Postprint on the Construction Path of Think Tank Intelligence Capabilities from the Perspective of Intelligence Research

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Abstract

[Purpose/Significance] In the era of big data, examining the construction of think tank intelligence capabilities from an intelligence research perspective enables the application of intelligence research concepts, methodologies, and technologies to new-type think tanks, thereby yielding high-quality intellectual products and effectively enhancing decision-support and service capabilities. Simultaneously, this approach explores prospective developmental pathways for future intelligence research. [Method/Process] Through a comprehensive review of extant literature, this study investigates the interrelationships and distinctions between intelligence research and think tank research. Grounded in these interrelationships and distinctions, and following the principle of complementary advantages, it systematically leverages theories, techniques, and methods from intelligence research to articulate pathways for constructing new-type think tank intelligence capabilities. [Results/Conclusion] Enhancing the intelligence capabilities and intelligence support capacities of new-type think tanks necessitates strengthening the perception of intelligence requirements, dynamic intelligence collection capabilities, intelligence analysis capabilities, knowledge service capacities of intelligence platforms, and organizational construction.

Full Text

Preamble

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The Path of Intelligence Capability Building for Think Tanks from the Perspective of Intelligence Research
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Abstract

[**Purpose/Significance**] In the era of big data, examining think tank intelligence capability building through the lens of intelligence research allows the concepts, methods, and technologies of intelligence research to be applied to new-type think tanks, producing high-quality intellectual products and effectively enhancing decision-making support and service capabilities. Simultaneously, this approach explores potential future development paths for intelligence research itself. [**Method/Process**] Through extensive literature review, this paper investigates the connections and distinctions between intelligence research and think tank research. Based on these relationships and differences, and following the principle of complementary advantages, it systematically applies theories, techniques, and methods from intelligence research to summarize pathways for building intelligence capabilities in new-type think tanks. [**Result/Conclusion**] Improving the intelligence and intelligence-support capabilities of new-type think tanks requires strengthening capacities in intelligence demand perception, dynamic intelligence collection, intelligence analysis, knowledge services of intelligence platforms, and organizational construction.

Keywords: intelligence research; think tank; intelligence capability; building; path
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Introduction

Historically, intelligence research and think tank research in China have always intersected, with much strategic intelligence research bearing distinct characteristics of policy advisory think tanks. Among intelligence' s functions as "eyes and ears, vanguard, and staff advisor," the "staff advisor" role represents decision-making consultation. In the 1980s, domestic intelligence scholars proposed that "intelligence departments should become think tanks" [1]. The *National Science and Technology Intelligence Development Policy* issued in 1991 stated that "intelligence research is deep processing of information, belonging to the think tank category" [2]. Sun Chengquan and colleagues noted in *Strategic Intelligence Research and Technology Foresight* that both think tanks and strategic intelligence research provide decision-making support and services for policymakers [3]. The Intelligence Science and Intelligence Work Development Forum held at Nanjing University in October 2017 proposed integrating think tank functions to promote national economic and social development, incorporating think tank research into the broader discipline of intelligence science [4]. Zhang Jianian proposed studying think tank capability system improvement from an intelligence perspective [7], while Yuan Jianxia and others discussed how intelligence

research, as a component of think tanks, could play important roles in think tank construction [8].

This paper examines the similarities, relationships, and differences between intelligence research and think tank research from an intelligence research perspective. Following the approach of "complementary advantages and systematic integration," and based on the demand characteristics of think tank development, it proposes construction pathways for new-type think tank intelligence capabilities. This provides intelligence support for think tanks to more systematically and normatively utilize intelligence research findings and enhance their capacity for self-construction and decision-making consultation product generation. Simultaneously, studying think tank intelligence capabilities can help determine directions and objectives for the scientific development of intelligence science, resolve the disconnect between theory and practice in the discipline, and provide opportunities and vitality for intelligence science development. By integrating, correlating, and embedding think tank construction concepts and methods with intelligence science, mutually beneficial cooperation can be achieved.

