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Strategic Configurations of AI Adoption in China's Healthcare Sector:

A Comparative Case Study

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| Contents |

| Abstract |

As artificial intelligence (AI) continues to influence business transformation, firms face diverse strategic choices in how they adopt and scale new technologies. This study explores how organizations configure artificial intelligence within complex and regulated environments, focusing on four representative healthcare firms in China. Drawing on the technology-organization-environment framework, strategic alignment theory, and the institutional logics perspective, we develop a conceptual model that maps firm strategies along two key dimensions: the depth of operational AI integration and the scope of strategic

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AI deployment. This framework identifies four strategic archetypes: AI Ecosystem Builders, Institutional Solution Providers, Platform Service Scalers, and Task Specific Innovators. Each archetype reflects a distinct approach to embedding technology and positioning it within the market. Through comparative case analysis, we show how firms align internal capabilities with external constraints and opportunities, making trade-offs between innovation, legitimacy, and scale. While rooted in the healthcare sector, the framework offers broader insights for understanding digital transformation across industries where regulation, market structure, and public accountability play a central role. This study contributes to research on strategic technology adoption by offering a structured lens to interpret business model variation in artificial intelligence intensive settings.

▪ Key words: Artificial Intelligence (AI), Digital Transformation, Chinese Firms, Emerging Market, Healthcare

Ⅰ. Introduction

Artificial intelligence (AI) has emerged as a transformative force in business management and organizational innovation, reshaping how firms create, deliver, and capture value across industries. As digital technologies evolve rapidly, AI is no longer viewed merely as a tool for process optimization but as a core driver of business model innovation. By enabling new forms of customer engagement, operational automation, and data-driven decision-making, AI compels firms to rethink traditional strategic logics and develop adaptive capabilities to remain competitive in volatile markets. Recent research highlights that firms that effectively integrate AI not only enhance efficiency but also unlock novel revenue models and competitive advantages, making AI adoption a strategic

necessity rather than a discretionary choice (Iansiti & Lakhani, 2020; Lee et al., 2021). As a result, understanding how firms configure AI technologies within their competitive strategies has become central to the study of innovation, digital transformation, and competitive dynamics in contemporary global business environments.

This global shift is particularly evident in healthcare systems, where AI technologies are driving substantial improvements in diagnostic accuracy, operational efficiency, and personalized service delivery (He et al., 2019; Keesara et al., 2020). Especially in emerging markets such as China, AI is not only viewed as a technological innovation but also as a strategic response to structural healthcare challenges, including demographic shifts, unequal access to services, and constrained medical resources (Wang et al., 2021). In fact, China represents a particularly relevant setting due to its severe urban–rural healthcare disparities, rapidly aging population, and the centralized policy push for AI-driven reform (Kim et al., 2025). Furthermore, national-level initiatives like "Healthy China 2030" and ongoing investments in digital infrastructure have further accelerated the diffusion of AI across both public and private healthcare domains (State Council, 2016; Wang et al., 2021). Despite these favorable macro-level conditions, Chinese firms have pursued notably diverse strategies in adopting AI. Some firms have leveraged their consumer technology platforms to deliver scalable health services via AI-enhanced interfaces, while others have deeply embedded AI into clinical decision-making, diagnostics, and institutional workflows. These divergent paths raise a central question: Why do firms operating under similar institutional, policy, and technological environments adopt such different approaches to AI integration?

In fact, while the transformative potential of AI is widely acknowledged, understanding how firms strategically adopt and scale AI remains theoretically fragmented. Much of the existing literature on digital

transformation focuses on technological capabilities or organizational readiness in isolation, offering limited insight into how firms align AI initiatives with strategic objectives and navigate complex industrial and institutional environments. This gap is particularly salient in highly regulated sectors such as healthcare, where innovation unfolds at the intersection of technological feasibility, organizational structure, and institutional legitimacy. To address this complexity, this study adopts a multi-theoretical framework that integrates the Technology–Organization–Environment (TOE) framework, Strategic Alignment Theory, and the Institutional Logics Perspective. TOE provides a structural lens to examine how technological characteristics, organizational capacities, and external pressures influence technology adoption. Strategic Alignment Theory focuses on the fit between AI initiatives and broader business strategies, highlighting how firms embed emerging technologies within their value propositions. The Institutional Logics Perspective adds a normative dimension, illuminating how organizations align AI strategies with dominant societal and sectoral values—such as market efficiency, state priorities, or clinical professionalism—to secure legitimacy. Despite the individual strengths of these frameworks, few studies have synthesized them to explain the strategic heterogeneity in AI deployment across firms operating under similar external conditions. This study addresses that theoretical gap by examining how different configurations of AI adoption emerge from the intersection of internal capabilities, strategic intent, and institutional alignment.

To investigate how firms navigate the complex institutional and technological dynamics of AI adoption in healthcare, this study conducts a comparative case analysis of four representative firms in China's AI-healthcare ecosystem: JD Health, Huawei RuiPath, Yidu Tech, and iFLYTEK. These firms were selected through theoretical sampling based on their strategic diversity, organizational type, and levels of institutional

embeddedness. Together, they reflect a wide range of AI adoption patterns—spanning consumer-facing platforms, enterprise infrastructure solutions, and clinically integrated intelligence systems. JD Health and Huawei RuiPath represent diversified technology conglomerates entering healthcare from adjacent sectors, while Yidu Tech and iFLYTEK are AI-native or health-tech-driven firms with stronger clinical and policy ties. This variation enables comparative insight into different business models (B2C, B2B, B2G), technological depth, and institutional logics, providing a robust foundation for building a conceptual framework of strategic AI adoption in China's digital health sector.

Through cross-case analysis, we identify four strategic archetypes that capture the dominant configurations of AI adoption in China's healthcare sector. AI Ecosystem Builders embed AI across multiple layers of the healthcare system, including clinical workflows, diagnostic processes, hospital operations, and public health analytics, supported by sustained partnerships with institutional actors. Institutional Solution Providers develop specialized AI solutions, such as diagnostic imaging and workflow automation tools, that are tightly integrated into hospital infrastructures. Platform Service Scalers apply AI to expand consumer-facing health services through digital platforms, emphasizing scale, convenience, and user engagement over clinical depth. Lastly, Task-Specific Innovators focus on modular, task-specific applications that target niche functions, often operating with minimal institutional integration or regulatory entanglement. This framework maps AI adoption strategies along the operational depth of AI integration(ranging from modular tools to system-wide deployment) and the strategic scope of AI deployment(from focused use to expansive platform ecosystems). The resulting matrix captures how firms not only differ in how they implement AI, but also in strategic priorities, business model orientation, and the degree of institutional embeddedness.

