Innovation in the College Application Information Service System and Pathways for Multi-stakeholder Collaboration Driven by the New College Entrance Examination Reform

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ABSTRACT

The new New National College Entrance Examination (NCEE) has promoted the fundamental shift of educational evaluation logic from single score to comprehensive evaluation. The purpose of this article is to explore the innovation path of voluntary service system to adapt to the new system, so as to solve the lag problem of the existing service model. The research reconstructs the multi-level closed-loop service paradigm, defines the power and responsibility boundaries of government supervision, university supply and market services, and designs an incentive-compatible collaborative dynamic model based on credit constraints. It is found that the key to alleviate the mismatch between supply and demand is to build dynamic and updated information ecology with ethical norms. This article puts forward that we should adhere to the principle of equal opportunity and digital inclusion, extend short-term reporting guidance to long-term career development, and establish a feedback mechanism for system self-evolution. Through the dual drive of technology empowerment and system optimization, it can effectively safeguard the fairness of further education and promote the precise matching between talent selection and individual development.

Keywords: *New National College Entrance Examination, College application, Information service system, Pathways for multi-stakeholder collaboration, Public value orientation.*

1. INTRODUCTION

The core of the new NCEE is to change from a single score admission to a dual selection mechanism based on "comprehensive qualities and major preferences" [1]. This fundamental change has broken the original ecological balance of entering a higher school, making the traditional college application service model face unprecedented challenges. With the diversification of subject selection mode, the choice space faced by candidates increases geometrically, and the complexity and uncertainty of information increase significantly [2]. The existing information service system mostly stays at the level of data handling and rule interpretation, lacking systematic support for deep decision-making logic, which leads to the further solidification of information barriers between supply and demand sides [3]. The disadvantage of some families in entering higher schools due to the difference in information acquisition ability highlights the limitations of the traditional linear service model in dealing with the nonlinear selection environment [4].

In this background, how to form a college application information service system adapting the new mechanism and explore multiple party coalition mechanisms of government, university and social institutions is an urgent theoretical proposition. This is related to the distribution of interests of individual families, and it also touches on the fundamental issues of educational equity and social mobility [5]. Based on the theory of institutional change, information economics and collaborative governance framework, this article abandons the empirical narrative of specific cases. Its purpose is to analyze the tension between information supply and demand brought by the new

NCEE, reconstruct the theoretical framework of information service, and explain the internal logic of multi-agent collaborative governance. The research will focus on the remodeling mechanism of information flow, the ethical definition of the boundaries of rights and responsibilities of all parties and the normative boundaries of technology empowerment.

This study will try to establish an explanatory and enlightening framework, so as to guide the path of innovation in educational services under the new college entrance examination background. This framework is helpful to maintain equal opportunities, support rational decision-making and finally achieve a better match between talent selection and personal development in a complex newspaper selection environment.

2. TENSION BETWEEN INFORMATION SUPPLY AND DEMAND UNDER INSTITUTIONAL CHANGE

The new NCEE marks that the logic of educational evaluation has changed from a sole focus on test scores to a dual-track mechanism that places equal emphasis on comprehensive qualities and students' major preferences. This institutional change has profoundly reconstructed the ecological basis of college application. With the diversification of subject selection mode, the choice space faced by candidates is expanding geometrically, which leads to the information environment changing from relatively static to highly dynamic and complex [6]. In this context, the original service model based on data handling is difficult to cope with the complexity of the rule system, resulting in a structural contradiction between the fragmentation of information on the supply side and the refinement of decision-making on the demand side. According to the theory of information economics, the lack of transparency of policy rules intensifies the natural information barrier between candidates, families and universities, forming a deep-seated information asymmetry [7]. Faced with a large number of combination options, individual cognitive boundaries are easily overloaded, resulting in decision-making anxiety and instinctive tendency to avoid risks [8]. This superposition of cognitive load and decision-making pressure highlights the functional lag of traditional linear service model in dealing with nonlinear selection environment.

