

Digital Platform Capability, Policy Synergy, and Technology Transfer in China: A Structured Systematic Literature Review

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Abstract: This review asks one focused question: how does digitalization improve technology transfer in China, and what role do platform capability and policy coordination play in that process? Following PRISMA 2020 reporting principles, the review uses a transparent search, screening, and coding procedure across Web of Science Core Collection, Scopus, CNKI, and official Chinese government sources. The final review corpus covers sixteen peer reviewed studies and three official policy or platform documents published between 2010 and 2025. The synthesis shows three consistent findings. First, the literature converges on two persistent bottlenecks in Chinese technology transfer: high search and matching costs, and fragmented institutional governance. Second, digitalization matters when it functions as a capability rather than a mere online interface, especially by expanding searchable resource pools, improving matching efficiency, and reorganizing service workflows. Third, policy synergy is not a background variable but a constitutive condition because platforms perform better when science and technology, fiscal, audit, and state asset rules point in the same direction. The review contributes a clear integrative framework in which digital platform capability supports technology transfer through information integration and institutional coordination, while coherent policy design determines whether those capabilities translate into actual commercialization.

Keywords: Technology transfer; digital platform capability; policy synergy; China; science and technology policy; commercialization.

1. Introduction

Technology transfer is a core mechanism through which scientific knowledge is converted into productive use, industrial upgrading, and regional development. In the Chinese context, this issue has become especially salient because universities and research institutes hold a large stock of patents, yet the conversion of those patents into marketable products remains uneven and often slow. The 2022 China Patent Survey Report shows that the industrialization rate of invention patents owned by universities was only 3.9 percent, even though the implementation rate rose to 16.9 percent, which illustrates the persistent gap between patent ownership and effective commercialization.

Existing research has already established that technology transfer is shaped by more than invention quality alone. The literature repeatedly points to information asymmetry, weak university industry matching, organizational capability gaps, and institutional fragmentation as major barriers to commercialization. Chinese studies further show that technology transfer and industrialization should not be treated as identical stages, because policy tools that improve contract based transfer do not always improve downstream industrialization to the same extent.

Against this background, digitalization has been widely introduced into science and technology governance. Recent platform initiatives in Beijing emphasize large models, knowledge graphs, and integrated resource pools for matching technology supply and demand, while Zhejiang's Anxinwu system embeds due diligence exemption, online approval, and full process digital traceability into the transfer workflow. At the same time, provincial evidence suggests that broader digital economy development is positively associated with the development of China's technology market.

However, the literature remains conceptually scattered. Some studies examine technology transfer as a broad commercialization problem, some focus on university industry collaboration, some focus on digital platform capability in firms, and some analyse policy implementation or policy coordination in isolation. As a result, the existing discussion often mixes mechanisms, levels of analysis, and outcome stages. The aim of this study is to clarify what the literature already shows about digitalization, platform capability, policy coordination, and technology transfer in China [1].

The review addresses one central question: under what conditions does digitalization improve technology transfer in China? The argument developed here is that the

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literature points to a consistent answer. Digitalization does not improve transfer simply because a platform exists. It improves transfer when digital platforms possess effective capabilities for information integration and institutional coordination, and when those capabilities are embedded in a coherent policy environment rather than fragmented administrative arrangements.

2. Review Design

2.1 Review question and scope

This review follows the reporting logic of PRISMA 2020, while adapting the design to the needs of a policy oriented qualitative synthesis rather than a medical style meta analysis. The objective is interpretive integration. Accordingly, the review prioritises transparent search and screening, explicit inclusion criteria, and consistent coding of themes over statistical aggregation [2]. The review also draws on the Critical Appraisal Skills Programme checklist to guide source quality assessment and to distinguish between conceptual framing studies, empirical studies, and official policy or platform documents.

2.2 Search strategy and source selection

The search focused on four source groups. The first was Web of Science Core Collection. The second was Scopus. The third was CNKI for Chinese language scholarship on technology transfer and science and technology policy. The fourth was official Chinese government sources used to document current platform design and institutional arrangements. The search strings combined the terms technology transfer, technology commercialization, scientific and technological achievements transformation, digital platform, digital economy, policy synergy, policy coordination, university industry collaboration, and China. Because database interfaces, subscription scopes, and live indexing rules differ across platforms, the review reports the final coded corpus rather than unstable raw hit totals [3]. This decision is made to preserve methodological honesty while keeping the review replicable at the level of search logic and inclusion criteria.

