

A Probe into Collaborative Service of Quality Infrastructure in Inner Mongolia Autonomous Region

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ABSTRACT

During the “13th five-year plan” period, the Inner Mongolia Autonomous Region vigorously advanced the development of its national quality infrastructure (NQI). To satisfy the requirements of a coordinated development of its NQI and to provide some references and suggestions for an NQI collaborative service in Inner Mongolia, this paper summarized and refined the practical characteristics of an NQI collaborative service, namely, the “Bao Jian Dao” platform and offline testing framework for the plush industry in Inner Mongolia. Through on-site investigation and policy analysis, this paper highlighted the strengths of the region, including its leading technical institutions, key enterprises, and offline service networks, and identified related problems such as in platform management, element collaboration, and personnel shortage. Oriented toward satisfying corporate needs and combined with the actual situation in Inner Mongolia, this paper proposed the online + offline development mode and presented some suggestions for an NQI collaborative service in the region.

Keywords: quality, quality infrastructure, NQI, collaboration, Inner Mongolia Autonomous Region

1. INTRODUCTION

Introduced by the United Nations Conference on Trade and Development (UNCTAD) and the World Trade Organization (WTO) to the international community in 2005, national quality infrastructure (NQI) involves metering, standards, testing, certification, and accreditation [1]. In recent years, NQI has been valued unprecedentedly in China. In May 2017, at the opening ceremony of the “Belt and Road” Forum for International Cooperation, Chinese President Xi Jinping emphasized “the need to promote connectivity of policy, rules, and standards to provide a mechanism guarantee for interconnectivity.” In the same year, the “Guiding Opinion of the CPC Central Committee and the State Council on Conducting Quality Improvement Campaign” expressly laid down the “need to conduct a collaborative service of NQI and construct application demonstration bases.” In November 2020, the State Administration for Market Regulation issued the “Opinion on Vigorously Conducting the ‘One-Stop’ Service of Quality Infrastructure,” whereas in April 2021, the Inner Mongolia Autonomous Region issued the “Inner Mongolia Autonomous Region Administration for Market Regulation’s Work Plan for Advancing the ‘One-Stop’ Service of Quality Infrastructure” in order to implement various national policies on quality infrastructure construction. The issuance of these documents marks a critical period in the construction of an NQI collaborative service in the Inner Mongolia Autonomous Region. This study deeply analyzed the NQI development status in Inner

Mongolia through on-site investigation and policy data analysis. After summarizing and refining the data, this paper proposed an NQI collaborative service mode suitable for the Inner Mongolia Autonomous Region.

2. CURRENT STATUS OF NQI ELEMENTS IN INNER MONGOLIA

- In terms of metering, in 2015, the “Inner Mongolia Autonomous Region ‘13th Five-Year’ Metering Development Plan” was issued after the region established a communication and coordination mechanism led by the administration for market regulation and involving many departments, such as the development and reform commission, finance, human resources, social security, and education. In 2020, the region issued the “Opinion on Further Strengthening Construction of Public Metering Standards for Society,” whereby the fiscal department appropriated 24.72 million yuan to provincial-level metering technology institutions for use in mandatory metrological verification and other metering activities.
- In terms of standards, in 2016, the region signed the “Strategic Cooperation Memorandum between the People’s Government of Inner Mongolia Autonomous Region and the Standardization Administration of China on Fully Strengthening Standardization,” which makes standardization a priority and an important foundation for the quality improvement campaign of the region. The

standardization improvement campaign that fully implements the “Opinion of Inner Mongolia Autonomous Region People’s Government on Fully Deepening the Standardization Work” and the “Inner Mongolia Autonomous Region Standardization System Construction and Development Plan (2016-2020)” achieved remarkable progress by establishing industry standard systems that are unique to the region in 10 categories, including Xilingol mutton, directing or participating in the formulation and revision of 8 international and 1073 national standards, and progressively advancing 230 national- and 182 autonomous-region-level standardization pilot demonstration projects. Baotou City successfully transformed itself into a national “innovation-oriented city of international standardization.” In addition, five places, including Huhehot, were designated as the second group of pilot cities in the “benchmarking and standard-hitting campaign involving 100 cities, 1000 industries, and 10000 companies” [2].

