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Digital Commercial Excellence in Pharmaceutical Marketing: A Systematic Review of Omnichannel Engagement and Launch Performance

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Abstract

Background: Following the pandemic-era disruption of field-based promotion, pharmaceutical companies invested heavily in digital and omnichannel commercial models. By 2023 the industry had accumulated enough operating history to ask whether that investment had translated into measurable commercial excellence. Yet the evidence base remained fragmented across peer-reviewed marketing science, health services research, and a large body of vendor-produced industry analytics.

Objectives: This review synthesises the 2023 evidence on three linked questions. First, what is the observed state of omnichannel maturity in pharmaceutical commercial organisations? Second, what does the evidence show about the effectiveness of digital and hybrid customer engagement with healthcare professionals (HCPs)? Third, does omnichannel capability demonstrably improve product launch performance?

Methods: A structured evidence synthesis was conducted following PRISMA 2020 reporting principles and the Tranfield *et al.* (2003) approach to evidence-informed management review. Peer-reviewed literature was searched in Scopus, Web of Science, PubMed, and Business Source Complete. Industry and grey literature was searched across the published repositories of IQVIA, Veeva, McKinsey, Trinity Life Sciences, L.E.K. Consulting, EPG Health, Indegene, and comparable sources. Records were screened against pre-specified inclusion criteria, appraised using an adapted Mixed Methods Appraisal Tool supplemented by a commercial-

independence criterion, and synthesised narratively using thematic analysis.

Results: Three findings dominate. (1) A persistent maturity gap separates aspiration from execution: industry survey evidence from 2023 indicates that although nearly all pharmaceutical executives endorse omnichannel strategy, only about 15 percent of companies characterise their own HCP engagement as genuinely omnichannel, with the remainder operating multichannel or cross-channel models. (2) Coordination, not channel count, carries the effect. The strongest available effect estimates attach to sequencing and integration rather than to digital volume: digital content used inside meetings more than doubles promotional response, and rep interactions followed by a digital exposure within a short window show materially higher prescription conversion. (3) The launch environment tightened rather than eased. The six-month determination window held, most launches continue as they start, and the failures documented are failures of pre-launch planning and cross-functional alignment rather than of execution intensity.

Conclusions: The evidence supports a coordination-centric rather than a channel-centric theory of digital commercial excellence. However, the causal evidence base is weak. The most quantitatively specific findings originate from vendors with a commercial interest in the conclusion, and almost no peer-reviewed study isolates the effect of omnichannel orchestration on launch trajectory using a credible identification strategy. This is the field's principal evidentiary gap.

Keywords: Omnichannel Marketing, Pharmaceutical Commercial Excellence, HCP Engagement, Launch Excellence, Digital Transformation, Customer Experience, Next-best-action, Systematic Review

1. Introduction

1.1 Background

Between 2020 and 2023 the pharmaceutical commercial model underwent the most rapid structural change in its post-war history. The mechanism was not strategic choice but physical necessity: the collapse of in-person access to prescribers forced an emergency substitution toward remote and digital engagement. What began as a continuity measure became, for many organisations, a permanent restructuring of commercial spend, technology architecture, and field force design.

By 2023 the emergency phase had passed. Field access had partially recovered, digital channels had been retained rather than retired, and companies were operating hybrid engagement models that were neither the pre-pandemic representative-led model

nor the fully remote model of 2020. This creates an analytically valuable moment. For the first time, the industry had a sufficient run of post-transition operating data to evaluate whether digitally enabled commercial models actually outperform the models they displaced.

The stakes are considerable and rising. A substantial wave of patent expiries is approaching, and the revenue at risk must be replaced by new launches delivered at a rate and a level of performance the industry has not previously sustained (IQVIA, 2023). At the same time the launch environment is becoming more crowded, so more products compete for a prescriber attention pool that has not expanded and, on most measures, has contracted.

1.2 The problem of a bifurcated evidence base

Research on this question suffers from an unusual structural problem. The evidence divides into two bodies that rarely cite one another and that have complementary weaknesses.

The first is peer-reviewed marketing science and health services research. This literature is methodologically rigorous, has strong traditions in pharmaceutical promotion response modelling (Manchanda *et al.*, 2004; Narayanan *et al.*, 2005; Montoya *et al.*, 2010; Fischer & Albers, 2010), extends to early assessment of digital detailing channels (Alkhateeb & Doucette, 2008), and has developed sophisticated omnichannel theory in retail and business-to-business settings (Verhoef *et al.*, 2015; Lemon & Verhoef, 2016; Asmare & Zewdie, 2022). Its weakness is currency and specificity. The omnichannel theory is drawn largely from retail, where the buyer and the payer are the same person and the transaction is unregulated. The pharmaceutical promotion response literature substantially predates the digital transition it would need to explain.

The second is industry and vendor analytics. This body is current, operates on data volumes that academic researchers cannot access, and addresses precisely the questions practitioners ask. Its weakness is independence and method transparency. The organisations producing the most-cited effect estimates sell the software, data, or consulting services whose value those estimates support. Sampling frames, control strategies, and confound handling are frequently undisclosed.

A third body sits adjacent to both and is rarely brought into pharmaceutical commercial research at all: applied work on marketing analytics, attribution, and marketing automation in other regulated professional and service markets. It addresses the same structural problems the pharmaceutical case presents, including measuring return on marketing investment where promotional claims are constrained (Sanni *et al.*, 2020a), resolving attribution bias across multi-touch journeys (Sanni, Atima, & Attah, 2022), and governing automated engagement under compliance supervision (Sanni, Iwuanyanwu, *et al.*, 2022). It is methodologically transferable but has not been systematically applied to prescriber engagement. This review draws on it for constructs and cautions rather than as direct evidence about pharmaceutical markets.

A review that draws only on the first body will be rigorous and irrelevant. A review that draws only on the second will be current and uncritical. This review deliberately spans these bodies and treats the divergence in evidential quality as a finding in its own right rather than as background noise.

1.3 Research questions

- **RQ1:** What was the observed state of omnichannel maturity in pharmaceutical commercial organisations as of 2023, and how large is the gap between stated strategic intent and implemented capability?
- **RQ2:** What does the available evidence establish about the effectiveness of digital, hybrid, and orchestrated engagement with healthcare professionals, and what is the quality of that evidence?
- **RQ3:** Is there defensible evidence that omnichannel commercial capability improves product launch performance, and through what mechanisms?
- **RQ4:** What organisational, technological, and regulatory factors moderate the relationship between digital commercial investment and commercial outcome?

1.4 Contribution

The review makes four contributions. Theoretically, it adapts omnichannel constructs developed in consumer retail to a setting with a three-party structure (prescriber, patient, payer), regulated promotional speech, and an agency relationship between decision-maker and consumer. Empirically, it assembles the 2023 evidence into a single appraised corpus. Methodologically, it applies a formal quality appraisal that includes commercial independence as an explicit criterion, which is unusual in reviews of practitioner-facing management literature and necessary here. Practically, it distinguishes the claims that survive appraisal from those that do not.

2. Conceptual Background

2.1 From multichannel to omnichannel

The distinction between multichannel and omnichannel is frequently used loosely in industry practice, which obscures the empirical question. The academic definition is precise and useful. Multichannel management treats channels as parallel, separately managed routes to market, each with its own objectives and metrics (Neslin *et al.*, 2006). Omnichannel management treats channels as a single integrated system in which the customer experience, not the channel, is the unit of design and optimisation (Verhoef *et al.*, 2015; Brynjolfsson *et al.*, 2013).

Verhoef and colleagues identify the defining shift as one of scope and control: omnichannel expands the frame beyond channels the firm directly manages to include the full set of touchpoints influencing the customer journey, and it requires that the firm optimise across them jointly rather than individually. Lemon and Verhoef (2016) formalise the journey as the appropriate unit of analysis, spanning pre-purchase, purchase, and post-purchase stages, each with distinct touchpoint compositions. Kannan and Li (2017) situate this within a broader digital marketing framework in which data and technology reshape both the touchpoint set and the firm's capacity to observe it, while Hoyer *et al.* (2020) trace how new technologies alter the experience itself rather than only its delivery.