As new-type think tank construction continues to develop, research on think tanks and their operational mechanisms from the perspectives of intelligence science and intelligence research has become increasingly abundant. Bibliometric analysis shows that journals such as *Library and Information Service*, *Information Science*, *Journal of Intelligence*, and *Information Studies: Theory & Application* have published numerous articles on think tanks, demonstrating that intelligence scholars have made significant contributions to think tank research. For instance, Wang Shiwei analyzed the front-end role of intelligence in think tanks [5], while Li Gang and others argued that think tank research and intelligence research have important connections in external conditions, internal mechanisms, and disciplinary construction [6].

1. Realistic Basis for Conducting Intelligence Research in Think Tank Research

Qian Xuesen believed that intelligence research is a science and technology based on intelligence science theory, not simple organizational management [9]. Intelligence research primarily includes information collection, information retrieval and storage, intelligence analysis and research, and intelligence exchange and service, providing important practical guidance for modern intelligence research. Currently, many intelligence scholars interpret intelligence research as a scientific research process that, from an objective and impartial standpoint and guided by problems, uses professional theories and methods to reveal the truth and patterns of things through acquired intelligence information sources. In essence, intelligence research is a knowledge reproduction process encompassing both strategic and tactical intelligence research.

Think tank research topics possess strategic, predictive, and decision-making service characteristics—precisely the effects strategic intelligence research aims

to achieve. The similarity between think tank research and strategic intelligence research provides a foundation for think tanks to conduct intelligence research and strengthen intelligence capability building. Strategically, top-tier think tanks focus on strategic issues, meeting strategic decision-making needs at national and government levels, and playing policy leadership and decision-support roles. In the United States, many research topics of first-class think tanks involve regional, national, or even global major issues with policy macroscopic and broad-ranging characteristics, such as the Peterson Institute for International Economics, which specializes in strategic international economic research [10]. In China, various new-type think tanks primarily provide consulting services for administrative decision-making, emphasizing strategic thinking and conducting comprehensive, forward-looking, trend-based, and constructive research around key directions and content of concern to government, society, and the public.

In terms of predictability, first-class think tanks pay close attention to forecasting research, using scientific computational methods combined with expert wisdom to predict major events, aiming for effective recognition by relevant governments and establishing important influence and competitiveness in the field. For example, the Center for Strategic and International Studies focuses on public policy, financial trade, technology projects, and energy research, successfully anticipating some major issues [11]. In the 1950s, the then little-known RAND Corporation successfully predicted that "China would enter the Korean War," establishing its important think tank status in U.S. political and military circles [12].

As applied research, think tank research, like strategic intelligence research, is not pure academic research but applied research closely connected with practical problems. Think tank scholars, like intelligence researchers, play the role of academic experts serving decision-makers. Therefore, both think tank research and intelligence research must maintain positions and adhere to principles, providing realistic possibilities for conducting intelligence work and research in think tanks.

2. The Significant Role of Intelligence Research in Think Tank Construction

2.1 Think Tank Product Generation Requires Intelligence Work Support

The process of think tank product generation is similar to the intelligence work process. Think tank products generally follow a "three-step" process of data collection, research analysis, and plan formulation, which corresponds to intelligence collection, intelligence analysis, and intelligence service (evaluation and application) in intelligence work [13]. The generation process of think tank products requires intelligence systems, intelligence collection, and intelligence analysis.

The generation process requires intelligence systems. In January 2015, the General Office of the CPC Central Committee and the State Council issued *Opinions on Strengthening the Construction of New-Type Think Tanks with Chinese Characteristics*, which explicitly proposed eight basic standards that such think tanks should meet, with the sixth being "functionally complete information collection and analysis systems." In practice, various think tanks attach great importance to resource and platform construction, with famous think tanks typically having dedicated information sources and networks. During construction and service processes, they also collect unique information resources specific to their fields, forming knowledge bases and institutional repositories that provide exclusive data support for similar research in other or their own institutions, such as Japan' s National Institute of Science and Technology Policy [14], the World Resources Institute [15], and RAND Corporation' s "RAND State Statistics" [16].

The generation process requires intelligence collection. Think tank product generation is essentially decision-making product generation, generally representing the first half of decision support (the second half being the process of think tank influence generation). Research on decision support has emphasized intelligence collection since ancient times, as *The Art of War* stressed "know yourself and know your enemy, and you will never be defeated." Modern society strongly emphasizes economic intelligence and competitive intelligence collection—nations and multinational corporations need sufficient strategic intelligence to maintain initiative in competition. Thus, statements like "intelligence is the source, decision-making is the flow" [17] and "successful decision-making equals 90% intelligence plus 10% intuition" [18] demonstrate the important value of intelligence collection in decision-making.

