
AI translation · View original & related papers at
chinaxiv.org/items/chinaxiv-202304.00446

Entering Through the Door and Crossing the Threshold: A Review of the Post-Print of *Competitive Intelligence Analysis Methods and Applications*

Authors: Shen Guchao

Date: 2023-04-01T16:02:58+00:00

Abstract

[Purpose/Significance] This paper provides a review and commentary on the book *Competitive Intelligence Analysis Methods and Applications*, aiming to acquaint readers with the theories, methodologies, and practices of competitive intelligence in the big data era. [Method/Process] Through extensive reading, the author conducts a comprehensive review and comparative analysis of existing domestic and international literature. Grounded in the context of the big data era and evolving user requirements, and integrating theoretical research with project-based practice, the author systematically traces the developmental trajectory of competitive intelligence both domestically and internationally, expounds upon novel concepts in competitive intelligence, and explores its future directions. [Results/Conclusions] The author accentuates the pivotal role of data within the intelligence processing chain and underscores a data-driven methodological framework. The work transcends traditional competitive theory paradigms and establishes a value network-based analytical approach for competitive intelligence. Building upon conventional analytical methods, it introduces a suite of innovative applications spanning data acquisition, monitoring, storage, organization, and analysis, thereby furnishing competitive intelligence practitioners with new perspectives, concepts, approaches, and applications for both practical operations and theoretical inquiry.

Full Text

Entering Through the Door, Stepping Over the Threshold— A Review of *Competitive Intelligence Analysis Methods and Applications*

Shen Guchao

School of Information Management, Nanjing University, Nanjing 210063

Abstract:

[**Purpose/Significance**] This article reviews the book *Competitive Intelligence Analysis Methods and Applications* to help readers understand the theory, methods, and practice of competitive intelligence in the big data era. [**Method/Process**] Based on extensive reading, the author summarizes and compares existing Chinese and foreign literature, examining the development of competitive intelligence at home and abroad in light of the big data landscape and evolving user needs. Combining theoretical research with project practice, the paper expounds new concepts of competitive intelligence and discusses future trends. [**Result/Conclusion**] The book highlights the role of data in the intelligence processing chain and emphasizes a methodology system characterized by data-driven approaches. It breaks through traditional competition theory to define new analytical approaches based on value networks. Building upon existing methods, it proposes novel applications for data collection, monitoring, storage, organization, and analysis, providing practitioners and researchers with fresh perspectives, concepts, and frameworks for competitive intelligence work.

Keywords: competitive intelligence; value network; intelligence analysis; book review

The rise of competitive intelligence in the West represented a new form of intelligence studies applied to the economic and commercial domain. Emerging in the late 1980s against a backdrop of growing corporate aversion to gaining competitive advantage through industrial espionage and calls for “common adherence to the rules of the game,” competitive intelligence rapidly developed thanks to two major trends: the “information explosion” that created an abundance of information resources, and advances in information technology that, together with business intelligence and security intelligence collection and analysis methods, enabled practitioners to obtain intelligence from open sources. This CI (competitive intelligence) did not fade away like the then more popular CI (corporate identity), for two reasons: first, strong demand continued unabated, and second, a new generation of researchers quickly matured, their work timely reflecting the increasingly mature characteristics of the competitive intelligence era.

These characteristics can be summarized in three aspects. First, competition

persists unabated, shifting from domestic corporate rivalry to more industry-level and international competition, driving research on industry competitive intelligence and national competitive intelligence. Second, internet development and the arrival of the big data era have introduced many new propositions. Third, information technologies and processing methods related to big data have formed new concepts and approaches different from the past. *Competitive Intelligence Analysis Methods and Applications* (hereinafter referred to as *The Book*) is a representative work reflecting these characteristics. Compared with previously published works on competitive intelligence analysis, this book has the following features:

1. New Perspective: Highlighting the Role of Data in the Intelligence Processing Chain

Data—comprising raw statistics, messages, rumors, and observed phenomena—has traditionally served as the starting point and foundation for intelligence analysis in textbooks, but has rarely been the focus of attention due to its raw, immature, and incomplete nature. However, the authors of *The Book* argue that in the big data era, the conceptual chain of “data-information-knowledge-intelligence” in intelligence studies has begun to return to the starting point of “data.” The explosive growth of data presents both opportunities and challenges for competitive intelligence work, as traditional theories and methods struggle to meet new demands for large-scale data collection, monitoring, storage, organization, and analysis. Competitive intelligence analysis methods and applications have entered an innovation stage characterized by data-driven methodological system integration and application. Data has become the driving force behind factor accumulation, strategic planning, process transformation, model innovation, operations management, and business decision-making. Research results from a “data-driven” perspective are widely distributed across data science, business management, library and information science, and other disciplines. Competitive intelligence analysis research must first enter through the “data-driven” door to systematically explore, integrate, and construct a competitive intelligence analysis method system oriented toward big data.