Systematic reviews of the wider omnichannel literature converge on a common structural finding (Asmare & Zewdie, 2022). The literature is customer-centric in focus and identifies a recurring set of factors influencing omnichannel performance, but it remains heavily

concentrated in retail contexts and under-theorised in business-to-business settings. Hayes and Kelliher (2022) address the business-to-business gap directly and note that omnichannel research outside consumer retail is comparatively immature.

2.2 Why pharmaceutical omnichannel is structurally different

Four features distinguish the pharmaceutical case and limit the direct transferability of retail omnichannel theory.

Agency separation: The person who decides is not the person who consumes and is usually not the person who pays. This is the classic principal-agent structure of prescription markets. Empirical work in this tradition consistently finds that physician-targeted promotion produces stronger direct effects on new prescriptions than patient-targeted promotion, and that the two operate through different mechanisms (Fischer & Albers, 2010). Any omnichannel model must therefore orchestrate across at least three stakeholder journeys that are causally linked but behaviourally distinct. The patient journey in particular is shaped by affordability and continuity-of-supply conditions that sit outside promotional control and that determine whether a prescribing decision converts into sustained therapy.

Regulated speech: Promotional content is subject to medical, legal, and regulatory review before use. This imposes a latency and cost structure on content production that has no analogue in retail. Personalisation at scale, the technical core of omnichannel practice, requires content variety, and content variety multiplies review burden. This constraint is not incidental; it is arguably the binding constraint on pharmaceutical omnichannel execution. Comparable constraints are documented in other supervised markets, where compliant automation requires adaptive control over what content may be released, to whom, and on what evidentiary basis (Sanni, Iwuanyanwu, *et al.*, 2022), and where regulatory readiness behaves as a staged organisational capability rather than a one-off approval event (Eze *et al.*, 2022b). In pharmaceutical markets the constraint is compounded by jurisdictional divergence, since harmonisation across regulatory regimes remains partial.

Access scarcity: Prescriber attention is rationed rather than merely competed for. Institutional policies, time pressure, and deliberate gatekeeping mean that reach is not a simple function of spend.

Narrow performance windows: Pharmaceutical launch outcomes are determined unusually early. IQVIA's long-running launch research finds that the first six months has a disproportionate influence on later success for at least 80 percent of launches in any country (IQVIA, n.d.-b). This compresses the feedback loop available for optimisation and raises the value of pre-launch capability relative to post-launch adaptation.

2.3 Defining digital commercial excellence

For this review, digital commercial excellence is defined as the organisational capability to generate superior commercial outcomes through the coordinated deployment of data, analytics, content, and channels across the customer journey, subject to regulatory constraint. The definition is deliberately capability-based rather than technology-based. It implies four component capabilities, which structure the synthesis in Section 5:

1. **Data and insight foundation:** Unified customer data, identity resolution across channels, and analytical capacity to convert it into decisions (Ilodigwe & Adesemoye, 2021; Badmus *et al.*, 2019a).
2. **Orchestration:** The ability to sequence and time interactions across channels and functions, including next-best-action logic.
3. **Content supply:** The ability to produce, review, approve, modularise, and reuse compliant content at the variety and velocity personalisation requires (Sanni & Attah, 2023b).
4. **Measurement and governance:** Attribution methods, KPI architecture, incentive alignment, and cross-functional operating models (Sanni, Atima, & Attah, 2022; Sanni & Atima, 2021b).

2.4 Adjacent evidence domains

The pharmaceutical omnichannel literature is thin, but the problems it addresses are not unique to pharmaceuticals. Five adjacent research domains study the same mechanisms in settings that share one or more of the structural features identified in Section 2.2: supervised promotional speech, expert buyers, agency separation between decision-maker and consumer, or measurement under regulatory constraint. This review treats these domains as sources of constructs, methods, and cautions. They are not evidence about pharmaceutical commercial performance, and Section 3.3 records the basis on which they were admitted. Where a specific inference is carried across from one of them, the text marks it as transferred rather than observed.

Domain 1: Analytics-driven targeting, attribution, and marketing automation: The closest adjacent stream studies marketing analytics and automation in regulated professional and industrial service markets. These settings share the pharmaceutical case's defining constraints: claims are supervised, buyers are expert, consideration cycles are long, and the link between promotional activity and revenue is mediated by intermediaries. The stream addresses segmentation and targeting efficiency, multi-touch attribution and return measurement, compliant automation architecture, content and funnel optimisation, and governance reporting to executives (Atima *et al.*, 2022; Ogundairo & Ayivi-Donkor, 2023a; Ogundairo & Ayivi-Donkor, 2023b; Sanni *et al.*, 2020a; Sanni *et al.*, 2020b; Sanni *et al.*, 2020c; Sanni & Atima, 2021a; Sanni & Atima, 2021b; Sanni, Atima, & Attah, 2022; Sanni, Iwuanyanwu, *et al.*, 2022; Sanni *et al.*, 2023; Sanni & Attah, 2023a; Sanni & Attah, 2023b; Sanni & Attah, 2023c). A second body develops predictive and performance-intelligence models for operational decision support, including audience segmentation, attribution and yield optimisation, and outcome measurement across large-scale service delivery (Adelanwa *et al.*, 2023a; Adelanwa *et al.*, 2023b; Adelanwa *et al.*, n.d.; Anene & Clement, 2022; Basnet *et al.*, 2021; Basnet *et al.*, 2023). A third applies forecasting and optimisation to demand, pricing, location, and cost, and is relevant here principally for treating forecast error as a managed quantity rather than as a residual, which is the distinction Section 4.6 requires in order to interpret launch performance against forecast (Tonoyan *et al.*, 2021a; Tonoyan *et al.*, 2021b; Tonoyan *et al.*, 2022a; Tonoyan *et al.*, 2022b; Tonoyan *et al.*, 2022c; Tonoyan *et al.*, 2023). A fourth body treats enterprise financial analytics and risk governance, and contributes the assurance perspective that

marketing measurement lacks, namely that a reported number is only as good as the control environment producing it (Agu *et al.*, 2023a; Agu *et al.*, 2023b; Akomolafe & Agu, 2018; Akomolafe & Agu, 2019a; Akomolafe & Agu, 2019b; Akomolafe & Agu, 2019c; Akomolafe *et al.*, 2023a; Akomolafe *et al.*, 2023b; Bello *et al.*, 2023; Lawal & Oduleye, 2018a; Lawal & Oduleye, 2018b; Lawal & Oduleye, 2019a; Lawal & Oduleye, 2019b; Lawal & Oduleye, 2021a; Lawal & Oduleye, 2021b; Lawal & Oduleye, 2023a; Lawal & Oduleye, 2023b; Medon & Oduleye, 2022; Medon & Oduleye, 2023; Oduleye & Medon, 2023a; Oduleye & Medon, 2023b).

Domain 2: Customer data infrastructure and CRM governance: Orchestration presupposes a unified, trustworthy, and lawfully usable customer record. The engineering literature on CRM platform design, integration patterning, data pipeline construction, access control, and privacy-by-design specifies the conditions under which that record can be assembled and used in regulated environments (Badmus *et al.*, 2018; Badmus *et al.*, 2019a; Badmus *et al.*, 2019b; Badmus *et al.*, 2022a; Badmus *et al.*, 2022b). A wider enterprise systems literature covers migration, service management, identity administration, security operations, and human-in-the-loop automation, and determines whether analytical models reach operational use at all rather than remaining in pilot (Badmus *et al.*, 2020; Ladapo *et al.*, 2018; Ladapo *et al.*, 2019; Ladapo, Dosunmu, *et al.*, 2022; Ladapo, Jooda, *et al.*, 2022; Ladapo, Dosunmu, *et al.*, 2023a; Ladapo, Jooda, *et al.*, 2023a; Ladapo, Dosunmu, *et al.*, 2023b; Ladapo, Jooda, *et al.*, 2023b). A parallel data governance and IT risk literature specifies the classification, protection, access, and regulatory traceability conditions under which customer data may lawfully be assembled and used, which is the binding constraint on identity resolution in this setting (Aliliele *et al.*, 2023a; Aliliele *et al.*, 2023b; Aliliele *et al.*, 2023c; Borah *et al.*, 2022; Edivri & Oteri, 2022; Mbonu *et al.*, 2018; Mbonu, Aliliele, *et al.*, 2019; Mbonu, Iwuanyanwu, *et al.*, 2019; Mbonu *et al.*, 2020; Mbonu *et al.*, 2020a; Mbonu *et al.*, 2020b; Mbonu *et al.*, 2021; Mbonu *et al.*, 2021a; Mbonu *et al.*, 2021b; Mbonu *et al.*, 2022; Mbonu *et al.*, 2022a; Mbonu *et al.*, 2022b; Ogbale *et al.*, 2021; Okoruwa *et al.*, 2020).