3. PARADIGM TRANSFORMATION AND STRUCTURE OF SERVICE SYSTEM

This section focuses on the paradigm shift of information service system from management-oriented to service-oriented, aiming at constructing a theoretical system model that adapts to the complexity of the new college entrance examination. The ideal college application service structure should not be a simple function stack, but a standardized knowledge network covering test data, professional maps and employment trends [9]. The core of this system is to establish a user-centered resource integration model, and transform the traditional administrative instruction release into a dynamically updated and interrelated data service stream [10]. In this process, the concept of data governance needs to run through the service process, and ensuring the accuracy and timeliness of information sources becomes the basic guarantee for system operation. In view of the application boundary of intelligent technology, it is proposed that an ethical framework must be established. "Figure 1" defines multi-level data processing logic and interaction mechanism. The architecture includes raw data layer, intelligent computing layer, business application layer and user interaction layer from bottom to top. Each level undertakes a specific functional mission and forms a strict logical closed loop. The original data layer is responsible for gathering multi-source heterogeneous information such as college enrollment regulations and socio-economic statistics; Intelligent computing layer carries out desensitization analysis and weight assignment based on privacy protection criteria; The business application layer provides customized prediction models according to the demand characteristics of candidates in different regions; The user interaction layer emphasizes the two-way feedback mechanism to ensure the revisability of the service.

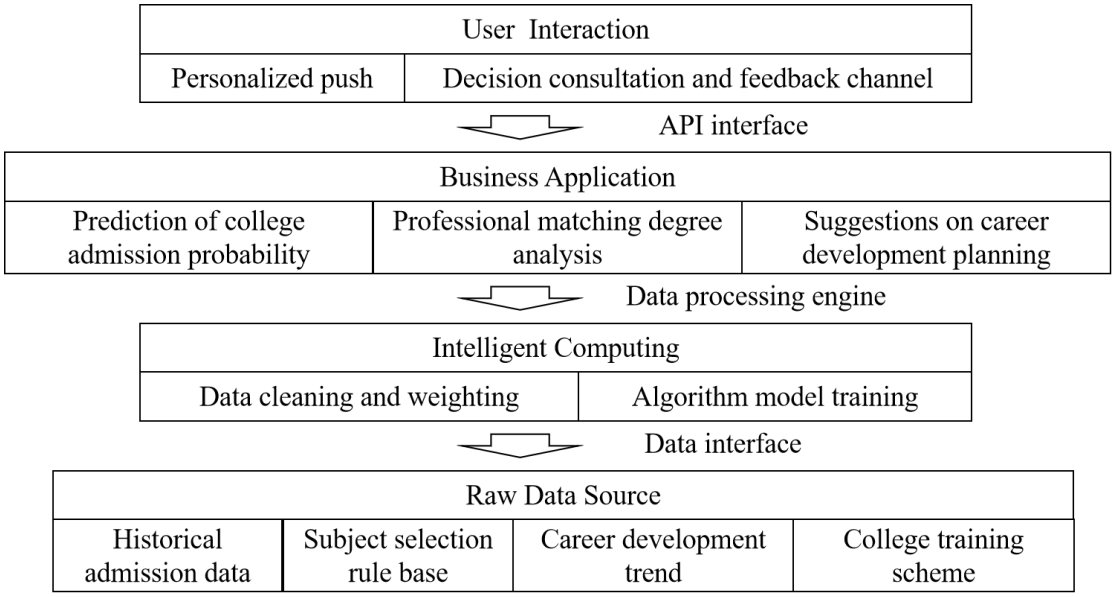


Figure 1 Information service system architecture of college application.

This hierarchical structure effectively isolates technical risks from business logic and ensures the stability and security of the system. The system must have dynamic adaptability, adjust the internal algorithm parameters according to the iteration of the new college entrance examination policy, and maintain its openness and long-term vitality. The rights and responsibilities of all parties in this framework need to be clearly defined to avoid the crisis of trust or the risk of excessive administrative intervention caused by market failure. Based on this reason, building such a closed-loop information service system is a measure to respond to technological changes, and it is also a key path to reshape the ecology of educational evaluation. Its ultimate goal is to reduce the cost of individual decision-making and maintain the substantive fairness of the opportunity for further study, so as to promote the healthy operation of the social mobility mechanism at the macro level.

4. COLLABORATIVE GOVERNANCE LOGIC OF MULTI-STAKEHOLDERS

Based on the theory of collaborative governance, this study discusses the role interaction and cooperation mechanism of government, universities, social institutions and parents in the information service ecology. The purpose of this process is to break the limitation of single administrative leadership and build a new paradigm of public service with multiple co-governance. All parties should undertake corresponding functions according to their core advantages, and form a complementary rather than competitive relationship network.