This study contributes to both theory and practice. Theoretically, this

study advances digital transformation research by moving beyond deterministic accounts of AI adoption. It demonstrates how firms, even within similar macro-institutional contexts, configure AI strategies in distinct ways depending on their strategic orientation and positioning within the healthcare ecosystem. By integrating the TOE framework, Strategic Alignment Theory, and Institutional Logics Perspective, the study offers a multi-level explanation of how business model innovation unfolds under institutional constraints. Practically, the findings provide clear strategic reference points for technology leaders, health-tech entrepreneurs, and policymakers seeking to harness AI effectively. By clarifying the trade-offs between depth, scope, and institutional fit, the framework offers a tool for evaluating which AI strategies are most appropriate in different organizational and regulatory contexts.

Ⅱ. Theoretical Background

1. AI as a Catalyst for Healthcare Reform in Emerging Economies

In this study, healthcare refers to clinical care, public health functions, health system management, and population health monitoring (OECD, 2023). Healthcare is seen as the set of services provided to individuals or communities by health professionals for the purpose of promoting, maintaining, monitoring, or restoring health. For the purpose of this research, the healthcare sector is treated as both an institutional field and a site of technological transformation, encompassing not only hospitals and medical practitioners but also digital platforms, AI solution providers, and health-tech enterprises. Accordingly, AI adoption in healthcare is understood to include a wide range of innovations spanning clinical decision support, diagnostics, workflow optimization, telemedicine, health

management, and population health analytics.

While digital health technologies have long played a role in modernizing healthcare systems, AI has recently emerged as a distinct and powerful driver of innovation. Especially in emerging economies, healthcare systems face structural inefficiencies, access gaps, and resource limitations. In advanced economies, AI adoption is being integrated incrementally to streamline administrative tasks, improve accuracy in radiology, and support patient triage. For instance, by 2021, more than 30% of healthcare providers in the United States had implemented some form of AI technology, particularly in radiology departments and electronic health record (EHR) systems (Accenture, 2020). However, AI's impact has been particularly pronounced in the healthcare sector in emerging economies, where it is being leveraged to address persistent structural challenges. These include uneven access to care, physician shortages, infrastructural deficits, and inefficiencies in clinical service delivery. Unlike developed countries, emerging economies often adopt AI as a means of leapfrogging traditional healthcare barriers, integrating digital technologies in ways that simultaneously address scale, access, and quality (OECD, 2023). In those countries, AI is not merely a technological upgrade, but a strategic response to address structural inefficiencies and imbalanced access to social needs (Han et al., 2024; Zhang et al., 2024). This dynamic has led to rapid experimentation with AI-driven health innovations across a wide range of low- and middle-income countries, particularly in Asia, Latin America, and Africa (World Health Organization, 2021).

Within this context, China presents a particularly compelling case. It shares many of the structural conditions common to other emerging economies, including rapid urbanization, uneven health service distribution, and limited provider capacity. Nevertheless, it differs significantly in the scale, level of coordination, and policy intensity that underpin its national

investment in AI. National initiatives such as the Next Generation Artificial Intelligence Development Plan and Healthy China 2030 have positioned AI at the center of state-led innovation agendas (State Council, 2016), creating a uniquely fertile environment for experimentation at the intersection of healthcare, data, and digital healthcare infrastructure. Pilot programs led by the Ministry of Industry and Information Technology (MIIT) have facilitated AI integration into hospital diagnostics, public health surveillance, and clinical decision-making (MIIT, 2021). This top-down, innovation-friendly policy environment has enabled both large technology firms and health-tech startups to scale AI rapidly across public and private healthcare sectors.

Consequently, a diverse set of actors from tech conglomerates to AI-native startups are pursuing opportunities in healthcare innovation. However, this dynamic and policy-driven growth landscape also brings complexity. Firms must navigate heterogeneous regulatory environments, manage institutional expectations, and align their innovations with diverse stakeholders. These pressures give rise to significant variation in how AI is adopted, embedded, and legitimized across organizations and business models. Despite increasing recognition of AI's potential, there remains a limited understanding of the strategic logics that guide firms' decisions about how to deploy AI in ways that are technologically feasible, institutionally acceptable, and competitively advantageous.

Although China is not representative of all emerging economies, it serves as a strategic exemplar. Its experience offers valuable insight into how AI adoption can unfold in contexts marked by institutional complexity, rapid digital transformation, and strong state involvement. Examining the Chinese case allows for the identification of broader patterns in strategic variation, providing a structured lens through which other emerging markets may interpret their own paths toward AI-driven healthcare reform.

2. Theoretical Perspectives on Strategic AI Adoption

Although a growing body of research has examined AI applications in healthcare, most studies focus on technical performance, clinical use-cases, or user acceptance (He et al., 2019; Topol, 2019). This literature tends to emphasize algorithmic capabilities or regulatory readiness, offering limited insight into how AI technologies are embedded into organizational strategies and broader healthcare ecosystems. As Reddy et al. (2019) observe, the integration of AI into health systems is often treated as a technical challenge, rather than a strategic or institutional one. Understanding why firms adopt AI in divergent ways, particularly in emerging economies, requires a theoretical approach that extends beyond adoption drivers to include organizational intent, environmental complexity, and legitimacy concerns. To address this complexity, this study draws on three complementary theoretical perspectives: the Technology–Organization–Environment (TOE) framework (Tornatzky & Fleischer, 1990), Strategic Alignment theory (Henderson & Venkatraman, 1993), and the Institutional Logics perspective (Thornton, Ocasio, & Lounsbury, 2012). Each framework provides a distinct lens for understanding how firms interpret technological opportunities, allocate resources, and respond to both competitive demands and normative expectations. When considered together, they offer a robust foundation for analyzing strategic variation in AI adoption across firms.

1) Technology–Organization–Environment (TOE) Framework

The TOE framework provides a foundational structure for understanding the contextual conditions that shape technology adoption. Originally developed to explain how firms adopt and implement new technologies, the

TOE model conceptualizes adoption as the outcome of three interacting contexts: technological, organizational, and environmental (Tornatzky & Fleischer, 1990). The technological domain includes features such as complexity, compatibility, and maturity of AI systems. The organizational domain involves internal readiness factors, such as firm size and resource availability. The environmental domain refers to external factors, including government policies, market competition, and industry norms.