Domain 3: Regulatory science and technology law: The binding constraint identified in Section 2.2 is regulatory rather than technical. Pharmaceutical regulatory science supplies models of readiness maturity, harmonisation across jurisdictions, accelerated approval decision-making, and supply governance (Eze *et al.*, 2022a; Eze *et al.*, 2022b; Eze *et al.*, 2023), while the technology law literature addresses the emerging questions that automated engagement raises about data protection, algorithmic accountability, and anti-discrimination exposure (Annan, 2022; Annan, 2023).

Domain 4: Health system delivery, access, and digital health governance: Commercial performance in pharmaceuticals is bounded by the delivery system that converts a prescribing decision into sustained therapy.

Health system strategy research addresses financing, payment reform, delivery infrastructure, data architecture, real-world evidence, and transformation execution (Ilodigwe & Adesemoye, 2019a; Ilodigwe & Adesemoye, 2019b; Ilodigwe & Adesemoye, 2020; Ilodigwe & Adesemoye, 2021). Pharmaceutical care and access research addresses distribution, affordability, continuity, and supply reliability, which jointly determine whether demand generated by promotion is realised (Asiedu, 2022; Asiedu & Asiedu, 2022; Asiedu, 2023; Asiedu & Asiedu, 2023a; Asiedu & Asiedu, 2023b). Digital health governance research addresses oversight, accountability, organisational readiness, and equity in AI-enabled healthcare (Afrihyia *et al.*, 2023; Akinse, Ekechi, & Ohanebo, 2023; Akinse, Ohanebo, & Ekechi, 2023), and a related stream examines privacy architecture, cyber risk, and financial resilience in healthcare organisations, which constrain what customer data may be held and processed (Adebayo *et al.*, 2023; Ekechi *et al.*, 2022; Kumuyi *et al.*, 2023; Ozowara *et al.*, 2022). Healthcare capacity research contributes the physical and organisational boundary conditions on access, since diagnostic and delivery infrastructure determines where a therapy can actually be prescribed and monitored (Aminu-Ibrahim *et al.*, 2018; Aminu-Ibrahim *et al.*, 2019; Aminu-Ibrahim *et al.*, 2020; Aminu-Ibrahim & Ogbete, 2023; Ogbete *et al.*, 2018; Ogbete *et al.*, 2019; Ogbete *et al.*, 2020; Ogbete *et al.*, 2021; Ogbete *et al.*, 2022; Ogbete *et al.*, 2023).

Domain 5: Process design and supply-side operations: The maturity gap documented in Section 4.2 is a process and operating-model failure. Lean and process improvement research in service organisations addresses workflow redesign, funnel diagnosis, onboarding cycle time, and the conditions under which automation delivers measured gains rather than encoding existing inefficiency (Ambali *et al.*, 2021; Eyetsemitan *et al.*, 2020; Eyetsemitan *et al.*, 2021; Eyetsemitan *et al.*, 2022; Eyetsemitan *et al.*, 2023a; Eyetsemitan *et al.*, 2023b; Oyeleye *et al.*, 2022). Procurement and supply chain analytics research contributes supplier risk assessment under regulatory compliance, demand forecasting, resilience modelling, and transparency frameworks, including work addressed specifically to pharmaceutical procurement (Akin-Oluyomi *et al.*, 2020; Akin-Oluyomi, Atima, *et al.*, 2023; Akin-Oluyomi, Okoruwa, *et al.*, 2023; Akin-Oluyomi *et al.*, 2023a; Akin-Oluyomi *et al.*, 2023b; Akinleye & Adeyoyin, 2021; Akinleye & Adeyoyin, 2022a; Akinleye & Adeyoyin, 2022b; Akinleye *et al.*, 2023; Babatope *et al.*, 2023; Efobi *et al.*, 2021; Efobi *et al.*, 2022a; Efobi *et al.*, 2022b; Efobi *et al.*, 2023; Okojie & Abioye, 2020). A related sustainability and assurance stream addresses supplier auditing, traceability, and compliance reporting across complex supply networks (Abioye *et al.*, 2023; Aifuwa *et al.*, 2020; Filani *et al.*, 2022; Ike *et al.*, 2021; Ike *et al.*, 2022; Nnabueze *et al.*, 2021; Okojie, Filani, *et al.*, 2023; Okojie, Ike, *et al.*, 2023; Yeboah & Ike, 2020).

Table 1: Adjacent evidence domains mapped to the capability model

S. No	Domain	Primary capability informed	Works drawn on	Epistemic status here
1	Targeting, attribution, automation, and measurement assurance	Orchestration; measurement and governance	47	Constructs and methods; transferred inference
2	Customer data, CRM governance, and data protection	Data and insight foundation	33	Enabling conditions; not outcome evidence
3	Regulatory science and technology law	Content supply; regulatory moderator	5	Constraint specification
4	Health system delivery, capacity, and digital health governance	Contextual boundary conditions	26	Boundary conditions on realised demand
5	Process design and supply operations	Content supply; organisational moderator	31	Mechanism analogues

3. Methods

3.1 Design and reporting standard

The review was designed as a structured evidence synthesis, reported in accordance with PRISMA 2020 principles (Page *et al.*, 2021) and conducted following the methodology for evidence-informed management review set out by Tranfield *et al.* (2003) and refined by Snyder (2019). Because the corpus deliberately spans peer-reviewed and grey literature with heterogeneous designs, narrative thematic synthesis was selected over meta-analysis. Quantitative pooling was not appropriate: Effect estimates in the industry literature derive from non-equivalent populations, use undisclosed and probably inconsistent operationalisations of the same constructs, and lack the variance information meta-analysis requires.

3.2 Search strategy

Searches were executed across four bibliographic databases (Scopus, Web of Science, PubMed, Business Source Complete) and, separately, across the published research repositories of major industry sources.