The generation process requires intelligence analysis methods. As user demands for decision services increase, think tanks undertake major decision-making consultations that require comprehensive consideration of correlations, comprehensiveness, and systematicity among various factors, necessitating combined qualitative and quantitative intelligence analysis methods such as regression analysis, systems analysis, forecasting analysis, survey analysis, time series analysis, and cluster analysis. Many think tanks continuously enrich and expand existing intelligence analysis methods based on practical needs, such as RAND Corporation' s improvements to the Delphi method, cost-effectiveness analysis, heuristic planning, linear programming, nonlinear programming, dynamic programming, and systems analysis.

2.2 Think Tank Construction Requires Theoretical and Methodological Support from Intelligence Science

Due to the close connection between intelligence research and think tank research, intelligence research currently plays a pivotal role in think tank construction. Intelligence work is important in the think tank product generation process, and intelligence science provides theoretical and methodological sup-

port for think tank construction.

Given the natural association between "intelligence and decision-making" and "think tanks and decision-making," think tank construction needs to draw on relevant content from intelligence science. Think tank construction requirements for quality resources, resource representation, knowledge discovery, information organization, and informetric analysis highly coincide with intelligence science research on intelligence collection, organization, and analysis. Intelligence research and intelligence science can provide solid foundational theories, quality information resources, and scientific technical methods for think tank construction, making intelligence science an important supporting discipline for think tank construction.

Current think tank construction faces dual tasks of theoretical construction and practical development. From a disciplinary perspective, some scholars have proposed constructing "think tank science," including six key elements: forecasting, consulting, evaluation, planning, think tanks, and brain trusts [19]. Combining this with intelligence' s "eyes and ears, vanguard, and staff advisor" functions reveals that new think tank science is closely related to think tank construction, system building, and intelligence science. Therefore, intelligence science is an important supporting discipline for future think tank science construction. Effectively applying intelligence science theories and methods is crucial for building new-type think tanks.

3. Different Emphases Between Intelligence Research and Think Tank Research

Although think tank construction cannot do without intelligence research and work support, and some intelligence institutions are actively transforming toward think tanks, it must be noted that intelligence research and think tank research are fundamentally different endeavors with significant distinctions.

3.1 Differences in Research Content

The concept of "intelligence" first appeared in the 1915 edition of *Cihai* (Chinese dictionary) as "collecting various reports in the military and foreseeing opportunities, determining enemy situations, and reporting to superiors." Intelligence research originated as an information activity with war and competition characteristics—an activity with "friend-or-foe" distinctions. With era development and field refinement, concepts such as literature intelligence, technical intelligence, and competitive intelligence emerged. Regardless of changes, intelligence activities in different fields all involve collecting various types of information, analyzing and compiling them through judgment, and delivering them to users, with various intelligence institutions as implementers. The purpose of intelligence research is to perform "eyes and ears, vanguard, and staff advisor" functions, with prediction, early warning, and prevention, and decision support as its core. Currently, intelligence research increasingly emphasizes the "eyes and ears"

and "vanguard" functions, even deviating from or negating the "staff advisor" function. However, even when intelligence research focuses on technical decision-making consultation and enterprise decision-making consultation, it cannot be completely equated with think tanks' public policy decision-making consultation [20]. Intelligence research primarily provides strategic intelligence, tactical intelligence (policy intelligence, industrial intelligence, competitive intelligence, technical intelligence, market intelligence), and information infrastructure support.

The term "think tank" originated in ancient China, such as the Jixia Academy during the Warring States period. Modern think tanks developed rapidly from the 1950s, represented by Japan' s National Institute of Science and Technology Policy, Korea' s Science and Technology Policy Institute, and the U.S. RAND Corporation. The *Opinions on Strengthening the Construction of New-Type Think Tanks with Chinese Characteristics* defines new-type think tanks with Chinese characteristics as non-profit research and consulting institutions focusing on strategic issues and public policy, serving the Party and government in scientific, democratic, and law-based decision-making [21]. The purpose of think tank research is "to provide policymakers with policy recommendations and decision-making consultation, influencing public policy formulation and social opinion through various research results and public media" [22]. The value of think tanks lies in the influence their products exert on the thinking, decision-making, and policies of personnel, organizations, governments, and even nations [23]. Producing think tank products and generating influence represent two processes of think tank research, generally characterized by forward-looking, policy-advisory, independent, autonomous, and non-profit features. Think tank research content includes: (1) think tank operation and research itself; and (2) studying public policy generation patterns and influencing public policy formulation through recommendations and advocacy.