The TOE framework has been widely used to study technology adoption, including in healthcare (Wamba-Taguimdje et al., 2020), where infrastructural limitations and policy uncertainty are common barriers. In AI adoption, these domains interact dynamically: technological capability is necessary but not sufficient without organizational commitment and environmental support. TOE is particularly useful for identifying enabling and constraining conditions in complex settings like healthcare, where firms must navigate data regulation, stakeholder resistance, and infrastructure gaps. However, TOE's primary limitation lies in its descriptive nature. While it identifies whetheradoption is likely, it does not explain whyfirms adopt AI in strategically distinct ways, nor how they align AI with broader business goalsto gain competitiveness. In emerging economies, where firms operate under conditions of institutional ambiguity and fast-evolving markets, TOE must be supplemented with frameworks that account for organizational intent and external factors.

2) Strategic Alignment Theory

Strategic Alignment theory shifts the focus from adoption feasibility to strategic coherenceand value creation. Originating in information systems research, this theory posits that the success of technological initiatives depends on their alignment with the firm's overall competencies, business scope and business governance (Henderson & Venkatraman, 1993).

Rather than viewing technology as an isolated asset, Strategic Alignment theory emphasizes that performance gains are realized when technology supports a firm's competitive goals, whether through cost efficiency, product innovation, or customer value.

In the context of AI, alignment determines how firms integrate intelligent systems into operations, business models, and customer interfaces. Some firms may adopt AI to support back-end automation and efficiency, while others may use it to scale platform-based services or offer personalized diagnostics. These strategic choices are shaped by the firm's growth logic and value proposition. In emerging markets, where digital infrastructure is expanding rapidly and consumer expectations are evolving, firms must continuously recalibrate their strategies to capture emerging opportunities while managing legacy systems and regulatory friction.

Despite its relevance, Strategic Alignment theory remains underutilized in healthcare AI research, particularly in the context of emerging economies. Studies tend to focus on alignment in stable environments, offering limited insight into how firms in fluid or hybrid markets align AI with uncertain, multi-stakeholder goals. As the competitive landscape in emerging-market contexts is often characterized by rapid digitization and fragmented policy regimes, strategic alignment becomes not only a matter of internal coherence but also a tool for navigating shifting external constraints (Elia et al., 2022).

3) Institutional Logics Perspective

While TOE and Strategic Alignment focus on structural and strategic dimensions of adoption, they do not fully capture the normative and socio-political factors that shape organizational behavior—especially in highly regulated sectors like healthcare. The Institutional Logics perspective addresses this by emphasizing the formal and informal institutional

environments in which firms operate. This theory posits that organizations are embedded in institutional orders such as state, marketorprofessionallogics, which define appropriate behavior, organizational goals, and legitimacy (Thornton et al., 2012).

In healthcare, multiple institutional logics operate simultaneously, and they often promote conflicting priorities. A market logic encourages firms to prioritize efficiency, scalability, and competitive advantage. From this perspective, AI is a tool for rapid innovation and cost reduction. A technological logic emphasizes disruption, speed of development, and the intrinsic value of technological advancement.In contrast, a professional logic, dominant in clinical institutions, emphasizes values such as evidence-based practice, patient safety, and adherence to ethical standards. From this viewpoint, innovations must be validated through rigorous trials, accepted by medical professionals, and integrated cautiously into clinical workflows.

These logics often coexist within the same healthcare ecosystem but point firms in different directions. For instance, a company developing AI for medical diagnostics may view speed and scalability as key to market success. However, medical professionals may resist adoption if the technology is not transparent, well-validated, or aligned with established clinical practices. Regulators, too, may delay approval to ensure public safety and adherence to legal frameworks.As a result, firms cannot approach AI adoption solely as a matter of technical performance or strategic fit. They must also engage in a process of legitimation, where innovations are framed and communicated in ways that align with the expectations of different institutional audiences. This means balancing commercial goals with professional norms and regulatory standards—particularly in healthcare systems where innovation is tightly interwoven with questions of credibility and public value.

Institutional Logics theory has been applied to healthcare and digital

innovation studies, particularly to explain resistance, diffusion, and legitimacy-building (Hinings et al., 2018). However, few studies have used this lens to explore strategic differences in how firms adopt AI across sectors or countries. This perspective is especially useful in emerging markets, where state influence, professional norms, and commercial innovation often collide, creating contested spaces in which firms must craft hybrid strategies that balance technological innovation with legitimacy.

Although China is frequently viewed as a strongly centralized and state-led system, it nevertheless exhibits a form of institutional pluralism, especially in sectors like healthcare and AI. Organizations must simultaneously respond to market-oriented pressures for efficiency and innovation, state-driven mandates around public accountability and health policy, and professional logics rooted in clinical ethics, standards, and expertise. These multiple logics are not only coexistent but often in tension, requiring organizations to navigate overlapping and sometimes contradictory demands. As such, China provides a theoretically rich and practically relevant setting for examining how firms configure and legitimize AI adoption strategies under institutional complexity.

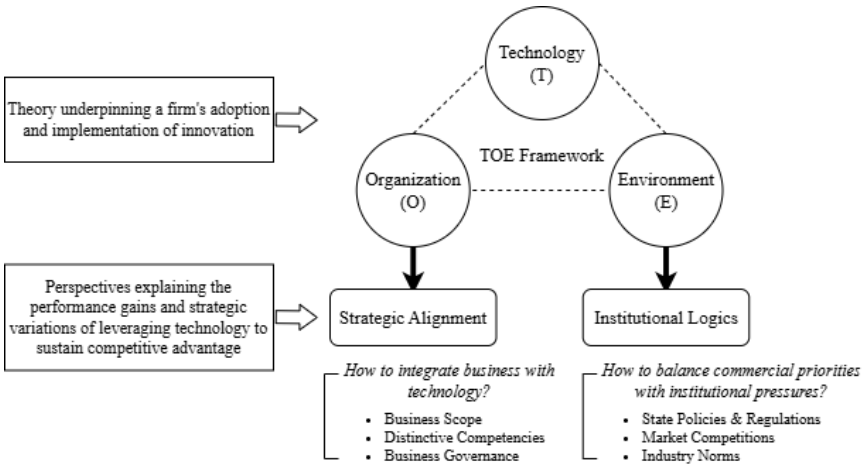
4) Toward an Integrated Framework

Taken individually, these three theories offer valuable but partial insights into AI adoption. TOE identifies the structural and contextual enablers of innovation adoption; Strategic Alignment theory explains how technology choices are tied to organizational strategy; and Institutional Logics reveals how legitimacy concerns shape innovation behavior. Yet, despite their complementary strengths, these frameworks have rarely been integrated in the study of healthcare AI, particularly in emerging markets. This study addresses that gap by synthesizing these

perspectives into an integrated framework.