2. New Concept: Breaking Through Traditional Competition Theory

The big data era brings not only an explosion in data volume but also increasing complexity in competitive relationships. For a long time, competition theory and strategic management theory have directly supported and guided competitive intelligence practice, such as Michael Porter’s Five Forces model and value chain theory. The boundaries of the five major elements affecting corporate competitiveness—competitors, suppliers, customers, substitutes, and new entrants—were clear and not difficult to identify. Strategic management theory formed on this basis guided practitioners and researchers in target market identification, strategic environment evaluation, internal condition analysis, strategic

option selection, development path design, competitive strategy formulation, and opportunity identification.

The impact of the internet has dramatically transformed traditional supply chains. New business models connect increasingly granular and changing user demands with efficient, low-cost manufacturing, supplemented by rapid product distribution based on digital information, thereby avoiding high-cost distribution layers. This has transformed linear, one-dimensional value chains, information chains, and collaboration chains into customer-centric value creation network systems. Modern supply chains are so complex that it is difficult to isolate profit analysis for a single product from the value network. The current “entanglement” in Sino-U.S. technological competition and trade disputes—the contradiction between America’s strategy to isolate Huawei and decouple from China in high-tech fields and its simultaneous benefit from commercial interactions with China—illustrates this point. Some analyses suggest that by 2027, China’s EDA market will reach \$3.9 billion, while the current U.S. market is \$2.8 billion. If China is excluded from the world’s fastest-growing market, companies like Cadence and Synopsys will struggle to maintain their leadership positions. In other words, U.S. supply cutoffs to Huawei also shrink its own trade surplus, while reduced R&D funding weakens American leadership in this high-tech field. A series of reports from Johns Hopkins University have also warned against this “self-defeating” trend, evaluating the Trump administration’s policies as having “gone too far.”

It is precisely based on such competitive concepts that the authors of *The Book* provide a detailed comparative analysis of value chains and value networks, clarifying a value network-based competitive analysis approach. They point out that the dynamic, organic value creation system formed by interconnections among member enterprises can more comprehensively present the complex competitive relationships between enterprises than the single linear structure of value chains, leveraging both competitive and cooperative advantages to guide enterprises in building customer value-centered competitive strategies (Chapter 3). Of course, the authors do not completely abandon traditional competitive intelligence analysis content but integrate it into the overall framework of big data-based competitive intelligence analysis. Using data flow as the main axis, they propose a full-process analysis framework covering the competitive intelligence lifecycle and integrating big data methods and technologies, including requirements analysis, data collection, data organization and storage, data analysis, and data visualization. The authors “enter through the door” but do not stop at the original “threshold”; their inheritance and development of original concepts provide momentum for “stepping over the threshold.”

3. New Approach: Redesigning Intelligence Strategies and Analysis Frameworks

New thinking about the concept of “competition” necessarily promotes new viewpoints and theories in intelligence strategies, thereby forming new analyt-

ical frameworks. Traditional competitive intelligence analysis treated data acquisition and sequencing as foundational work preceding intelligence analysis. However, competitive intelligence big data collection primarily addresses how to rapidly and accurately obtain thematic information from the internet under resource constraints. Therefore, *The Book's* authors focus on data collection and monitoring, storage and organization, adopting a strategy that combines general search engines with vertical search engines to construct an internet thematic information collection system framework. They integrate systematic solutions for key technologies such as anti-blocking methods for competitive intelligence topical data collection, body URL screening, template construction and content extraction, webpage body screening, post-collection deduplication, and body filtering. For typical applications and data monitoring after data collection, the authors construct technical solutions for monitoring relevant data using topic models for thematic monitoring and opinion mining methods for comment monitoring and sentiment analysis. In terms of data storage and organization, they introduce data storage methods such as data warehouses, Hadoop, Elastic-Search, data lakes, and data marts in the big data era, as well as typical data organization methods including domain ontologies and linked data (Chapters 4 and 5). The related technologies discussed in these new approaches are not original, but the authors systematically integrate existing methods and technologies to form technical solutions with certain application value, verifying their effectiveness through experimental data. The research results have sustainable and improvable application value.