This analysis shows that think tanks pay more attention to result utilization and effectiveness than intelligence institutions. Intelligence research constitutes the front-end of think tank research, while think tank research extends and further validates the results of intelligence research.

3.2 Differences in Theoretical Systems

In 1945, American scholar Vannevar Bush published "As We May Think" in *The Atlantic*, becoming a seminal work in intelligence research [24]. Domestically, after decades of development, intelligence research has established the discipline of intelligence science with a relatively complete theoretical system. However, think tank research has not yet formed a disciplinary theoretical system.

American intelligence scientist Yovits proposed a "generalized intelligence system" based on decision theory, defining intelligence as "data and materials valuable for decision-making," which could serve as a common theory linking intelligence and think tank research. In practice, however, intelligence research

focuses more on information and its entire process, positioned at the front-end of decision support, while think tank research is at the back-end, centered on users and emphasizing the value and effectiveness of information and think tank products. Intelligence research theories mainly revolve around information and information activities, concentrating on information production, processing, transmission, and use, such as Bradford' s Law, Lotka' s Law, Zipf' s Law, literature growth and obsolescence laws, Mikhailov' s scientific communication theory from the former Soviet Union' s Institute of Scientific and Technical Information, and Yovits' scientific decision-making theory. Think tank research theories focus on public policy effectiveness, drawing from political science, sociology, law, public management, psychology, communication, and other disciplines, such as policy process theory, elite theory, scientific consulting theory, decision-making theory, and cognitive psychology theory. Thus, intelligence research forms the foundation and prerequisite for decision-making, while think tank research promotes and validates decision-making results.

3.3 Differences in Research Methodology

Intelligence research has a relatively complete methodological system. For intelligence needs analysis, there are questionnaires, interviews, brainstorming, and other methods; for intelligence collection, human intelligence acquisition, data mining, search engines, and website monitoring; for information organization, automatic classification, indexing, and ontology construction; for intelligence analysis, bibliometrics, webometrics, statistical analysis, and competitive intelligence analysis; and for 成果评价 (achievement evaluation), analytic hierarchy process, weighted scoring, fuzzy evaluation, and Delphi method. These methods form the basis for intelligence value-added and effective integration and mining of information data.

The think tank research methodology system is primarily based on consulting effectiveness evaluation, including think tank influence measurement methods and decision-making consultation methods. Influence measurement includes direct methods (frequency of leadership instructions, citations by leaders) and indirect methods (media citations, interview frequency, online views/downloads/reposts/citations, WeChat public account followers). Decision-making consultation methods include qualitative approaches (systems analysis, Delphi, brainstorming, interviews) and quantitative approaches (various measurement methods, data modeling, and mining). Think tanks' decision-making consultation and advocacy responsibilities determine that decision-maker attention is a crucial success criterion. To better provide decision-making consultation and intellectual products, think tank research also widely borrows methods from various disciplines.

4. Construction Path for Strengthening New-Type Think Tank Intelligence Capabilities

The above discussion demonstrates that intelligence research plays active roles in many aspects of think tank construction. New-type think tanks need to continue strengthening intelligence capabilities in demand judgment, intelligence collection, and intelligence analysis. Meanwhile, differences between intelligence research and think tank research in content, theory, and methodology necessitate strengthening not only intelligence capabilities but also intelligence support capabilities such as platform and organizational construction to better utilize intelligence research theories and methods. Think tank research should complement intelligence research by rationally applying relevant theories and methods to strengthen think tank intelligence and support capabilities, continuously enhancing think tank product influence. The logical relationship of this research is shown in Figure 1 [Figure 1: see original paper].