Understanding AI adoption requires attention not only to what conditions enable it, but how and why firms choose different adoption paths. By focusing on the intersection of operational depth, strategic scope, and institutional alignment, this study moves beyond binary models of adoption to explore configurations of AI integration across firms. This approach allows us to examine how firms construct AI strategies that are technologically viable, strategically coherent, and institutionally legitimate. In doing so, the framework contributes a more comprehensive lens for understanding AI-driven transformation. It explains how firms actively configure, scale, and justify AI adoption based on internal priorities and external demands, offering a foundation for comparative analysis across organizations. As such, it provides both theoretical depth and practical relevance for studying digital transformation in evolving, complex and regulation-intensive contexts. Figure 1 demonstrates the integrated framework.

Figure 1. An Integrated Framework of Strategic AI Adoption in Emerging Markets



Ⅲ. Case Study

1. Method

To examine the strategic variation in AI adoption within China's healthcare sector, this study adopts a qualitative multiple-case study design, well-suited for capturing complex, context-dependent phenomena such as digital transformation (Yin, 2014). We conduct a comparative analysis of four leading firms selected through theoretical sampling to maximize diversity in strategic orientation, organizational structure, and institutional embeddedness. This variation allows for rich comparative insight into divergent business models (B2C, B2B, B2G), technological architectures, and institutional logics.

Data were collected from multiple secondary sources, including corporate white papers, industry reports, media coverage, and official policy documents. Triangulation across data types and timeframes was employed to strengthen validity. The analysis followed an abductive logic, iterating between empirical patterns and established theories—specifically the TOE framework, strategic alignment theory, and institutional logics.

Through this process, two core analytical dimensions were identified: the depth of strategic integration and the breadth of deployment scope. These dimensions form the basis of a 2×2 typology (see Table 2 and Figure 2), enabling a structured comparison of the firms and highlighting how different combinations of internal capability and institutional positioning give rise to distinct AI adoption strategies.

2. Case Selection and Firm Overview

Four firms were selected to represent a range of strategic positions and organizational types within China's rapidly evolving AI-healthcare

ecosystem. These include both diversified technology conglomerates extending into healthcare and health-tech - native firms that originate from medical AI or digital health backgrounds. The selection ensures variation across business models, technological depth, and institutional engagement, thus maximizing contrast and enabling cross-case theoretical insights.

(i) JD Health is the healthcare arm of JD.com, a major e-commerce platform in China. It leverages AI to enhance digital health service delivery through online consultations, smart triage, and chronic disease management. Its model is primarily consumer-facing (B2C) and built on scalable platform logic. The company also operates one of the largest online pharmacies in China and integrates AI for personalized health recommendations and supply chain optimization.

(ii) RuiPath, a medical AI company with strong technical and infrastructural ties to Huawei, specializes in AI-powered diagnostic imaging systems and smart hospital IT infrastructure. Its strategy emphasizes B2B integration with hospitals and public health institutions, leveraging Huawei's technological backbone and ecosystem.

(iii) Yidu Tech is a health-tech startup focused on real-world data analytics, clinical decision support systems (CDSS), and AI for pharmaceutical research. Its model is data-driven and research-intensive, oriented toward both clinical and institutional (B2G, B2B) clients. It also supports public health policy evaluation and AI-powered drug discovery through collaborations with hospitals and government agencies.

(iv) iFLYTEK Healthcare, a subsidiary of the AI speech recognition tech giant iFLYTEK, integrates AI into clinical workflow optimization, voice-enabled diagnostics, and national-level public health initiatives. With strong state partnerships, it exemplifies high institutional embeddedness and alignment with public policy priorities. Its involvement in projects like national health informatization platforms and medical AI

pilots underscores its close alignment with state-led digital health agendas.

These firms were not only chosen for their industry prominence, but also for their divergent strategic logics. Their differences in AI application scope, operational integration, and alignment with institutional actors make them analytically valuable for constructing a typology of AI adoption strategies in the healthcare sector.

3. Data Collection and Analysis

Data for this study were collected from a broad array of publicly available sources between 2020 and 2025. These included company websites, investor reports, annual white papers, media outlets, academic publications, and government-issued policy documents from entities such as the Ministry of Industry and Information Technology (MIIT) and the National Health Commission (NHC). This triangulated dataset provides a comprehensive view of each firm's technological initiatives, strategic positioning, and institutional affiliations.

To ensure analytical rigor and internal validity, we adopted a three-stage coding process combining both inductive and deductive techniques:

Stage 1-Descriptive Coding: Each firm was first profiled in terms of its AI-related initiatives, mapped along key dimensions such as operational depth (extent of internal AI integration), strategic scope (market focus and business model orientation), and institutional engagement (degree of alignment with regulators, hospitals, and public stakeholders).

Stage 2-Theoretical Interpretation: Using a structured analytical template derived from the three theoretical frameworks, we examined how these dimensions were shaped by technological affordances, organizational strategies, and institutional pressures. This step allowed us

to identify patterns of alignment and divergence across cases.

Stage 3–Framework Construction: In the final stage, insights from the individual cases were synthesized into a two-dimensional analytical framework. This framework positions firms according to their strategic scope and operational integration, revealing four archetypal configurations of AI adoption.

Ⅳ. Findings

This section presents a comparative analysis of four AI healthcare firms in China—JD Health, RuiPath, Yidu Tech, and iFLYTEK, drawing on the lenses of technological context(TOE), strategic alignment, and institutional logics. These firms exemplify distinctive approaches to AI deployment, reflecting both internal capabilities and external constraints.Drawing on the integrated framework, we interpret how these firms differ in their operational deployment of AI (depth of integration into clinical and institutional systems) and in the strategic scope of AI use (ranging from consumer services to institutional infrastructure). The analysis reveals how technological capacity, organizational intent, and institutional alignment jointly shape distinct adoption logics.