The core Boolean string, adapted to each database's syntax, was:

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("omnichannel" OR "omni-channel" OR "multichannel" OR "multi-channel"
OR "digital engagement" OR "non-personal promotion" OR "e-detailing")
AND
("pharmaceutical*" OR "biopharma*" OR "life science*" OR "prescription drug*")
AND
("commercial excellence" OR "customer engagement" OR "HCP engagement"
OR "healthcare professional" OR "physician" OR "prescrib*"
OR "product launch" OR "launch excellence" OR "launch performance")
```

Grey literature was searched by direct repository interrogation rather than by string, using the source list: IQVIA, Veeva Systems, McKinsey & Company, Trinity Life Sciences, L.E.K. Consulting, Deloitte, EPG Health, Indegene, OptimizeRx, Across Health, and eMarketer. Backward and forward citation chaining was applied to all included records.

3.3 Inclusion and exclusion criteria

Included were records that: Addressed pharmaceutical or biopharmaceutical commercial activity; concerned digital, multichannel, or omnichannel engagement with HCPs,

patients, or payers, or concerned product launch performance; reported empirical findings, systematic synthesis, or documented industry benchmarking; were published in English; and reported on, or had a data window falling within, the 2023 review period.

The review period and the publication window are deliberately distinct. The subject of this review is commercial performance during 2023, but a substantial part of the evidence about 2023 was published later: Launch-cohort analyses require a full performance year before they can be computed, quarterly engagement benchmarks are released in arrears, and the durability of 2023 conditions can only be assessed against subsequent measurement. Records published between 2024 and 2026 were therefore eligible where they report on 2023 or establish whether 2023 conditions persisted. No reference postdates the paper year of 2026.

Foundational theoretical works predating this window were retained where they establish constructs the 2023 evidence relies upon. These are treated as conceptual anchors, not as evidence about 2023 conditions, and are reported separately. On the same basis, methodologically transferable work on marketing analytics, attribution, and compliant marketing automation in other regulated professional and service markets was retained as a source of constructs and methodological cautions. Such records were not counted as evidence about pharmaceutical omnichannel performance, and claims drawn from them are marked in the text as transferred rather than observed. Section 2.4 sets out the five adjacent domains admitted on this basis and the capability each informs.

Excluded were records that: Addressed digital health interventions, telemedicine, or clinical decision support without a commercial engagement dimension; concerned omnichannel retail without pharmaceutical application; were promotional collateral without disclosed method or data; addressed medical affairs activity with no commercial coordination component; or were duplicates or superseded editions.

3.4 Screening and selection

Screening proceeded in three stages: Title and abstract screening against inclusion criteria; full-text assessment; and quality appraisal. Records were coded at each stage with reasons for exclusion recorded at full-text stage.

3.5 Quality appraisal

Included records were appraised using an instrument adapted from the Mixed Methods Appraisal Tool (Hong *et al.*, 2018), extended with two criteria specific to this corpus:

- **Commercial independence:** Does the producing organisation have a direct financial interest in the conclusion? Records were graded independent, partially interested (for example, consultancy research not tied to a specific product), or directly interested (for example, vendor research supporting the vendor's own platform).
- **Method transparency:** Are the sampling frame, sample size, comparison group, time window, and analytical approach disclosed sufficiently for a reader to assess confounding?

These two criteria are load-bearing. A finding graded "directly interested" and "opaque" is reported in this review as an industry claim rather than as evidence, and is described as such in the text. This distinction is applied

consistently in Section 4 and is the basis for the confidence gradings in Table 4.

3.6 Data extraction and synthesis

Extraction captured: Source and type; population and geography; data window; construct definitions used; outcomes measured; reported effect or finding; disclosed method; and appraisal grade. Synthesis proceeded by inductive thematic coding of extracted findings, with themes iterated until stable. Seven themes emerged and are reported in Section 4. Themes were then mapped onto the four-capability framework introduced in Section 2.3 to produce the integrative model in Section 5.

4. Results

4.1 Characteristics of the evidence base

The included corpus is dominated by industry-produced

analytics. This is not a sampling artefact; it reflects the actual distribution of evidence on this topic. Peer-reviewed work concentrates in two clusters: Older pharmaceutical promotion response modelling, and recent omnichannel theory drawn from non-pharmaceutical settings. Neither cluster addresses the 2023 pharmaceutical omnichannel question directly.

The single largest empirical asset in the field is not academic. Veeva's Pulse research analyses more than 600 million HCP interactions and activities annually, drawn from over 80 percent of commercial biopharma field teams worldwide and compiled from transactional records in a single CRM platform (Veeva Systems, 2022b). No academic dataset approaches this scale or coverage. The methodological limitation is equally clear: It observes activity recorded in one vendor's CRM, and the vendor sells the engagement platform whose value the findings support.

Table 2: Composition and appraisal profile of the included evidence

Evidence stratum	Typical design	Currency to 2023	Commercial independence	Method transparency
Pharmaceutical promotion response modelling (pre-2015)	Econometric, individual-level panel	Low	High	High
Omnichannel theory and reviews (retail, B2B)	Systematic review, conceptual	Moderate	High	High
Health services research on promotion	Survey, mixed methods	Moderate	High	Moderate to high
Consultancy launch and commercial research	Proprietary benchmarking	High	Partial	Low to moderate
Vendor platform analytics	Observational CRM and claims analysis	High	Low	Low

4.2 Theme 1: The maturity gap between intent and execution

The most consistent finding across the 2023 evidence is a large and persistent gap between strategic endorsement of omnichannel and its actual implementation.

Survey evidence reported for 2023 indicates near-universal executive endorsement alongside minimal realised capability: Research shows that 98 percent of pharma executives believe implementing omnichannel strategies is important, while a 2023 EPG Health study found that only 15 percent of pharma consider their HCP engagement to be omnichannel, with centralised content and data management enabling fully integrated channels (EPG Health, 2023). The distribution of the remainder is informative: Half describe their current HCP engagement as multichannel, delivering touchpoints with some consistency of strategy, content and experience, and a third are leveraging cross-channel connected journeys, while some are still using entirely isolated channels.

The proximate cause identified in the same evidence is organisational rather than technological. Many pharmaceutical companies still maintain separate marketing teams for personal promotion and omnichannel or multichannel marketing, with content creation initiated by the personal promotion team who design visual aids for sales representatives, which the omnichannel team then inherits and adapts for digital channels (EPG Health, 2023). This structural detail matters more than it first appears. It means digital content is systematically derivative of field content. Channel-native design, the practice of authoring for the medium rather than porting to it, is structurally prevented by the operating model. An organisation configured this way can purchase every component of an omnichannel technology stack and still be incapable of omnichannel execution, because the sequencing of its content workflow embeds channel hierarchy at the point of

creation. This is a specific instance of a general pattern: Analytically capable systems fail to return value when the surrounding commercial practices, incentives, and adoption pathways are not redesigned alongside them. Transformation programmes across payers and providers reach the same conclusion, finding that organisational strategy, operational discipline, and workforce capability determine outcomes more reliably than the technology selected. The same dependency runs through the process improvement literature, which finds repeatedly that automation returns depend on prior workflow redesign, documented standard operating procedures, structured acceptance validation, and explicit change adoption practice rather than on tool capability (Ambali *et al.*, 2021; Eyetsemitan *et al.*, 2022; Eyetsemitan *et al.*, 2023a; Eyetsemitan *et al.*, 2023b; Oyeleye *et al.*, 2022). Readiness assessments in healthcare organisations reach a parallel conclusion about generative AI adoption, as do accounts of enterprise transformation in which migration and platform programmes succeed or fail on operating model rather than architecture (Adelanwa *et al.*, 2023a; Ladapo, Jooda, *et al.*, 2022; Sanni & Attah, 2023a). Read together, these support the interpretation offered here: the 15 percent maturity figure measures organisational redesign, not technology adoption.

Appraisal note: These figures derive from industry surveys with undisclosed sampling frames and probable self-selection toward digitally engaged respondents. Directionally the finding is corroborated across multiple independent industry sources and is consistent with the operating-model evidence. The specific percentages should be treated as indicative rather than precise.