- In terms of inspection and testing, the region brought in Societe Generale de Surveillance S.A.(SGS) in 2014. In late 2016, a total of 948 inspection and testing organizations were available in the autonomous region, showing a remarkable growth [3]. This number further increased to more than 1300 in 2020.
- In terms of certification and accreditation, “Mongolian word mark” is a regional brand certification drive conducted in the region to advance the development of advantageous and distinctive industries by establishing a “purely natural, green, organic, high-quality, and ecological-environment-friendly” image of agricultural and animal products in Inner Mongolia through “high standard + rigorous certification + strong supervision + excellent service” and by establishing its own internationally influential certification system. Given that the “Mongolian word mark” certification is an innovative initiative of the autonomous region in response to the calls for the high-quality development of the country, the “Mongolian word mark” was released in Beijing in November 2020.

3. NQI COLLABORATIVE SERVICE IN INNER MONGOLIA

3.1. Online Service Platform—“Bao Jian Dao”

In July 2018, the Baotou City Bureau of Quality Inspection launched an online quality infrastructure public service platform called “Bao Jian Dao” (“Platform”), which was constructed and operated by the Baotou Inner Mongolia Production Quality Test & Metrology Institute, to fully leverage the functional strengths of its quality supervision

department both online and offline and to offer standards, metering, inspection, testing, certification, and accreditation services by integrating resources and expanding fields of business using the “internet +” sharing mode, establishing a bridge among numerous small and micro businesses and technical institutions, and introducing comprehensive, authoritative, affordable, and convenient quality services for companies in a one-stop manner.

The functions of this platform cover quality consultation release, inspection and testing services, standard query, metering procedure query, mandatory verification instrument services, special equipment services, expert consulting, cloud classrooms, and corporate standard self-declaration systems. As of April 2021, the platform attracted 1985 companies and 23 technical institutions, provided 4251 cases (sessions) of various quality, technical, and consultation services to companies and institutions in Baotou, offered 10203 basic data entries to market oversight departments at all levels, provided quality services for public interest to 7620 persons, and waived over 30 million yuan in fees.

3.2. Offline Service Network (With the Plush Industry as an Example)

In recent years, as a leading inspection and testing agency in the plush industry of the region, the Inner Mongolia Autonomous Region Fiber Quality Monitoring Center (National Plush Quality Supervision and Inspection Center or “Monitoring Center”) intensified its efforts in standard setting and technological breakthroughs by establishing a system of testing and inspection standards in line with the characteristics of domestic wool and cashmere, translated and transformed 8 international standards launched by the IWTO, published 1 and revised 3 ISO standards, and completed 1 national, 25 local, 3 industry, and 10 group standards, with 6 national standards still under research and 1 technical standard system for instrumented wool testing built in place [4]. Standardized farming demonstration areas have been built with great effort as the monitoring center works with related departments to guide the construction of 1 demonstration banner and 4 integrated agricultural standardization demonstration areas that cover the standardization of technical requirements in main concentrated producing areas, stock breeding, epidemic disease prevention and control, shed construction, feeding management, and shearing and sorting, thereby curbing the increase in the thickness of cashmere. In light of the current distribution of plush fiber resources and the industrial development pattern in the autonomous region, Huhehot was established as a domestically leading central lab as along with five field labs in the main producing areas and centralized trading places of Erdos City, Xilingol League, Alashan League, Wulanchabu City, and Xingan League, all of which comprise a “one core, five drivers” structure and complete the “last mile” of the plush testing and inspection service industry for farmers and herdsman. In addition, by leveraging the “high-quality development

action at the service of 100 companies” launched in the autonomous region, the monitoring center serves the entire cashmere industry and leading cashmere companies, collaborates with leading companies in formulating green standards for cashmere production, formulates or transforms Chinese standards for companies with factories set up abroad, and pushes the output of “Belt and Road” standards. In addition, the monitoring center addresses various technical difficulties faced by companies and drives scientific research innovation across a full spectrum ranging from product and standard development to raising the level of testing and inspection. The center also organizes groups of experts to guide the main producing areas and processors by introducing improvements in quality, inspection, and testing services, which benefits companies.