1. JD Health: Platform-First, Patient-Adjacent

JD Health exemplifies a consumer-facing, platform-led AI strategy with relatively shallow operational integration but broad strategic scope. As the healthcare subsidiary of JD.com, the company has expanded from e-commerce into online health services, leveraging AI tools such as chatbots, symptom checkers, and chronic disease management applications.For example, during the COVID-19 pandemic, JD Health

launched an AI chatbot to provide preliminary self-diagnosis and mental health counseling, helping triage patient needs at scale (JD Health, 2024).

From a technological perspective (TOE), JD Health deploys AI primarily at the user interface level, integrated with its digital platform infrastructure. AI is applied to enhance customer engagement and personalize services but remains loosely connected to clinical systems or professional workflows. This technological deployment aligns with JD.com's data analytics and logistics ecosystem, rather than with high-complexity healthcare infrastructures.

In terms of strategic alignment, JD Health's AI initiatives are tightly woven into its broader digital retail strategy. AI serves to extend the value proposition of fast, accessible, and scalable services—consistent with its core B2C business model. Rather than transforming clinical care, AI is positioned as a layer of value-add in JD's digital health offerings, such as its "Family Doctor" platform, which connects patients with appropriate resources while boosting platform engagement (Yang, 2024).

Institutionally, JD Health operates primarily within a market-oriented logic. Its legitimacy stems from user satisfaction, speed, and efficiency, rather than regulatory compliance or medical authority. The firm has limited engagement with hospitals or government actors, opting instead for rapid scaling via platform-based consumer services. As such, JD Health demonstrates a configuration characterized by broad strategic scope but relatively shallow clinical and institutional integration.

2. RuiPath (Huawei): Infrastructure-Led Hospital Modernization

RuiPath embodies a deeply embedded, infrastructure-centric AI strategy that emphasizes vertical integration and institutional partnership. Through solutions like CloudPACS and AI-enhanced imaging diagnostics, RuiPath supports the digitization of hospital operations(Huawei Cloud,

2025).Unlike more analytics-focused firms, RuiPath's core contribution lies in infrastructure transformation. As a healthcare division of Huawei, it brings AI into hospital environments primarily through digital imaging, radiology systems, and cloud-based diagnostic platforms. Its core mission is not to generate health intelligence but to modernize the clinical backbone, providing the physical and digital infrastructure that allows hospitals to digitize at scale.

From a technological lens, RuiPath leverages Huawei's strength in cloud computing, chipsets, data centers and network infrastructure to deploy AI at scale within hospital environments.Its AI tools are embedded in clinical workflows, particularly in radiology and diagnostic services, positioning the company as a high-depth B2B solution provider. RuiPath's products support hospital-wide digitization, from medical imaging to data integration(Huawei, 2025). These efforts also reflect a deep strategic alignment with national priorities in healthcare modernization.

Strategically, RuiPath's AI strategy builds on Huawei's broader position as a national infrastructure provider. The firm integrates hardware (chips, servers), software (CloudPACS), and networking (5G, cloud) into comprehensive hospital digitization projects. In this sense, RuiPath's AI is embedded more in automation and system-level modernization than in patient-level medical analytics. AI adoption is not an isolated initiative but part of a long-term strategy to serve institutional clients including public hospitals. This alignment allows Huawei to position RuiPath as a mission-critical partner in China's "Smart Hospital" modernization push.

Institutionally, RuiPath aligns closely with the state logic.Its legitimacy is derived from conformity to national goals, regulatory priorities, and hospital partnerships. RuiPath's participation in pilot programs and state-funded projects reflects its status as a national tech champion. The company strategically aligned with public-sector transformation and technologically embedded in clinical infrastructures.It builds legitimacy by aligning with

state-led development plans and adopting a compliance-first approach. This enables preferential access to state funding, regulatory partnerships, and healthcare infrastructure projects supported by the MIIT and local health commissions (MIIT, 2021).For instance, RuiPath has been included in AI pilot zones and government-funded projects aimed at transforming medical infrastructure. These pilot projects include interoperability standards, AI-based radiology, and smart diagnostics (China Daily, 2023).

3. Yidu Tech: Data-Driven Clinical Intelligence

Yidu Tech has emerged as a leading player in AI-powered clinical intelligence. It builds real-world data (RWD) platforms and CDSS that integrate patient data, medical recordsandinsurance claims. These tools assist hospitals and research centers in predictive modeling, disease stratification, and precision treatment recommendations. The company's AI strategy is inherently institutional. Unlike JD Health, Yidu Tech co-develops its products with top-tier hospitals and regulators, ensuring that AI solutions are both clinically valid and policy-compliant. During the COVID-19 pandemic, Yidu Tech's modeling system was used by city governments to forecast transmission patterns and guide public health interventions (Yidu Tech, 2024).

Yidu Tech adopts a strategy centered on B2B and B2G partnerships, providing AI-powered solutions to hospitals and government agencies for applications such as population health management and clinical decision support. Rather than targeting end users directly, Yidu positions its AI tools to enhance institutional decision-making at scale. A key enabler of this approach is its deep integration with national hospital systems, which facilitates secure access to sensitive RWD and allows the development of compliant, large-scale CDSS products (YiDu Tech, 2024).

In terms of the technological context, Yidu Tech functions in high-complexity

technological environments, managing sensitive, multidimensional health data. Its tools are co-developed with hospitals and research institutions, allowing for iterative customization and high fidelity in clinical integration. However, its vertically integrated model and longstanding relationships with hospitals enable iterative co-development, creating feedback loops that improve both the accuracy and usability of its AI models.

Strategically, Yidu focuses on institutional partnerships rather than consumer-facing models. Its B2B and B2G alignment enables the firm to position itself as a trusted provider of AI tools for precision medicine, health system intelligence, and policy decision-making. Strategic alignment is achieved through deep embedding within the professional healthcare ecosystem.

Institutional logics play a central role in Yidu's operations. The company draws legitimacy from professional and scientific norms, ensuring its tools are evidence-based, ethically grounded, and co-produced with clinical stakeholders. In contrast to infrastructure-focused players like RuiPath, Yidu Tech operates at the intersection of data science and clinical practice. Rather than digitizing hospital hardware systems, Yidu specializes in building AI-driven analytics platforms that support clinical decision-making and public health modeling.At the same time, its close engagement with public authorities—particularly during the COVID-19 pandemic—aligns it with state policy mandates for health intelligence.While both Yidu and RuiPath maintain strong institutional ties, their bases of legitimacy differ: Yidu derives trust from medical professionalism, scientific rigor, and co-creation with clinicians, whereas RuiPath aligns with state logic and digital infrastructure policy mandates. Yiduseesitselfas a knowledge partner in precision medicine, rather than a systems vendor.