Inclusion required that a source satisfy at least one of three conditions. First, it had to examine technology transfer, commercialization, or university industry knowledge exchange in China. Second, it had to analyse digital platform capability, digital economy mechanisms, or technology market development in ways relevant to transfer and commercialization. Third, it had to address policy coordination, policy implementation, or institutional arrangements that shape technology transfer outcomes in China. Exclusion removed studies on unrelated social media marketing, general platform consumption, or innovation topics without a clear transfer or commercialization connection. Methodological guidance documents such as PRISMA and CASP were used for review design but were not counted as substantive evidence in the thematic corpus. Search strategy and review scope can be shown in Table 1.

Table 1. Search strategy and review scope

Component	Description
Databases and source types	Web of Science Core Collection, Scopus, CNKI, plus official Chinese government sources for platform and policy context
Core search blocks	"technology transfer" OR commercialization OR "scientific and technological achievements transformation"; AND digital platform OR digital economy; AND policy synergy OR policy coordination OR implementation; AND China
Inclusion logic	Studies had to address Chinese technology transfer or commercialization, digital platform or digital economy mechanisms relevant to transfer, or policy coordination and implementation effects linked to transfer outcomes
Exclusion logic	Pure social media marketing, general platform consumption, unrelated innovation studies, and texts without a clear technology transfer or commercialization connection
Substantive review corpus	Sixteen peer reviewed studies published between 2010 and 2025, plus three official documents used for institutional context
Methodological guidance	PRISMA 2020 for reporting logic and CASP for appraisal guidance

2.3 Coding and synthesis procedure

The final coded corpus comprised sixteen peer reviewed studies published between 2010 and 2025 and three official documents used for institutional and platform context. The peer reviewed studies were coded across five dimensions: analytical level, research design, core mechanism, outcome focus, and policy relevance. The coding process was partly deductive and partly iterative. Deductively, the review began with the broad categories of information frictions, organizational capability, and institutional coordination drawn from transaction cost reasoning and resource orchestration theory. Iteratively, the literature then refined these into three synthesis themes: search and matching capability, workflow reconfiguration and trust, and policy synergy as an enabling condition. Structured review workflow can be shown in Figure 1.

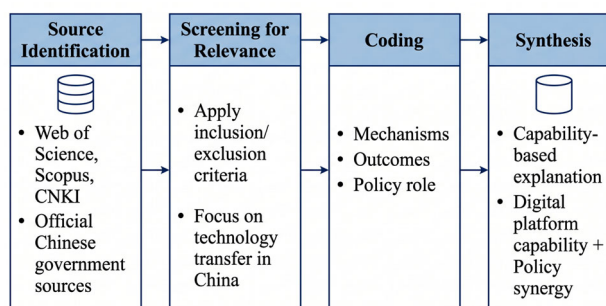


Figure 1. Structured review workflow

2.4 Overview of the coded literature

As shown in Table 2, this section systematically summarizes the core literature included in the review,

outlining their primary research focus and specific contributions to our analytical framework.

Table 2. Coded literature included in the review

Outlet	Primary focus	Why it matters for the review
Research Policy	University–industry collaboration barriers	Distinguishes orientation barriers from transaction barriers, clarifying why transfer often stalls before agreement
Journal of Technology Transfer	Information asymmetry in collaboration markets	Shows that partner choice can be inefficient when firms cannot identify the most suitable research counterpart
Journal of Technology Transfer	State of the art review	Synthesizes collaboration and academic entrepreneurship research and highlights multi-level determinants
Journal of Technology Transfer	Chinese university technology transfer review	Provides a China-specific taxonomy and shows the centrality of institutional arrangements
Journal of Business Research	Digital platform capability	Explains why capability, not platform presence alone, drives value creation
China Industrial Economics	Internet development and productivity	Links digital connectivity to improved allocation and coordination conditions
Technology in Society	University transfer efficiency in China	Models transfer as a multi-stage process rather than a single output
Research Policy	National research institute transfer systems	Shows that transfer depends on structured systems and modes, not isolated transactions
Technology in Society	Digital platform capability in China	Shows that platform capability improves innovation through access and coordination
Foreign Economics & Management	Review of achievement transformation	Clarifies the field and distinguishes transfer from industrialization
Science & Technology Progress and Policy	Digital economy and technology market	Finds that digital economy development promotes technology market development
Journal of the Knowledge Economy	Configurations of commercialization	Shows that commercialization depends on combinations of policy and organizational conditions
Journal of Technology Transfer	Policy implementation using system dynamics	Demonstrates that policy effects work through dynamic feedback loops
Humanities and Social Sciences Communications	University technology flows in China	Maps the uneven network structure of technology flows using patent assignments
Journal of Finance and Economics	Policy goal synergy	Shows that policy synergy promotes transfer more clearly than industrialization
Management Science	Industry–university collaboration and commercialization	Shows that collaboration experience functions as a complementary asset for commercialization