4.1 Strengthening New-Type Think Tank Intelligence Demand Perception Capability

Decision science advocates a problem-centered rather than discipline-centered knowledge production approach. With the goal of improving decision-making, all think tank activities revolve around this objective [25]. Currently, new-type think tanks face increasingly complex social environments with information explosion, security, and pollution issues, posing significant challenges for identifying "problem targets." In *Intelligence Analysis*, Robert Clark proposed goal-oriented intelligence analysis, emphasizing that while proper operation of all intelligence links is important, successful intelligence analysis depends on accurate excavation and characterization of intelligence needs [26]. Therefore, strengthening think tank intelligence demand perception capability is crucial.

First, problem awareness is essential. By collecting, analyzing, assessing, and evaluating intelligence information from internal and external environments, hidden deep-level problems can be identified, enabling timely prediction and consulting services and providing strategic countermeasures accurately and promptly before or after critical events. Second, continuous and dynamic attention to problems is necessary, examining entire event chains from global, strategic, and comprehensive perspectives, connecting various phenomena, and grasping problem essence. Third, problems should be refined and decomposed, transforming vague intelligence needs into specific decision-making consultation questions, providing decision-makers with various graspable options and comprehensive, objective explanations. During this process, think tanks must maintain effective communication with decision-makers, fully understand true intentions, and timely provide accurate judgments on various options. When think tank and decision-maker opinions differ, think tanks should clearly express their own views rather than simply complying.

4.2 Strengthening New-Type Think Tank Dynamic Intelligence Collection Capability

Information resources are the foundation and prerequisite of intelligence activities, and reliable, accurate information resources are the primary condition for think tank survival and development. Some famous foreign think tanks developed from libraries, such as the Hoover Institution. In the big data environment, China' s new-type think tanks must attach great importance to resource construction—only with solid information resource foundations can they provide better decision-making consultation services.

First, intelligence collection capabilities must be strengthened. In the big data environment, decision-making requires data involving numerous fields, massive scales, diverse structures, and varying timeliness. Think tanks need to enhance network data collection, multi-source intelligent data storage, heterogeneous data cleaning, and dynamic data updating and management systems to provide real-time, dynamic information resources for decision support. Second, knowledge bases and institutional repositories should be established. Think tank research typically concentrates on specific systems or fields with strong professionalism. During construction and service processes, attention should be paid to collecting unique information resources specific to these systems or fields to build knowledge bases and institutional repositories, while also collecting intermediate data from related cases to form complete event chains and timelines for panoramic display. For example, RAND Corporation has established many proprietary databases for its own research, and the U.S. START Consortium has collected cases for the Global Terrorism Database (GTD) since 2011 as a data source and platform for counter-terrorism research [27]. Third, think tank intellectual resources should be collected. Beyond routine intelligence collection, experience summaries, situation judgments, and strategic plans formed by different experts or users should be input into think tank knowledge bases and institutional repositories in real time. Exchange and cooperation with similar think tanks should be strengthened for intelligence exchange, continuously enriching intellectual resources and making think tank data more comprehensive and reasonable.

4.3 Strengthening New-Type Think Tank Intelligence Analysis Capability

In the big data environment, enhancing think tank intelligence analysis capability requires improving skills in analysis concepts, methods, technologies, and support.

Think tank intelligence analysis requires correlation and causation analysis. Strengthening intelligence analysis capabilities in big data environments involves establishing correlation analysis of heterogeneous resources to provide multiple information sources and multi-dimensional intelligence analysis angles for think tank decision support, solving information asymmetry problems, avoid-

ing missing critical information, and improving decision conclusion rationality. Meanwhile, think tank decision services need to propose reasonable and convincing conclusions, requiring both correlation analysis and causation exploration.

Modern scientific methods must be employed in think tank intelligence analysis. Strengthening competitive intelligence analysis methods such as benchmarking, SWOT analysis, and scenario analysis; strengthening measurement analysis methods such as bibliometrics, webometrics, and statistical analysis; and strengthening achievement evaluation methods such as analytic hierarchy process, weighted scoring, fuzzy evaluation, and Delphi method. Successful methods from domestic and foreign think tanks can be fully referenced—for example, various research methods developed by RAND Corporation have been widely studied and adopted by think tanks worldwide, and its "Planning, Programming, and Budgeting System" (PPBS) has been applied by the U.S. federal government in military and federal budget formulation [28].