4. iFLYTEK: From Language Interface to Equal Health Ecosystem

iFLYTEK differentiates itself from platform-based or infrastructure-heavy peers by focusing on a specific operational bottleneck in China's healthcare system: the administrative burden of clinical documentation. Leveraging its core expertise in speech recognition and natural language processing (NLP), the company has developed the Smart Medical Assistant, which converts physician-patient dialogues into structured electronic medical records (EMRs) in real time (iFLYTEK, 2025). This tool alleviates workload pressures without altering core diagnostic processes, making it especially valuable in resource-constrained environments.

Technologically, iFLYTEK's AI is specialized rather than expansive. Its NLP models are finely tuned to handle Chinese medical terminology, regional dialects, and institutional documentation formats. These technical strengths support rapid deployment, particularly in rural and secondary-tier hospitals where physician shortages and inefficient workflows are most acute. According to recent industry reports, iFLYTEK's medical AI systems have been implemented in over 1,000 hospitals across China, including in pilot zones for healthcare digitization (36Kr, 2025).

Strategically, the company adopts a narrow-but-deep focus. iFLYTEK focuses narrowly but effectively on a specific domain of AI—speech recognition for clinical documentation. Instead of building broad data platforms or hospital-wide systems, it delivers task-specific tools that enhance existing routines. This approach enables both scalability and acceptance, as it improves efficiency without requiring major changes to clinical decision-making or IT infrastructure.The company's flagship product, the Smart Medical Assistant, directly addresses a pervasive operational bottleneck in China's hospitals: the documentation burden faced by physicians. By automatically transcribing doctor-patient

conversations into EMRs, it frees up clinical time while maintaining accuracy. iFLYTEK's technological advantage also lies in its highly localized NLP capabilities, which are customized for Chinese medical terminology and regional dialects. This enhances usability and allows its tools to be deployed across a wide range of regions, including resource-constrained rural areas. In doing so, iFLYTEK responds directly to both market needs (workflow efficiency and usability) and institutional goals (urban-rural healthcare equity).

Institutionally, iFLYTEK adopts a dual legitimacy strategy that carefully balances state alignment with professional acceptance. On one hand, it collaborates closely with local governments and participates in public health innovation pilots, aligning with national priorities such as improving healthcare access in lower-tier regions. On the other hand, it gains credibility within the medical profession by designing its AI tools as augmentative rather than disruptive, supporting clinicians in routine tasks rather than challenging their authority or clinical autonomy. This approach contrasts with Yidu Tech's science- and data-driven integration with top-tier hospitals and institutions, and RuiPath's infrastructure-oriented alignment with national digital modernization.

In summary, the case comparison shows that AI adoption in healthcare reflects distinct strategic configurations shaped by technological capacity, business priorities, and institutional alignment. Rather than following a single path, firms tailor their approaches based on internal strengths and external expectations. This suggests that successful AI deployment depends not only on readiness but also on how well firms aligntechnologicalinnovation with strategy and legitimacy. Table 1summarizesthese patterns through the lens of the integrated theoretical framework.

Table 1. Summary of AI Healthcare Firm Strategies and Theoretical Integration

Firm	StrategicBusiness Model	Technological Context	Strategic Alignment	Institutional Logic
Yidu Tech	Clinical decision support (B2B/G)	Deep, high-dimensional real-world data, CDSS embedded in clinical intelligence	Supportingevidence-based clinical professional ecosystem via institutional partnerships	Scientific-professional logic: medical rigor,clinical legitimacy and institutional compliance
RuiPath (Huawei)	Hospital infrastructure and diagnostics(B2B	Deep, AI-enhanceddiagnosticimagingandhospitalworkflows	Modernizing healthcare infrastructure, aligned with Huawei's long-term goal of becoming a national infrastructure provider	State-dominant logic: compliance, infrastructure building, and national policy alignment
JD Health	Consumer-facing digital platform services (B2C)	Shallow, app-based, symptom checkers, chatbots, and cloud data analytics for user triage	Aligned with platform expansion and user engagement goals	Commercial-market logic: accessibility, speed, scale, convenience, and user experience
iFLYTEK	Voice-based clinical documentation (B2B)	Medium, NLP and voice recognition tools tailored to clinical settingsand doctor workflow optimization	Aligned with efficiency in physician workflow, especially in lower-tier hospitals	Hybrid of market and state logics: subnational (local) government pilot projects and clinician acceptance

Ⅴ. A Conceptual Framework

1. Two Dimensions

To capture the observed strategic variation in AI adoption, this study proposes a two-dimensional framework that maps how firms integrate and deploy AI in the healthcare sector. As outlined in Table 1, the framework is structured along two analytical axes: the depth of AI integration and the scope of deployment. These dimensions are explained as follows:

Operational Depth of AI Integrationrefers to the extent to which AI technologies are embedded into a firm's core operations, decision-making systems, and value creation processes. This dimension answers the question: How deeply is AI system embedded into technological, business and institutional infrastructure? High integration implies that AI functions not merely as a supportive tool but as a central and evolving driver of organizational and industrial transformation. In contrast, low integration suggests that AI plays a relatively peripheral role, enhancing isolated functions or interfaces without fundamentally altering how the business operates or delivers value.