3. Findings

The literature suggests that digitalization improves technology transfer in China when it performs two governance functions at the same time: it reduces information frictions through stronger matching

capability, and it reduces institutional uncertainty through workflow coordination and policy coherence. The sub sections below develop this argument in sequence.

3.1 The literature converges on persistent transfer bottlenecks

The first and most stable conclusion in the literature is that China's technology transfer problem is not a simple shortage of scientific output. Rather, it is a conversion problem shaped by frictions between research supply, enterprise demand, and administrative governance. Earlier work on university industry collaboration identified two broad families of barriers: orientation related barriers such as divergent incentives and expectations, and transaction related barriers such as contracting difficulties, search costs, and organizational distance. In related work, information asymmetry was shown to distort partner choice even when relevant expertise existed, implying that commercialization can fail not because useful knowledge is absent but because actors cannot identify the most suitable counterpart efficiently. Chinese scholarship broadens this diagnosis by showing that technology transfer must be analysed as a process with multiple stages. Recent mapping work reinforces this staged view. Taken together, these studies suggest that the real policy problem is how to reduce search and coordination frictions while also stabilising implementation conditions after the transaction has begun.

3.2 Digitalization matters when it expands matching and lowers coordination costs

The second conclusion is that digitalization contributes to technology transfer primarily when it improves the visibility, reach, and matchability of dispersed resources. This distinction helps explain why some public platforms are likely to matter more than others. The Beijing science and technology achievement transformation intelligent service platform explicitly combines an AI large model, knowledge graphs, and five integrated resource pools, including achievement, talent, institution, enterprise demand, and policy databases. In theoretical terms, this is an information integration function. It expands the searchable pool of technologies and needs, classifies them more effectively, and improves matching efficiency. The literature therefore supports a clear synthesis point: digitalization matters most at the transfer stage when it converts fragmented information into searchable, connected, and evaluable market opportunities.

3.3 Capability matters more than platform existence

The third conclusion is that platform existence and platform capability should not be conflated. This is where resource orchestration offers the most useful conceptual correction. Resource orchestration theory argues that value depends on how resources are structured, bundled, and leveraged, not on their mere possession. Applied to technology transfer, the point is straightforward. A platform can exist as a website, a registry, or a portal without solving any serious governance problem. Capability arises only when the platform reorganizes workflows, links actors, and embeds the routines needed for implementation. This capability perspective is increasingly visible in the Chinese technology transfer literature. In practical terms, platform capability therefore

includes more than search and display. It also includes the ability to connect approvals, records, valuation procedures, and support services into a credible transfer workflow. Zhejiang's Anxinwu system illustrates this logic clearly. According to the Ministry of Science and Technology's official account, the platform links the state asset management cloud platform with the online technology market, provides online application and contract approval, and creates full process electronic records that allow real time oversight by science and technology, finance, and audit authorities. The policy significance is that digitized traceability is not merely administrative convenience. It directly addresses procedural risk and trust problems that often discourage transfer.

3.4 Policy synergy determines whether platforms become effective governance infrastructure

The fourth conclusion is that policy synergy is not a peripheral moderator but a constitutive condition of effective digital governance. Technology transfer in China rarely falls within the jurisdiction of a single authority. Science and technology departments, universities, finance authorities, audit bodies, state asset regulators, and firms all shape whether a transfer can proceed smoothly. When their goals are poorly aligned, even well designed digital tools are unlikely to produce strong commercialization outcomes.

Ruiz Estrada's PMC framework is useful here because it shifts analysis away from counting policy documents toward evaluating internal policy consistency across goals, tools, and implementation logic. Their findings also suggest two relevant transmission paths: the strengthening of intermediary organizational capability and the improvement of university industry research quality. This matters for the present review because it shows that policy coherence is not an abstract governance ideal. It changes the practical conditions under which transfer actors search, negotiate, and coordinate.