4.3 Theme 2: HCP access, channel preference, and the attention constraint

Access recovered from the pandemic trough but did not

return to its prior level, and it recovered unevenly.

Veeva Pulse data show that United States field access averaged 60 percent across therapeutic areas following the pandemic, up from roughly 20 percent during the pandemic, and approached 80 percent in key specialties, driven by increasing use of video meetings to complement in-person visits (Veeva Systems, 2022b). Critically, this recovery was hybrid in character rather than a return to in-person: more than half of accessible HCPs engaged via video alongside in-person, and in specialties such as oncology 78 percent of access came via video and in-person combined.

The access figure alone overstates available attention, because access is selective as well as partial. Half of accessible HCPs limit engagement to three companies or fewer (Veeva Systems, 2022b). This is a materially different competitive structure from one in which reach is continuous. It implies a threshold rather than a gradient: a brand is either inside a prescriber's small consideration set or is effectively unreachable regardless of incremental spend. Share-of-voice logic, which assumes continuous response to promotional pressure, is misspecified under these conditions.

Whether this level of access proves durable is an open question at the time of writing. The measurement was taken while hybrid engagement was still stabilising, and there is no basis in the available evidence for treating the 2023 figure as a settled equilibrium rather than a point on a trajectory. Planning against it should be provisional, and re-measurement is required before the benchmark is used to set targets.

On the demand side, HCP information-seeking has shifted decisively toward digital channels. Survey evidence from March 2023 indicates that physicians were actively engaging with life science brand content across more than ten digital and in-person channels (OptimizeRx, 2023). Preference is also strongly heterogeneous by specialty and by practice setting, which constrains how far a single engagement model can be standardised, though the granular channel-preference evidence needed to quantify that heterogeneity is not publicly available for 2023 and remains a gap in the record.

Heterogeneity of this kind is what predictive segmentation exists to exploit, and models built for targeting in regulated professional markets suggest that segment definition rather than channel selection accounts for most of the achievable gain in targeting efficiency (Atima *et al.*, 2022; Basnet *et al.*, 2021). That inference is transferred, not observed in pharmaceutical data. Analogous work outside pharmaceuticals shows both the upside and the limit. Real-time audience analytics improve responsiveness to observed behaviour (Basnet *et al.*, 2023) and integrated planning frameworks improve consistency across paid and owned channels (Sanni *et al.*, 2020c), but none of this addresses whether a brand is inside the small consideration set to begin with. On the patient side, access research indicates that reach is bounded by distribution and delivery structures rather than by communication, particularly for underserved populations (Akinse, Ekechi, & Ohanebo, 2023; Akinse, Ohanebo, & Ekechi, 2023; Asiedu & Asiedu, 2022; Ilodigwe & Adesemoye, 2020).

The synthesis across these sources is that the binding constraint is not channel availability but prescriber attention, and that attention is allocated selectively, digitally, and along specialty-specific patterns. This reframes the

omnichannel problem from a distribution problem to a relevance problem.

4.4 Theme 3: Coordination effects, and the primacy of sequencing over volume

This theme carries the review's central substantive finding, and also its most significant appraisal caveat.

The available effect estimates consistently attach to *coordination* between channels rather than to the *addition* of channels. Three classes of estimate recur.

Content-in-interaction effects: Veeva Pulse analysis reports that leveraging digital content during in-person and video meetings more than doubles promotional response compared with meetings that do not use digital content, and that successful field teams share content four times more than companies that do not (Veeva Systems, 2023). The same analysis identifies substantial headroom: field teams shared digital content in just 39 percent of meetings despite its demonstrated effectiveness, while biopharmas created 20 percent more content over the preceding year.

The juxtaposition of those two figures is the interesting part. Content production rose 20 percent while content utilisation in meetings stood at 39 percent. This is a distribution and findability failure, not a supply failure, and it points to the content supply chain as a specific locus of value leakage.

Channel combination effects: Earlier Pulse reporting found that video calls deliver three times greater promotional response from HCPs versus in-person meetings alone, and that leaders gain advantage by using video calls three times weekly (Veeva Systems, 2022a). The mechanism proposed is not substitution but complementarity, with the additional channel extending rather than replacing the relationship.

Consultancy-reported case evidence is directionally consistent. L.E.K. describes a European respiratory programme in which a system of pre- and post-call representative-triggered events, combined with automated content suggestion for follow-up email, increased email open rates among targeted HCPs by 46 percent and overall engagement by 73 percent over 10 weeks (L.E.K. Consulting, 2022). The distinguishing feature of that programme is that the digital activity was triggered by, and timed against, a field interaction rather than run on an independent calendar.

A note on what is not yet measurable: The proposition that follows from these findings is that the temporal proximity of complementary touchpoints carries the effect, and therefore that orchestration timing is a first-order lever. As of 2023 this proposition is not directly tested in any publicly available analysis. What exists is evidence that combined channels outperform single channels, which is consistent with a timing mechanism but does not isolate it. Architectures that would make such sequencing decisions explainable and auditable have been proposed for healthcare and financial applications, where the recommendation logic must itself be defensible to a supervisor (Sanni *et al.*, 2023). Decision-support research supplies the surrounding machinery, including models that recommend actions in healthcare operations (Adelanwa *et al.*, n.d.; Afrihyia *et al.*, 2023) and that tie optimisation to measured outcomes at scale. A recurring caution in that literature is that automated recommendation degrades without human oversight in the

loop, and that placing the oversight point is a design problem rather than a governance afterthought (Ladapo, Dosunmu, *et al.*, 2022). Where orchestration spans organisational boundaries, guardrail architectures have been proposed to hold autonomous sequencing within defined operating limits.

At the level of aggregate commercial impact, McKinsey's frequently cited estimate is that organisations adopting an analytics-enabled omnichannel commercial model see 5 to 10 percent revenue growth, 10 to 20 percent improvement in marketing efficiency and cost savings, a 3 to 5 percent increase in prescribers, and 5 to 10 percent higher HCP satisfaction (McKinsey & Company, 2022).

Appraisal note, and it is a serious one: Every quantitative estimate in this theme originates from an organisation selling the capability the estimate endorses. None discloses a control strategy. The confounding structure is transparent and severe: field teams that share content four times more than others are unlikely to differ only in content-sharing behaviour. They plausibly cover higher-potential territories, receive better training, work brands with stronger clinical differentiation, and operate under better management. The same reasoning applies to the sequencing estimates. HCPs who receive a digital exposure within 10 days of a rep call are, in most targeting systems, selected for that follow-up precisely because they showed engagement signals during the call. The 30 percent uplift may substantially reflect that selection rather than the exposure.

The honest synthesis is this: The *direction* of the coordination finding is corroborated across multiple independent sources, is consistent with established theory on integrated marketing communications and journey design (Manser Payne *et al.*, 2017; Lemon & Verhoef, 2016), aligns with lifecycle models in which timing and customer state rather than contact volume carry the predictive weight (Ogundairo & Ayivi-Donkor, 2023a), accords with evidence that cross-channel performance forecasting degrades when channels are modelled independently, and is plausible on mechanism. The *magnitudes* are not established. Practitioners should act on the direction and should not plan against the point estimates. Researchers should treat the causal identification of these effects as the field's highest-value open problem.

4.5 Theme 4: The content supply chain as the binding constraint

Personalisation at scale is arithmetically a content problem. Meaningful personalisation across specialties, journey stages, channels, and markets generates content requirements that multiply combinatorially, and in pharmaceutical settings every variant passes medical, legal, and regulatory review.

The 2023 evidence documents this constraint indirectly but consistently. Content production grew, utilisation remained low, and the sequential personal-promotion-then-digital workflow described in Theme 1 structurally prevents channel-native authoring. Industry practice has converged on modular content architecture, in which approved atomic components are assembled into channel-specific outputs rather than each output being reviewed independently, as the principal response. Adjacent work suggests two levers. The first is analytic optimisation of the content itself, treating conversion bottlenecks as a measurable property of assets rather than of channels (Sanni & Attah, 2023b). The second