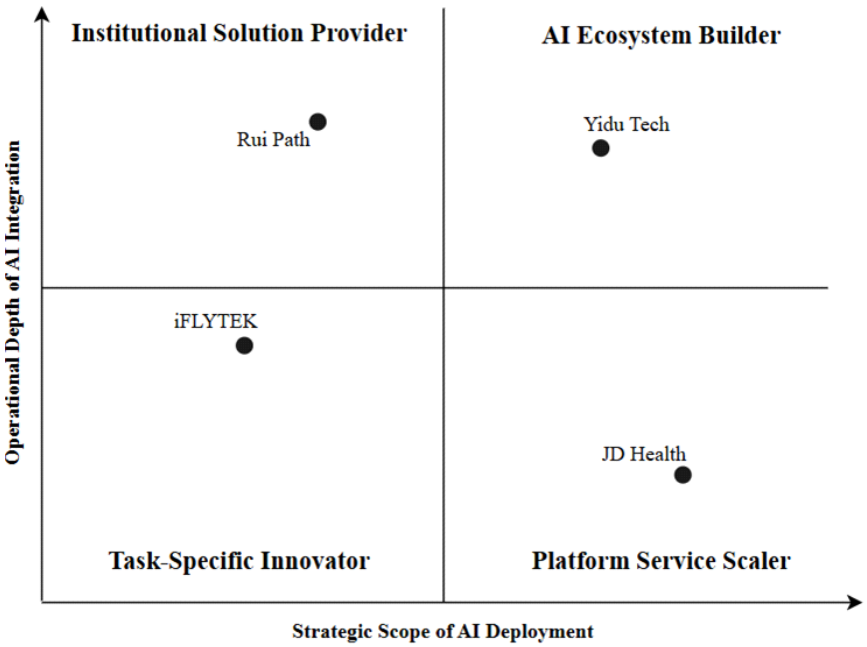
Strategic Scope of AI Deploymentcaptures the breadth and reach of AI implementation across the firm's offerings and markets.This dimension answers the question: How broadly is AI deployed across functions, users, and services?A broad scope suggests that AI is applied across multiple products, customer or regional segments. In other words, A broad scope uses AI to support multi-functional systems that serve various stakeholders in a scalable manner. A narrow scope indicates a more targeted application, focusing on solving specific operational tasksor niche markets.

Table 2. Summary of AI Healthcare Firm Strategies and Theoretical Integration

Dimension	Definition	Description
Strategic Integration	Degree to which AI is embedded into core healthcare functions	Ranges from peripheral tools (low) to core clinical/operational infrastructure (high)
Deployment Scope	Breadth and reach of AI use across services/markets	Ranges from narrow pilots (low) to enterprise-wide or ecosystem-level deployment (high)

2. Strategic Archetypes

Figure 2.Strategic Archetypes of AI Adoption in Healthcare



The intersection of these dimensions yields four strategic archetypes (Figure 2), each reflecting a distinct logic of AI adoption. While the framework is grounded in the healthcare context, its conceptual foundations

are designed to be broadly applicable across sectors undergoing AI-driven transformation.

1) AI Ecosystem Builder (High Integration, Broad Scope):

Example: Yidu Tech

Firms in this category deploy AI as an integrated platform that spans multiple institutional layers—from clinical treatment and research to public health modeling and policy support. Yidu Tech exemplifies this approach by co-developing AI tools with hospitals, government bodies, and research institutions. Its systems handle RWD and CDSS, and population health analytics, reflecting deep technological complexity and strong institutional alignment.

What distinguishes Yidu from others is its dual commitment to breadth and depth: it not only offers multi-functional AI services, but also embeds them in highly regulated environments through long-term partnerships. Innovation here is positioned not simply as a commercial product but as an infrastructural asset for health system transformation. This makes Yidu an archetype of how AI can be scaled through trust, collaboration, and systemic integration.

2) Institutional Solution Provider (High Integration, Narrow to Medium Scope):

Example: Rui Path

Enterprise Enablers focus on deep but specialized AI integration within core institutional settings. RuiPath, for instance, concentrates on hospital digitization—particularly in imaging diagnostics and IT infrastructure—by leveraging Huawei's strengths in cloud computing and smart systems. Its AI is not broad in function, but highly embedded in mission-critical

clinical environments.

While its specialization enables trust and reliability in clinical AI, their specialization limits cross-sector scalability, anchoring them within a B2B institutional niche.This narrow focus also means its innovations are less transferable across other domains or end-user markets. As a result, RuiPath exemplifies how firms can succeed through deep institutional integration and policy alignment, even without broad commercial reach.

3) Platform Service Scaler (Low Integration, Broad Scope):

Example: JD Health

This archetype represents firms that apply AI broadly across digital platforms, particularly in B2C service delivery. JD Health uses AI to enhance telemedicine, online consultations, personalized health content, and pharmaceutical logistics. Its strength lies in platform scalability, consumer reach, and speed to market.

However, this AI is typically deployed at the interface level—improving service personalization or triage efficiency—rather than being embedded in clinical workflows or co-developed with institutional stakeholders. JD Health remains largely outside hospital systems and regulatory decision-making processes. While agile and scalable, this model lacks the institutional depth and legitimacy necessary for systemic health transformation. Thus, it represents a growth-oriented but peripherally integrated model of AI adoption.

4) Task-Specific Innovator (Low Integration, Narrow-Medium Scope):

Example: iFLYTEK (early stage)

This quadrant captures firms developing modular, task-specific AI tools that enhance discrete functions without requiring system-wide

adoption or regulatory coordination.This involves firms that develop modular, narrowly scoped AI products such as speech transcription tools or wearable diagnostics. These tools are easy to adopt, especially in less regulated environments, and can scale quickly in consumer markets. While iFLYTEK has evolved beyond this model through state partnerships and hospital penetration, its earlier trajectory illustrates how targeted product innovation can serve as a steppingstone to broader institutional engagement.Similar strategies are evident in other firms. For example, Fitbit, whose AI-driven features support wellness tracking, symptom monitoring, and user feedback without embedding into clinical care. These tools are typically consumer-oriented and easy to deploy, offering flexibility and speed. This strategy can serve as a viable pathway for firms targeting mass-market adoption with minimal institutional friction.

Ⅵ. Conclusion& Discussion

1. Overview and Contribution

This study investigates how firms in emerging markets adopt AI in highly regulated sectors, focusing on the healthcare sector in China. Through a comparative case analysis of four leading firms, we develop a 2×2 analytical framework that captures the variation in both the strategic integration of AI technologies and their deployment scope. This framework responds to growing calls for more contextualized understandings of digital transformation and strategic alignment in complex institutional environments (Bican & Brem, 2020; Wamba-Taguimdje et al., 2020). The findings reveal that there is no single model for AI adoption; instead, firms pursue differentiated strategies based on internal capabilities, strategic

intent, and the institutional constraints they face. Some prioritize platform expansion, while others emphasize alignment with public systems or clinical practices. While the study is grounded in the healthcare context, the patterns it uncovers offer broader insights for understanding how organizations navigate AI adoption in other regulated and institutionally complex sectors.