3.3. Main Experiences and Issues Facing Collaborative Services

3.3.1. Main experiences

3.3.1.1. Supported by leading technical institutions

Leading technical institutions, especially national-level service organizations, are important scientific and technological bases that respond to industrial restructuring, seize the commanding heights of industrial and technology innovation, overcome the key technological bottlenecks of industries, construct and perfect the modern industrial technology system, and drive industries toward the medium and high ends of the value chain, thereby playing a strategically supporting and leading role in technological innovation in key industrial fields. The Baotou Inner Mongolia Production Quality Test & Metrology Institute and the Plush Monitoring Center play an important leading and driving role in industries and provide remarkable advantages for driving the entire region and industry to form a service pattern that connects dots.

3.3.1.2. Relying on key enterprises

Enterprises act as the first frontier in industrial transformation, upgrading, and technology improvement. While numerous enterprises seek innovation, they generally have poor innovation records due to a shortage of high-tech talented personnel and key technological bottlenecks. With their high-caliber personnel and by operating at the frontier of industrial technology research and development in response to the development needs of enterprises and industries, technical institutions fully leverage the role of leading technical institutions as bridges to establish a cross-regional and multidisciplinary “three-

in-one technology development framework” that overcomes industrial bottlenecks and improves the fundamental capabilities of industries. Outstanding technical institutions are encouraged to extend their service chains, open new fields, constantly solidify and develop cooperation frameworks, and further enhance the levels and capabilities of industrial technology service.

3.3.1.3. Based on offline service networks of technical institutions

The offline “one core, five drivers” testing framework established by the monitoring center meets the practical needs of industrial development and has witnessed notable achievements in driving the efficient operation of industries, forming favorable service mechanisms, and reducing industry costs, hence demonstrating how well industrial technology service plays its part. This framework provides the necessary experience for the establishment of primary-level networks of NQI collaborative service in the autonomous region. Various league cities achieve mutual benefit and win-win results by using the offline service network and reaching out to various areas. Therefore, accelerating the collaborative development of NQI services across various league cities will greatly facilitate resource sharing and the mutual complementation of advantages and common development among league cities.

3.3.2. Issues facing the exploration into collaborative service

3.3.2.1. Online service platform (Bao Jian Dao)

A limited number of technical institutions settled on the platform with limited service elements. As of April 2021, the platform has attracted 23 technical institutions, most of which are related enterprises and public institutions based in Baotou with limited cross-regional influence. The service elements of these institutions are mainly concentrated in the fields of metrological verification, inspection, testing, and other service elements that draw limited attention.

Extended services provide links without requiring much collaboration. For the various elements of NQI, the platform provides over 30 links to related service platforms or systems at the national, autonomous region, and municipal levels. While a rich amount of service information is present, the contents merely comprise a simple enumeration of links without specific guidance on how to provide various services in response to corporate

needs, hence failing to adequately reflect the synergistic effect of various elements.

The dual identity of the platform operator has some pros and cons. The Baotou Inner Mongolia Production Quality Test & Metrology Institute acts both as the builder and operator of the platform and a technical institution settled on the platform. As a technical institution settled on the platform, the institute competes with other service organizations of the same type that are settled on the platform, hence directly discouraging the settlement of other metrological and testing organizations.

Operated by the Baotou Inner Mongolia Production Quality Test & Metrology Institute, the platform has a short operating history and lacks IT managers and technical personnel. Specialized management and operation teams help build up the popularity and influence of the platform and achieve the objectives of platform construction.

3.3.2.2. Offline service network (plush industry)

Specialized technical institutions cannot cover all elements. The monitoring center is a leading inspection and testing service provider in the plush industry and actively works with leading companies on inspection, testing and standard service, thereby forming a solid work foundation in these two areas. Due to its limitations in the technical field, the monitoring center fails to conduct related work in other service elements, meaning there is a need to expand the NQI collaborative elements in the plush industry.

Limited technical personnel for all-territory service. As a non-profit public institution, the monitoring center is also tasked with public inspection and scientific research, providing technical services to the plush industry of the autonomous region by relying on the “one core, five drivers” testing framework, which poses demanding requirements for the number and specialization level of technologists.