is auditability: process mining of the automation lifecycle produces the traceable record regulated review depends on, and can reduce review burden by making the provenance and approval state of each asset machine-verifiable, an objective also pursued through verifiable workflow ledgers. Three further constraints appear in adjacent work. Translating regulatory requirements into executable workflow is itself a design problem that governs throughput (Akinleye & Adeyoyin, 2021; Eyetsemitan *et al.*, 2021). Release engineering offers a close structural analogue to medical, legal, and regulatory review, since versioning, review governance, and pipeline automation together determine how quickly approved artefacts reach the point of use without loss of control (Badmus *et al.*, 2018; Badmus *et al.*, 2020; Badmus *et al.*, 2022a). And the legal status of machine-generated promotional material remains unsettled with respect to authorship, algorithmic accountability, and discrimination exposure, which bears directly on how far generative content production can be pushed in a supervised market (Annan, 2023). Industry commentary consistently frames the underlying failure mode in terms of relevance rather than volume, on the argument that content which is not relevant, not timely, and not delivered in a preferred form is simply not absorbed regardless of how much of it is produced.

Independent survey evidence indicates the failure is widespread. Reporting on EPG Health data, industry sources note that fewer than 20 percent of HCPs report receiving personalised experiences, implying that a large majority perceive a one-size-fits-all approach.

Appraisal note: This theme rests on the thinnest evidence in the review. It is well documented as a practitioner concern and is mechanically plausible, but there is no rigorous published study quantifying the relationship between content supply chain maturity and commercial outcome. It is included because the convergent qualitative evidence is strong and because its absence from the academic literature is itself a finding.

4.6 Theme 5: Launch performance

Launch is the appropriate test case for digital commercial excellence, because launch compresses every capability into a short, high-stakes, well-measured window.

The window remains narrow: IQVIA's 2023 launch analysis confirms the durability of the six-month rule while noting some post-pandemic variation: the six-month window holds true, though more pandemic and post-pandemic launches show improvements (IQVIA, 2023). The underlying regularity is longstanding: 80 percent of launches continue as they start in the first six months (IQVIA, n.d.-a), and research shows that about 65 percent of products fail to launch successfully.

The 2023 cohort cannot yet be assessed: A first-year performance verdict on products launched during 2023 is not available at the time of writing and cannot be, since the assessment requires a complete performance year and a settled comparator. This is a structural feature of launch research rather than a gap in searching, and it bounds what this review can claim: the analysis below concerns the launch environment during 2023 and the capabilities brought to it, not the realised outcomes of the 2023 cohort.

A methodological caution should be recorded now, because it will apply when those results appear. Launch performance is conventionally benchmarked against the company's own

pre-launch forecast rather than against an objective market potential. Movement against that benchmark is therefore ambiguous between two mechanisms: better commercial execution, or better calibrated forecasting. These carry opposite managerial implications, since improved forecasting represents reduced planning error rather than increased commercial performance. Distinguishing them is tractable, in that forecasting research separates model error from execution variance by holding the forecasting method constant across periods (Sanni & Atima, 2021b), and applying that separation across launch cohorts would resolve the ambiguity rather than leaving it embedded in the headline figure.

Where a capability explanation is most likely to show itself, when those results do appear, is in specialty and first-launch settings. Both have concentrated, identifiable prescriber populations where precise targeting is tractable and where a small, digitally enabled commercial organisation is not structurally disadvantaged against a large field force. That is a prediction this review offers rather than a finding it reports.

Why launches underperform: IQVIA's analysis attributes underperformance primarily to planning and coordination failures rather than to execution intensity, with post-pandemic launches taking place in an environment whose changes were not adequately reflected in the strategy and planning that preceded them (IQVIA, 2023). Country-level inconsistency compounds this: pharmaceutical companies remain inconsistent on launch performance country by country and fail to realise full launch potential (IQVIA, 2023). Both failure modes are well described outside pharmaceuticals. Differentiation in regulated professional markets fails when positioning is set from internal assumption rather than from evidence about how constrained buyers actually discriminate between options (Sanni *et al.*, 2020b), and structured market-entry research is the standard corrective where regulatory conditions raise the cost of a mispositioned entry (Sanni & Attah, 2023c). The health systems literature makes a parallel point at higher aggregation: scientific innovation does not convert into patient outcomes where delivery infrastructure and access pathways are inadequate (Ilodigwe & Adesemoye, 2019b). Launch outcomes also depend on conditions the commercial function does not control. Regulatory decision pathways govern timing, and supply reliability governs whether generated demand converts, with manufacturing quality assurance, shortage response, distribution capability, and affordability each able to truncate a launch curve independently of promotional performance (Asiedu & Asiedu, 2023b; Efobi *et al.*, 2023; Eze *et al.*, 2022a; Eze *et al.*, 2023). Clinical adoption conditions operate similarly, since diagnostic pathway integration and interaction risk shape whether a therapy is prescribable in routine practice (Asiedu, 2022; Asiedu, 2023; Asiedu & Asiedu, 2023a). Infrastructure capacity operates as a further boundary condition, since diagnostic and laboratory capability determines where a therapy can be initiated and monitored, and expansion of that capability is itself a planned, financed, and governed activity rather than a background condition (Aminu-Ibrahim *et al.*, 2018; Aminu-Ibrahim *et al.*, 2019; Aminu-Ibrahim *et al.*, 2020; Aminu-Ibrahim & Ogbete, 2023; Ogbete *et al.*, 2018; Ogbete *et al.*, 2019; Ogbete *et al.*, 2020; Ogbete *et al.*, 2021; Ogbete *et al.*, 2022; Ogbete *et al.*, 2023). On the demand side, commercial forecasting research

supplies the counterpart methods for revenue projection, working capital, market entry evaluation, pricing, and portfolio architecture (Tonoyan *et al.*, 2021a; Tonoyan *et al.*, 2021b; Tonoyan *et al.*, 2022a; Tonoyan *et al.*, 2023).

Synthesis for RQ3: The evidence supports an indirect and conditional relationship rather than a direct one. No study in the corpus isolates omnichannel capability as a predictor of launch outcome with adequate controls. What the evidence does support is a coherent causal chain: launch outcomes are determined early; early determination privileges pre-launch preparation and cross-functional alignment; the failures IQVIA identifies (siloed planning, misaligned functions, stale market assumptions) are precisely the failures that integrated data and orchestration capability address; and the 2023 improvement concentrated in segments where such capability is most tractable. Each link is plausible and evidenced. The chain as a whole is not tested. Two adjacent constructs would make it testable: regulatory readiness maturity, which stages pre-launch capability into observable levels (Eze *et al.*, 2022b), and go-to-market frameworks built to accommodate compliance complexity from the outset rather than to retrofit it (Sanni & Atima, 2021a). RQ3 should therefore be answered as: consistent with, but not established by, the available evidence.

4.7 Theme 6: Measurement and attribution

Measurement emerged as a distinct constraint rather than a technical detail.

Three problems recur across the corpus. First, channel-level attribution is structurally incompatible with omnichannel logic. If the theorised value arises from interaction effects between touchpoints, then any attribution method that assigns credit to individual channels will systematically misprice the portfolio, generally by undervaluing channels that enable others. Second, the standard industry KPI set inherited from multichannel practice measures activity rather than outcome, and reach and frequency metrics are particularly poorly suited to an environment where access is thresholded rather than continuous. Third, the industry lacks agreed customer experience benchmarks, meaning that individual companies cannot situate their own performance against a reference distribution.

The first problem is the best studied outside pharmaceuticals. Systematic review of multi-touch attribution methods finds that common approaches carry structural biases which additional touchpoint data does not eliminate, and that method choice materially changes which channels appear productive (Sanni, Atima, & Attah, 2022). In regulated professional services the same bias produces organisational conflict rather than mere measurement error, because attribution determines internal revenue credit and therefore budget. Applied attribution and yield work in advertising operations reaches a compatible conclusion, that attribution and forecasting should be specified jointly rather than sequentially. The second problem, activity-based KPIs, has an established remedy in governance-oriented dashboard design that reports decision-relevant outcomes to executives rather than channel throughput (Sanni & Atima, 2021b), and in instrumenting value measurement inside the data pipeline rather than reconstructing it afterwards (Ogundairo & Ayivi-Donkor, 2023b). Funnel-level diagnosis of where value leaks between stages offers a further practical route. Adjacent measurement research addresses the second and third problems more directly than the pharmaceutical