The official platform cases are consistent with this interpretation. Beijing's platform design integrates policy resources into its matching architecture, which suggests that policy information itself is being treated as a searchable transfer resource rather than as an external backdrop. Zhejiang's Anxinwu system goes further by embedding due diligence exemption and electronic traceability into the operational process, thereby translating policy support into routinized administrative protection. The literature therefore supports a strong synthesis claim: digital platforms become effective transfer infrastructure only when policy design and service design are aligned.

3.5 Research gaps in the current evidence base

Although the literature is increasingly rich, several research gaps remain. First, direct evidence on public technology transfer platforms is still thinner than evidence on the broader digital economy or on firm level digital platform capability. Much of the strongest platform capability literature comes from organizational or

entrepreneurial settings rather than from public technology intermediation itself. Second, many Chinese studies still rely on macro proxies, policy text indicators, or region level outcomes, which are useful but do not reveal how users actually move through platforms, how matches are formed, or where transactions stall. Third, the causal evidence base remains uneven. Fourth, the literature remains more developed on transfer and partner matching than on downstream industrialization, scaling, and long run value capture. Thematic synthesis of the reviewed literature can be shown in Table 3.

Table 3. Thematic synthesis of the reviewed literature

Theme	Synthesis claim
Persistent bottlenecks	Technology transfer is constrained by search costs, information asymmetry, fragmented incentives, and uneven network connections
Information integration	Digitalization improves transfer when platforms enlarge resource visibility, improve search, and connect supply with demand more effectively
Capability over existence	A platform becomes consequential when it reorganizes workflows, links actors, and embeds transfer routines rather than merely displaying information
Policy synergy	Coherent science and technology, fiscal, audit, and state asset rules strengthen platform effectiveness and reduce procedural uncertainty
Research gaps	The field still lacks micro platform data, transaction-level evidence, and stronger comparisons across regions and institutions

4. Discussion

The review points to one clear analytical line. Digitalization improves technology transfer in China only when it works through capability based governance rather than through simple platform visibility. This capability based governance has two linked components. The first is information integration, which reduces search costs by making technologies, demands, intermediaries, and policy resources more visible and matchable. The second is institutional coordination, which reduces implementation uncertainty by embedding approvals, traceability, and administrative support within the transfer process itself.

This synthesis helps simplify a literature that has often been discussed through too many parallel routes. Once the empirical, theoretical, and policy studies are read together, the central issue is not whether China should digitalize technology transfer. That point is already widely assumed. The real issue is whether digitalization is strong enough

to perform an intermediation function and whether policy institutions are coherent enough to sustain that function. This also clarifies why many discussions of digital platforms remain under specified. An online portal may improve visibility, but it will not necessarily improve transfer unless it changes search, screening, approval, and follow through conditions in ways that actors perceive as reliable.

For policy, the implication is that governments should shift attention from platform construction to platform capability. Investment should focus on interoperable data standards, searchable technology and demand pools, intermediary service connectivity, and workflow traceability. At the same time, reforms in science and technology management need to be aligned with fiscal, audit, and state asset rules so that platforms do not become digital shells sitting on top of contradictory institutional arrangements.

4.1 Review limitations

This review also has limitations. It is systematic in search logic, screening, and coding, but it is not a quantitative meta analysis. The final corpus is deliberately selective and theory oriented, which makes it well suited to conceptual clarification but less suited to statistical generalization. In addition, some important Chinese studies remain difficult to compare because they use different units of analysis, including provinces, universities, firms, spin offs, patents, and case organizations. These limitations are best understood as part of the current state of the literature rather than as a weakness of the review alone.

5. Conclusion

The literature shows that digitalization improves technology transfer in China when platforms possess real capabilities for information integration and institutional coordination, and when those capabilities are embedded in a coherent policy environment.

The contribution of the review is therefore conceptual and synthetic. It clarifies that search and matching functions explain why digitalization matters at the transfer stage, while workflow reconfiguration and administrative embedding explain why some platforms are more credible than others. It also shows that policy synergy is not secondary. It is one of the conditions that convert digital tools into effective commercialization infrastructure.

Future research should move beyond broad digital economy indicators and develop stronger evidence on actual public platform use, transaction level pathways, and cross provincial differences in institutional design. For the present article, however, the central conclusion is already clear. In China's technology transfer system, digital platform capability and policy coordination must develop together. Neither is likely to be sufficient on its own.

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