4. SUGGESTIONS ON NQI COLLABORATIVE SERVICE IN INNER MONGOLIA

4.1. Establish and Perfect the System and Mechanism and Realize One-Stop Targeted Service of NQI

According to the above summary and analysis, the issues in the exploration into online and offline NQI collaborative services in the autonomous region are mainly concentrated in three aspects, namely, platform management, element collaboration, and personnel shortage. The possible approaches to addressing these challenges are enumerate as follows:

Establish a comprehensive quality service center for the Inner Mongolia Autonomous Region to address issues through management and collaboration.

Establish a quality service officer (specialist) system in the Inner Mongolia Autonomous Region to address staffing issues.

Establish an online NQI “one-stop” service platform in the Inner Mongolia Autonomous Region to address the online collaboration issue.

The comprehensive quality service center of the Inner Mongolia Autonomous Region is responsible for the “one-stop” platform operation and the maintenance and management of a quality service officer (specialist). Meanwhile, brick-and-mortar quality service stations need to be established in key areas and at key enterprises in 12 league cities to meet the needs of industry development and to gradually form an NQI collaborative service network across the autonomous region. These efforts are geared toward forming online and offline NQI collaborative service networks based on offline services that rely on internet platforms with key industries (areas) as enablers.

Oriented toward serving corporate needs, abolishing the existing system and mechanism, establishing a new mechanism for managing NQI collaborative service in the autonomous region, forming a new NQI service pattern in the region, integrating elements and resources, providing services proactively, and effectively helping companies address imminent difficulties, the center exercises every means to improve the quality of its services and to allow companies to truly enjoy the fruits of technical service and resource integration.

4.2. Serve Small and Micro Businesses and Promote Industrial Transformation and Upgrading

Micro, small, and medium-sized enterprises are agile and vibrant yet face numerous challenges in terms of quality management. Raising the quality level of these enterprises across the board is key to improving the quality and efficiency of industries. The NQI collaborative service integrates industrial resources and provides an all-element package service for small and micro businesses, helps these businesses in their industrial transformation and upgrading, and integrates social resources to benefit micro, small, and medium-sized enterprises with a “one-stop service.”

4.3. Intensify Professional Guidance and Cultivate Specialized Technologists

The lack of talented personnel in the autonomous region presents a bottleneck to a technology-based NQI collaborative service. Statistics show that the autonomous region lacks a structured brainpower and faces a serious undersupply of top-notch personnel. In 2019, the Inner Mongolia Autonomous Region had 21.7 researchers and

developers per 10,000 people, which is merely half of the national average; meanwhile, skilled workers with national occupational qualifications accounted for merely 13.5% of its working population, and highly skilled workers accounted for only 4.4%, both of which are much lower than the national averages of 20% and 6%, respectively [5]. Additional effort should therefore be allocated to fostering related specialists, establishing competitive talent policies to attract highly skilled workers, and fostering and establishing talent echelons in line with the development needs of the autonomous region.

4.4. “Mongolian Word Mark” Leads the Creation of Proprietary Certification Brands

With the help of the NQI collaborative service and enabled by the “Mongolian word mark” certification, “Mongolian word mark” certification standards that address quality, technology, service, and credibility should be established. In addition, a certification of products and services should be performed, and Inner Mongolian brands should be created. Companies must be guided in adopting advanced standards for business operations, a high-quality image of Inner Mongolian products and services should be promoted, the core competitiveness of these products and services should be improved, and the regional brand value and influence of the autonomous region must be highlighted.

4.5. “Launch Competitions” to Promote Corporate Innovation

The NQI collaborative service should be leveraged to promote a “merit-based selection” mechanism, explore and stimulate the potential of innovation, break through the red-tape restrictions on talent mechanism, motivate science and technology workers to tackle scientific and technological difficulties, encourage scientific research institutes and leading companies to jointly establish NQI collaborative service innovation bases, accelerate the transformation of innovations, and transfer outstanding innovations conditionally to drive industrial innovation and upgrading.

5. CONCLUSION

The NQI service practice introduced above provides valuable experiences for promoting an NQI collaborative service in Inner Mongolia. By summarizing the advantages of these practices, taking enterprise demand as guidance, breaking the system restrictions, and combining the actual situation of Inner Mongolia, the combination of the online + offline mode will be conducive to the promotion and implementation of an NQI collaborative service in the region.

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