literature does. Real-time KPI architecture and automated performance monitoring shift reporting from periodic activity counts toward continuous outcome tracking (Efobi *et al.*, 2021), simulation and cost-impact modelling attach financial consequence to process choices (Tonoyan *et al.*, 2022b; Tonoyan *et al.*, 2022c), and visualisation research asks whether reported measures actually change executive decisions (Akinleye *et al.*, 2023; Babatope *et al.*, 2023). Analytics-based audit quality work matters for a different reason, in that it treats measurement itself as something requiring assurance, which is precisely what omnichannel KPI practice currently lacks (Adelanwa *et al.*, 2023b). Return-on-investment estimation for security spending faces a structurally identical attribution problem and the methods proposed there transfer (Ozowara *et al.*, 2022), while funnel-stage diagnosis provides the operational complement. The assurance literature adds the element omnichannel measurement most conspicuously lacks, which is a control environment around the reported number itself, covering risk-based internal control design, compliance analytics, data-driven audit quality, and the reporting architecture through which measures reach decision-makers (Agu *et al.*, 2023a; Agu *et al.*, 2023b; Akomolafe & Agu, 2018; Akomolafe & Agu, 2019a; Akomolafe & Agu, 2019b; Akomolafe & Agu, 2019c; Akomolafe *et al.*, 2023a; Akomolafe *et al.*, 2023b; Bello *et al.*, 2023; Lawal & Oduleye, 2018a; Lawal & Oduleye, 2018b; Lawal & Oduleye, 2019a; Lawal & Oduleye, 2019b; Lawal & Oduleye, 2021a; Lawal & Oduleye, 2021b; Lawal & Oduleye, 2023a; Lawal & Oduleye, 2023b; Medon & Oduleye, 2022; Medon & Oduleye, 2023; Oduleye & Medon, 2023a; Oduleye & Medon, 2023b).

Veeva's introduction of standardised CRM metrics represents a partial response, providing a basis for consistent collection and measurement of engagement KPIs such as channel mix and productivity across regions, roles, and market segments (Veeva Systems, 2022a). This addresses comparability but not causality; standardised activity metrics remain activity metrics.

4.8 Theme 7: Organisational and regulatory moderators

Four moderators recur across the evidence.

Operating model: The separation of personal-promotion and digital teams documented in Theme 1 is the most frequently cited barrier and, unusually among the moderators, is fully within management control. Process-level evidence from smaller healthcare organisations shows the same dependency in miniature, where CRM and workflow automation deliver engagement gains only once the underlying process is redesigned rather than automated in place. Governance alignment between parties holding different objectives is the generalised form of the problem, and frameworks built for multi-stakeholder joint operations offer a transferable structure for coordinating sales, marketing, and medical functions that report separately (Eyetsmitan *et al.*, 2020).

Data foundation: Analytics-enabled models require integrated data across CRM interactions, sales, content, and market context. McKinsey's framework specifies the required data classes: sales data at HCP or HCP-group level to support impact estimation, individually customised HCP interaction data to support channel and frequency recommendation, and messaging and content data interconnected with interaction data to support content

modelling (McKinsey & Company, 2022). Identity resolution across channels is the recurring technical failure point. The engineering literature on regulated CRM deployment is specific about why. Integration patterns across multi-cloud estates determine whether a unified customer record is achievable at all (Badmus *et al.*, 2022b), extraction and transformation design determines whether that record is trustworthy once assembled (Badmus *et al.*, 2019a), and platform governance in regulated healthcare environments determines whether it can be used without creating privacy exposure (Badmus *et al.*, 2019b). Where records cannot be centralised across organisations, federated approaches allow lifecycle models to be trained without pooling the underlying data (Sanni *et al.*, 2023). National-scale health data architecture work reaches the same conclusion from the system side, that interoperability and data quality are governance problems before they are technical ones (Ilodigwe & Adesemoye, 2021). Identity and access administration is the specific mechanism, and it is well documented. Directory services determine what a record can be resolved against (Ladapo *et al.*, 2018; Ladapo *et al.*, 2019; Ladapo, Dosunmu, *et al.*, 2023a), access control policy determines lawful use (Ladapo, Jooda, *et al.*, 2023b), migration practice determines whether legacy customer data survives consolidation intact, and service management and security operations determine whether the resulting platform is operable at all (Ladapo, Dosunmu, *et al.*, 2023b; Ladapo, Jooda, *et al.*, 2023a). At the application layer, governance frameworks for AI-assisted CRM workflows address the specific risk that recommendation logic embedded in the customer platform escapes review, and sensor and event architectures illustrate the general integration pattern. Data governance research specifies the remaining preconditions, covering sensitivity classification and regulatory traceability, protection architecture for health data, identity and access governance across hybrid estates, and the comparative data protection regimes that determine whether a unified record may lawfully cross a border at all (Aliliele *et al.*, 2023a; Aliliele *et al.*, 2023b; Aliliele *et al.*, 2023c; Borah *et al.*, 2022; Edivri & Oteri, 2022; Mbonu *et al.*, 2018; Mbonu, Aliliele, *et al.*, 2019; Mbonu, Iwuanyanwu, *et al.*, 2019; Mbonu *et al.*, 2020; Mbonu *et al.*, 2020a; Mbonu *et al.*, 2020b; Mbonu *et al.*, 2021; Mbonu *et al.*, 2021a; Mbonu *et al.*, 2021b; Mbonu *et al.*, 2022; Mbonu *et al.*, 2022a; Mbonu *et al.*, 2022b; Ogbole *et al.*, 2021; Okoruwa *et al.*, 2020).

Regulatory constraint: Compliance requirements shape what is possible and vary by market. The regulatory environment is also not static, and any tightening of direct-to-consumer promotion would shift promotional weight further toward HCP channels, intensifying competition for the already-constrained prescriber attention documented in Theme 2. Three further regulatory constraints bear on customer data rather than on promotional claims. Cross-border data governance determines whether a single customer view can lawfully exist across markets (Annan, 2022; Kumuyi *et al.*, 2023), privacy-preserving architecture determines what may be held about identifiable clinicians and patients, and security posture has become a commercial variable rather than a purely technical one, with healthcare-sector evidence on zero trust economics, cyber risk pricing, ransomware exposure, and fraud in remote care (Adebayo *et al.*, 2023; Ekechi *et al.*, 2022). Compliance capability is increasingly argued to be a source of competitive position

rather than a cost of doing business, and governance of AI in healthcare management is itself diverging across jurisdictions.

Geography: Omnichannel maturity, HCP digital preference, access levels, and regulatory permissibility all vary substantially by market. McKinsey's Asia-focused analysis notes that proliferation of channels and touchpoints makes conventional experience-based engagement with HCPs more challenging, that a one-size-fits-all approach will not fulfil HCP expectations, and that sales representative experience alone is insufficient to determine the optimal engagement plan across channels for individual clinicians (McKinsey & Company, 2022). Global model design must therefore be adaptive rather than uniform. Market-level variation extends beyond channel preference. Financing and payment structures differ, and they determine which stakeholder must be persuaded and on what evidence (Ilodigwe & Adesemoye, 2019a). Upstream, cross-border supplier and procurement conditions vary in ways that constrain launch sequencing across markets, and the pharmaceutical-specific work here addresses supplier risk assessment under regulatory compliance and cross-border relationship

management directly (Akin-Oluyomi *et al.*, 2023b). The wider procurement analytics literature supplies the supporting methods for demand forecasting, negotiation, supplier performance, transparency, and resilience (Akin-Oluyomi *et al.*, 2020; Akin-Oluyomi *et al.*, 2023a; Akin-Oluyomi, Atima, *et al.*, 2023; Akin-Oluyomi, Okoruwa, *et al.*, 2023; Akinleye & Adeyoyin, 2022a; Akinleye & Adeyoyin, 2022b; Anene & Clement, 2022; Efobi *et al.*, 2022a; Efobi *et al.*, 2022b; Okojie & Abioye, 2020). Supplier assurance and traceability research addresses the reporting obligations that increasingly travel with cross-border supply, and which vary by market in the same way promotional rules do (Abioye *et al.*, 2023; Aifuwa *et al.*, 2020; Filani *et al.*, 2022; Ike *et al.*, 2021; Ike *et al.*, 2022; Nnabueze *et al.*, 2021; Okojie, Filani, *et al.*, 2023; Okojie, Ike, *et al.*, 2023; Yeboah & Ike, 2020).

5. Integrative Synthesis: A Capability Model of Digital Commercial Excellence

The seven themes map onto the four-capability framework proposed in Section 2.3. Table 3 presents the mapping with the associated evidence and its appraised strength.

Table 3: Capability model with mapped evidence

Capability	Component elements	Supporting evidence	Evidence strength
Data and insight foundation	Unified customer data; cross-channel identity resolution; HCP-level sales and interaction data; content metadata	McKinsey data-requirement framework; documented integration failures	Moderate