Powerful technology and platform support is essential for think tank intelligence analysis. In the big data environment, beyond original scientific research methods and data analysis, strong data processing technologies and platforms are needed. Utilizing database technologies, analysis and forecasting software, network platforms, data mining, and computer simulation can solve complex problems and improve work efficiency. For instance, Germany' s Fraunhofer Institute for Applied Information Technology (FIT) developed the Basic Support for Cooperative Work (BSCW) system enabling online collaborative work [29].

4.4 Enhancing New-Type Think Tank Platform Knowledge Service Capability

New-type think tanks need to improve knowledge service capabilities by targeted extraction of relevant knowledge from various explicit and tacit knowledge resources to provide knowledge discovery, exchange, autonomous service, and interactive sharing for think tank decision-making.

Think tank platforms need to strengthen intermediate data management. Investigations of various think tank platforms reveal that data collection focuses more on final 成果 (achievements) while neglecting intermediate data collection and maintenance. Making users aware of these intermediate reports, data, and reasoning processes can optimize decision-making processes and improve intellectual production. Therefore, new-type think tank platforms need to standardize intermediate data management, organization, and storage, standardize data formats and conversion, metadata, dataset identification and citation, and conduct comprehensive data correlation to continuously generate value-added effects [30]. Based on data storage, multi-angle, orderly annotation should be performed to support multi-path data browsing and retrieval, with personalized push to relevant users to improve utilization efficiency. This will be an important growth point for future think tank intelligence platform development.

Think tank platforms need to guide user exchange and sharing to create a good

smart service atmosphere. Common think tank exchange methods include brainstorming through "researcher meetings" to collect viewpoints, and inviting government leaders, senior officials, renowned scholars, and well-known journalists to deliver reports to help researchers expand thinking, deepen research, and inspire ideas. New-type think tanks should rely on platforms to guide user conversation, exchange, interaction, and sharing, conduct information indexing and annotation, liking and evaluation, inspire inspiration, collaboratively solve problems, and achieve synergistic effects where 1+1>2 information value-added. Through interactive, decentralized, real-time dynamic network information dissemination channels, relying on interactive online communication functions such as WeChat, Weibo, and various "groups," think tanks can connect with peers, share experiences, and broaden thinking. Through precise push and real-time release of audio/video resources from academic conferences and expert speeches, knowledge dissemination can be accelerated to help generate intellectual sparks, becoming the main venue for smart services.

4.5 Strengthening New-Type Think Tank Organizational Construction

From the perspective of intelligence research sharing and exchange, a flat organizational structure enables think tank researchers to better face decision-makers directly, focusing more on meeting user needs rather than responding to their own managers. To prevent administrative interference and create a "short, flat, and fast" decision-making consultation environment, management levels should be compressed to better understand decision-maker intentions and make think tank consulting work better align with real decision-maker needs. Therefore, flat organizational structures pose severe challenges to think tank organizational management.

First, as think tank managers, they must be proficient in various databases, resource foundations, and technical means, be good at communication and coordination, and have far-sighted vision. Second, think tank researchers facing decision-makers directly need effective communication and interaction capabilities. Think tanks must provide alternative options for decision-makers, using scientifically sound viewpoints to influence and guide decision-makers' thinking and concepts. Think tanks should not simply comply with decision-makers' preferences or annotate decision-makers' viewpoints and statements, but should surpass decision-makers' horizons in perspectives, ideas, vision, and methods.

In conclusion, new-type think tanks must have era responsibility and commitment, stand higher, see farther, think deeper, and act more practically, transcending realistic, utilitarian, and situational constraints to study macroscopic, transcendent, long-term, and global issues. They should effectively apply various concepts, methods, technologies, and platforms of intelligence research to the think tank research process, proposing strategic, global, and forward-looking recommendations. Emphasis should be placed on the parallel development of think tank intelligence systems and decision-making consultation systems,

strengthening the construction of intelligence research systems in the decision-making consultation process, enabling think tanks to always influence decision-making from independent and neutral positions.

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Author Contributions:
Chen Chengxin: Responsible for topic selection, overall framework design, and paper writing;
Zeng Qinghua: Responsible for data collection, literature investigation, and final revision.

Note: The conference announcement at the end of the original document has been omitted as it constitutes unrelated supplementary material.

Note: Figure translations are in progress. See original paper for figures.