1) Theoretical Contribution

Our findings extend current theories of technological adoption and organizational alignment in several ways.First, the configured framework was developed from the TOE framework by conceptualizing not only the presence of technological factors, but how firms strategically respond to organizational environmental constraints. Second, the study refines the Strategic Alignment perspective by introducing a dual-axis model of alignment that incorporates both internal-organizational fit (between technological capability and operational deployment) and external-institutional fit (between operational scope and regulatory or professional legitimacy). While classic alignment theory focuses on linking information technology and business strategy, our findings show that in regulated, hybrid sectors like healthcare, strategic fit must also accommodate public value creation, trust-building, and policy alignment. This broader alignment logic is especially salient in emerging markets where state-market tensions are acute. Furthermore, the research contributes to Institutional Logics theory by demonstrating how firms do not simply operate under market-driven logic but actively navigate and synthesize multiple institutional orders in their AI deployment. Rather than treating logics as constraints, firms use them as strategic resources, shaping different pathways of AI integration and scale. Our 2×2 typology makes these logics visible not as abstract categories, but as actionable strategic choices that influence AIbusiness

model deployment.

Finally, the proposed framework brings conceptual clarity to the growing literature on AI adoption in complex and regulated environments. It introduces two important but often overlooked dimensions: operational integration depth and strategic deployment scope. By mapping firm strategies along these dimensions, the framework shows that variation in AI adoption is not random or uniform. Rather, it reflects deliberate choices and trade-offs shaped by internal capabilities, strategic priorities, and the institutional environments in which firms are embedded. This perspective moves beyond simplified adoption models and highlights the need for strategic coherence and contextual awareness in designing AI-enabled business models.

2) Managerial and Policy Implications

This study offers actionable insights for both business leaders and policymakers navigating AI adoption in regulated and institutionally complex sectors.For managers, the findings emphasize that AI adoption is not simply a question of technological readiness or competitive pressure. Rather, it involves navigating a balance between how deeply AI is integrated into the core operations of the firm (operational integration) and how widely it is deployed across the organization or ecosystem (deployment scope).Firms must assess their strategicand marketposition in relation to these dimensions. For example, platform-driven firms (like JD Health)may benefit from expanding institutional collaborations to deepen integration and improve credibility, while firms (like RuiPath) mayevaluate whether their highly embedded strategies can scale beyond specialized domains or sectors. Understanding where a firm sits within the framework can serve as a diagnostic tool for adjusting AI strategies in line with both internal capabilities and external expectations.

For policymakers, the framework suggests that firms adopt AI in different ways depending on their institutional roles, strategic goals, and operational capacities. This diversity implies that policy environments should avoid assuming a single ideal model of AI adoption. Instead of promoting uniform standards or overly prescriptive regulations, policymakers might focus on creating flexible governance structures that allow for multiple modes of innovation. For instance, firms working closely with public institutions may benefit from stable policy signals, institutional partnerships, and long-term infrastructure planning. In contrast, firms operating on the consumer-facing or service-delivery end may require more clarity around data use and consumer protection norms.While this study does not propose specific regulatory mechanisms, it underscores the importance of policy environments that recognize strategic variation and institutional complexity. Supporting innovation in such settings requires sensitivity to how firms build legitimacy and scale AI under different organizational and institutional constraints.

While this study is grounded in the context of China, its findings offer potential insights for other emerging markets undergoing digital transformation in the healthcare sector. Many of these contexts share similar institutional characteristics, including strong regulatory environments, evolving public health infrastructures, and complex relationships between government, technology firms, and healthcare providers. In such settings, firms may also need to align AI strategies with national policy priorities, build institutional credibility, and adapt to fragmented healthcare delivery systems. The framework developed in this study provides a useful lens for understanding how healthcare firms in emerging markets can navigate these challenges through different configurations of technological integration and service deployment.

2. Limitations and Future Research

As with any qualitative case study, this research has several limitations that also open opportunities for future inquiry. First, the analysis is limited to four Chinese firms operating in the healthcare sector. While these cases were purposefully selected to reflect strategic variation in AI adoption, they may not capture the full diversity of approaches present in other sectors or regions. Future research could broaden the empirical base by including firms from a wider range of institutional contexts for a more robust test of the framework's generalizability. Second, the study relies primarily on secondary data sources, including company reports, media coverage, and public documentation. These materials provide insight into strategic positioning but may reflect aspirational narratives rather than actual implementation outcomes. Incorporating longitudinal fieldwork, in-depth interviews, or ethnographic observations would help to unpack how AI strategies evolve over time and how firms navigate internal tensions and external demands in practice.Third, while this study focuses on the healthcare sector, the conceptual framework developed here has potential relevance for other industries undergoing AI-driven transformation. Sectors such as education, finance, logistics, and manufacturing face similar challenges in aligning technological innovation with institutional legitimacy, user trust, and regulatory complexity. Future studies could test and refine the framework across these domainsto examine whether the identified strategic archetypes remain valid.

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| 국문초록 |

의료분야 인공 지능 도입의 전략적 구성:
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인공지능(AI)의 확산은 기술과 산업 전반에 걸쳐 기업의 전략과 운영방식에 구조적 변화를 초래하고 있다. 본연구는 중국 건강관리 산업의 네 개 주요 기업사례를 비교분석하여, 고도로 규제된 환경에서 기업들이 AI를 어떻게 전략적으로 도입하고 활용하는지를 탐색한다. 기술 - 조직 - 환경(TOE) 프레임 워크, 전략적정렬이론, 제도논리관점을 통합하여, 기업의 AI 전략을 '운영 통합의 깊이'와'전략적 적용범위'라는 두축을 기준으로 개념화한 2X2 프레임 워크를 제시한다. 이를 통해 AI 생태계 구축자, 제도적 솔루션 제공자, 플랫폼 서비스확장자, 특화형 혁신가라는 네 가지 전략유형을 도출하였다. 연구결과, AI 도입은 일관된 경로를 따르기보다는 기업의 내부자원과 기술적 역량, 제도적 환경에 대한 대응방식에 따라 다양한 전략적 조합으로 나타난다. 본연구는 특히 빠르게 변화하는 기술환경과 복잡한제도 조건 속에서 기업들이 어떻게 전략적목표, 시장 위치, 제도적 정당성을 고려하여 AI 도입경로를 설계하는지를 보여준다. 본 구조는 건강관리산업에 기반을 두고 있지만, 교육, 금융, 제조 등 유사한 제도적 긴장이 존재하는 산업전반에서 AI 기반 비즈니스모델의 차별성과 정렬 전략을 분석하는데에도 이론적 토대를 제공한다.

▪ 주제어: 인공지능(AI), 디지털혁신, 중국기업,신흥시장,의료산업