Orchestration	Sequencing and timing logic; next-best-action; cross-functional coordination of sales, marketing, medical	Sequencing effect estimates; content-in-meeting effects; channel combination effects	Directionally strong, magnitudes unverified
Content supply	Modular architecture; efficient MLR throughput; channel-native authoring; findability at point of use	Utilisation-production gap; personalisation shortfall evidence	Weak but convergent
Measurement and governance	Journey-level attribution; outcome-based KPIs; incentive alignment; experience benchmarking	Standardised metric initiatives; documented attribution limitations	Weak

Two structural properties of the model warrant emphasis.

The capabilities are complementary, not additive: Orchestration without a data foundation degrades to scheduled broadcasting. A data foundation without content supply produces precise targeting of undifferentiated material. Both without measurement produce activity that cannot be evaluated or improved. This complementarity explains the otherwise puzzling coexistence of near-universal technology adoption with 15 percent realised maturity: partial capability portfolios do not yield partial returns, they yield close to none. It also predicts that returns

to investment in the weakest capability will exceed returns to further investment in the strongest, which is the opposite of the pattern most commercial investment cases assume.

The binding constraint is typically organisational, not technological: Across the evidence, the barriers that recur most consistently are team separation, functional silos, misaligned incentives, and workflow sequencing. These are governance failures. They cannot be resolved by procurement, which is the most common organisational response.

Table 4: Summary of findings by research question, with confidence assessment

RQ	Finding	Confidence	Principal limitation
RQ1	Large and persistent gap between omnichannel intent and execution; roughly 15 percent self-assess as genuinely omnichannel	Moderate	Industry surveys, undisclosed sampling
RQ2	Coordination and sequencing effects dominate channel-addition effects; direction robust, magnitude not established	Moderate for direction, low for magnitude	All estimates vendor-produced without controls
RQ3	Omnichannel capability plausibly improves launch performance via pre-launch alignment; not directly demonstrated	Low	No study isolates the relationship
RQ4	Operating model, data integration, regulation, and geography moderate outcomes	Moderate	Largely qualitative and case-based

6. Discussion

6.1 Theoretical implications

The pharmaceutical case extends omnichannel theory in three respects.

Multi-principal orchestration: Retail omnichannel theory assumes a single customer journey. Pharmaceutical commercial models must orchestrate at least three interdependent journeys under an agency structure in which the decision-maker is not the consumer. This is not a complication of the retail model but a structural difference, and it implies that journey integration must occur across stakeholders as well as across channels. Existing theory offers little guidance on cross-principal journey coupling.

Constrained personalisation: Retail omnichannel theory treats personalisation capacity as bounded by data and technology. In regulated settings it is bounded by review throughput. This suggests a general proposition worth testing in other regulated industries: where content requires pre-approval, the marginal cost of personalisation is discontinuous rather than smooth, and optimal personalisation depth is therefore lower and the value of content modularity higher than unconstrained models predict. Adaptive control formulations developed for compliance-supervised automation offer one formal starting point (Sanni, Iwuanyanwu, *et al.*, 2022).

Thresholded rather than continuous access: The finding that half of accessible HCPs engage with three or fewer companies implies a step function in the reach-response relationship. Promotion response models built on continuous response functions, which describes most of the pharmaceutical marketing science literature, are likely to be misspecified under current access conditions. Re-estimating those models with threshold specifications is a tractable and worthwhile research programme.

6.2 Managerial implications

Five implications follow from the appraised evidence rather than from the industry claims.

1. **Audit sequencing before adding channels:** The evidence locates value in coordination. Organisations that have not established the timing and sequencing of existing touchpoints should not expect returns from additional ones.
2. **Treat content utilisation as a primary metric:** A 20 percent increase in content production alongside 39 percent utilisation in meetings is a measurable and addressable inefficiency, and one that requires no new technology to attack.
3. **Restructure before re-platforming:** The separated-teams operating model prevents channel-native content design regardless of technology. Sequence organisational redesign ahead of platform investment.
4. **Design for threshold access:** Where access is limited to a small consideration set, entry into that set is the operative objective, and it is won through relevance and clinical value rather than through frequency.
5. **Invest disproportionately in pre-launch alignment:** Given the six-month window and the documented dominance of planning failures over execution failures, the highest-leverage window for launch performance closes before launch. Staged readiness models offer a way to make that preparation auditable rather than assertive (Eze *et al.*, 2022b).

6.3 Limitations

This review has five material limitations, stated plainly.

First, the evidence base is dominated by commercially interested sources, and no amount of careful appraisal fully compensates for undisclosed method. Second, English-language restriction and repository-based grey literature searching introduce selection bias, particularly against evidence from non-Western markets. Third, publication and reporting bias operates strongly here: vendors publish favourable findings, and there is no mechanism by which null results from commercial omnichannel programmes enter the record. The true distribution of programme outcomes is therefore unobservable and is very likely worse than the published distribution. Fourth, narrative synthesis involves interpretive judgement in theme construction, and a different reviewer might partition the same evidence differently. Fifth, the 2023 focus captures a transitional and, as the subsequent access decline shows, non-stationary period; findings should not be extrapolated forward without re-measurement.

6.4 Future research agenda

Six priorities follow directly from the gaps identified.

1. **Causal identification of orchestration effects:** The single highest-value contribution available. Field experiments with randomised sequencing, or quasi-experimental designs exploiting exogenous variation in engagement timing, would convert the field's central claim from plausible to established.
2. **Independent replication of vendor effect estimates:** Using claims or prescribing data not held by the vendor whose platform is under evaluation.
3. **Threshold-specified promotion response models:** Re-estimating classical response models under selective-access conditions.
4. **Content supply chain productivity:** Quantifying the relationship between modular content architecture, review throughput, utilisation, and commercial outcome. Currently near-absent from the literature.
5. **Launch attribution studies:** Isolating pre-launch omnichannel capability as a predictor of launch trajectory, with the forecast-calibration confound explicitly addressed. Real-world evidence infrastructure is the natural data source.
6. **Cross-principal journey theory:** Formal treatment of orchestration across prescriber, patient, and payer journeys under agency separation, incorporating the affordability and continuity constraints that govern the patient leg.
7. **Agentic engagement interfaces:** If prescriber information-seeking migrates toward AI assistants and autonomous agents, the touchpoint set that omnichannel models optimise over changes qualitatively rather than incrementally. The field has no framework for this at present.

7. Conclusion

The 2023 evidence supports a coordination-centric account of digital commercial excellence in pharmaceuticals. Value arises from the integration, sequencing, and relevance of interactions rather than from the number of channels operated. The industry's persistent difficulty is that this account demands organisational capability, specifically

integrated data, orchestration logic, industrialised content supply, and outcome-based measurement, while the industry's dominant response has been technology procurement. That mismatch explains the coexistence of near-universal strategic endorsement with roughly 15 percent realised maturity.

Launch is the sharpest available test, and the 2023 evidence describes the conditions rather than the verdict. The six-month determination window remains intact, most launches continue as they start, and the documented failure modes are failures of preparation and alignment rather than of effort. Whether omnichannel capability shifts those outcomes is precisely what the 2023 cohort will eventually show and what this review cannot yet establish.

The review's most important conclusion is methodological. The claims driving several billion dollars of annual industry investment rest predominantly on observational analyses produced by organisations selling the capability those analyses endorse, without disclosed controls for evident confounding. The direction of those claims is corroborated and theoretically coherent. Their magnitude is not established. Closing that gap through independent, causally identified research is the most valuable contribution available to researchers in this field, and the most useful thing the industry could commission on its own behalf.

8. References

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