4. New Application: Domain Practice Connecting Theory with Reality

As the book's title suggests, "methods" and "applications" are the authors' emphases. The transformation of perspectives, concepts, and approaches must ultimately be implemented in specific domains to provide reference for competitive intelligence analysis work in the new era. Traditional competitive intelligence analysis methods such as expert surveys, brand switching analysis, Five Forces model, and SWOT analysis rely heavily on personal experience, are highly subjective, and have single analysis dimensions, making it difficult to identify cross-boundary competitors and network competitive relationships. Quantitative methods such as patent intelligence analysis and financial analysis also struggle to cope with challenges posed by massive, multi-source, heterogeneous data. To address this, the authors systematically discuss competitive intelligence analysis methods and applications based on large-scale datasets in the big data environment (Chapters 6 through 8). These include: analysis of data sources such as online news, data search, social media data, and user reviews needed to capture industry signals, closely monitor emergency evolution and development, and provide market early warning; identification of key business processes, determination of candidate competitors, measurement of key process overlap indicators and their calculation, competitor and competitive environment analysis processes, and construction of an enterprise competitive situation

analysis model based on multi-layer networks from a data-driven perspective, all designed from value chain and value network perspectives with key process overlap as the anchor. These studies demonstrate innovation in conceptual design, model construction, data processing, and application practice, providing enterprises with insightful, scientific, and highly operational analytical paradigms for dynamic competitor and competitive situation monitoring.

As a platform for competitive intelligence work, competitive intelligence systems aim to support corporate competitive intelligence and strategic management, becoming key information systems for large and medium-sized enterprises. Integrated platforms can better integrate competitive intelligence analysis work with organizational business and internal/external environments to carry out effective competitive intelligence innovation services. To this end, the authors design the overall architecture of an enterprise competitive intelligence innovation service platform (Chapter 9), with main functional modules including intelligence collection, intelligence processing, and intelligence analysis and services, covering all aspects of the aforementioned competitive intelligence lifecycle, and present a platform implementation interface. This chapter highlights purpose and results orientation, reflecting the “grounded” characteristics of big data-based competitive intelligence analysis.

Times are advancing rapidly. In 2000, Nanjing University’s CI Studio undertook a two-year competitive intelligence service commission for Huawei. When revisiting Huawei last year, its intelligence needs and competitive environment had changed dramatically. The complex competitive environment Huawei faces today is representative, illustrating that while competitive intelligence’s role as “eyes, ears, vanguard, and advisor” for decision-makers remains unchanged, its methods, approaches, and analytical indicators are constantly evolving. Falling behind the times brings enormous risks and challenges. The U.S. can wage a technology war against China in its current manner because its products have become deeply embedded in China’s critical infrastructure domains over the years, forming a solid “single source” dependency. Intelligence and think tank systems have long conducted extensive analysis and forecasting of the risks of such strong external dependencies in foundational domains. When facing America’s “new technology policies,” what adjustments must Chinese enterprises make to their intelligence work priorities? While having no choice but to accelerate independent R&D, how can technical intelligence be combined with market intelligence? What changes will occur in the contest over standard specifications on the international stage? How can we maintain the large number of standard specifications dominated by China, including 5G, artificial intelligence, big data, and other cutting-edge technologies representing new industrial trends? How should competitive intelligence work be deployed in advance for research around the five dimensions of people’s lives, work, health, information, and security to achieve the country’s 2035 long-term goals? Too many questions require answers.

The new international competitive environment and national innovation-driven

strategy have required the intelligence enterprise to shift its focus toward serving national strategy, evolving from merely breaking through international technology blockades to a new stage of intelligent knowledge integration, mining, computation, and transformation into productive forces. Competitive intelligence has also advanced from corporate competitive intelligence and industry competitive intelligence to a new stage of national competitive intelligence. For example, analyzing, tracking, and identifying influencing factors in key technology domains and critical links in industrial and supply chains using new technologies and methods, extracting relevant signals, and providing recommendations for strategic planning and design at the decision-making level—all represent research space that *The Book* can continue to expand and deepen. As the authors point out in the final chapter, at the micro level, competitive intelligence development should be led by innovation-driven strategies and oriented toward corporate innovation development; at the macro level, corporate competitive intelligence development should integrate with national competitive intelligence development. From the perspective of ensuring long-term national competitiveness, the intelligence work system design needs to be oriented toward overall development and security concepts, enabling competitive intelligence in the new era not only to enhance corporate competitive advantages but also to serve major national decision-making, highlighting the status and role of the intelligence discipline.

References

[1] Xu Xin, Ke Jian, Gu Jun, et al. *Competitive Intelligence Analysis Methods and Applications*[M]. Beijing: China Science and Technology Literature Publishing House, 2021.

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

Source: ChinaXiv — Machine translation. Verify with original.