4.1 Stakeholder Positioning and Boundaries

The government, as the leading regulatory authority, is responsible for formulating standards and bottom line rules for information dissemination, and maintaining the fairness of market order. As a data provider, universities must fulfill their main responsibility of disclosing enrollment information and ensure the transparency of training programs and admission rules. The responsibility of market-oriented service institutions is to optimize information retrieval efficiency through technological means, but they must not tamper with raw data or mislead candidates' expectations. Parents and students have the ultimate decision-making power and information feedback obligation. This clear division of responsibilities is a prerequisite for reducing communication costs. When all parties act within the legal boundaries of power, the channels for information flow can remain smooth and orderly, avoiding system chaos caused by overstepping or absence.

4.2 Incentive Compatible Collaborative Dynamic Mechanism

The sustainability of the cooperation system depends on the design of effective incentive mechanism, so that the individual rationality of

each participant can be transformed into the collective optimal result. The transaction cost theory points out that the lack of trust will significantly increase the cooperation friction, so it is very important to build a long-term cooperation mechanism based on information sharing and credit constraints. Government departments can support the development of high-quality social institutions and improve their service quality by purchasing public services; Colleges and universities need to exchange the trust of parents through openness and transparency to reduce the unnecessary risk of public opinion; Social forces can get reasonable benefits through technological innovation and actively participate in public welfare career education projects. This mutually beneficial arrangement ensures that each subject pursues the maximization of their own interests and promotes the efficiency of the overall cooperation network. The ecological model of multi-agent collaborative governance is shown in “Figure 2”.

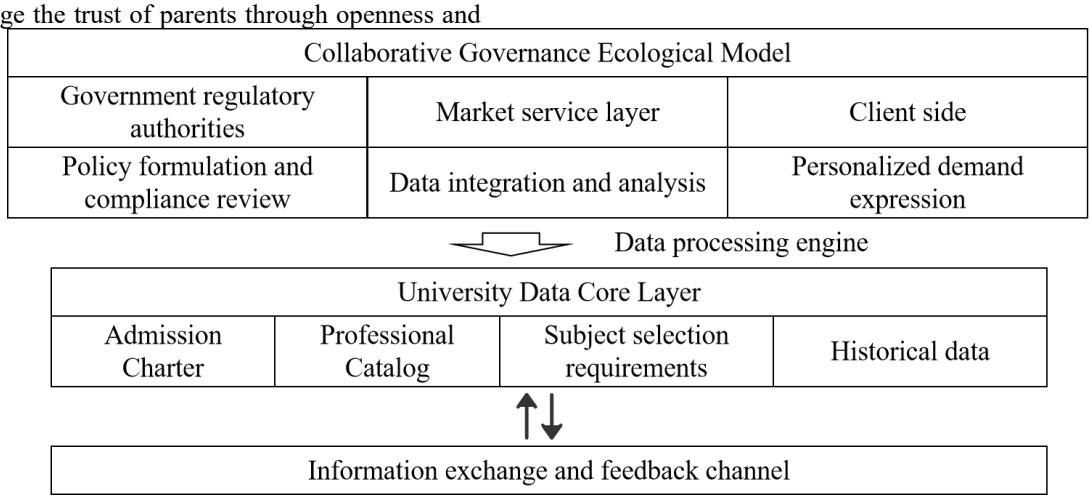


Figure 2 Multi-stakeholder collaborative governance model.

4.3 Conflict Coordination and Risk Sharing Model

To prevent information deviation or a service conflict, it plays an essential role in defining the Information Watch Standard to establish a unified risk hedging and dispute resolution mechanism. Third-party evaluation agencies should assume the supervisory function, conduct independent evaluation on the quality of information services on a regular basis, and timely discover and correct potential market failures. When there is a mistake in volunteering due to information error, the responsible party should bear the corresponding remedial cost according to the responsibility sharing clause agreed in advance, instead of simply passing the risk on to the examinee's family. In addition, the public sector needs to establish a dynamic risk early warning system to intervene to deal with emergencies in advance by monitoring public opinion and technical failures. This risk-sharing structure enhances the resilience of the whole system and ensures the continuity of basic services in the face of external shocks.

5. THE IMPLEMENTATION PATH OF PUBLIC VALUE ORIENTATION

5.1 Equal Opportunity and the Realization of Digital Inclusion

The primary purpose of establishing an information service system is to uphold educational equity, and it has to overcome this digital gap that results from urban-rural and class disparity. The government should take the responsibility when promoting digital services, and ensure that candidates from different economic backgrounds enjoy equal rights in obtaining key information for further studies. This means that the service terminal should not only face the high-speed environment in developed urban areas, but also adapt to the network conditions in underdeveloped areas and provide an efficient information access scheme with low bandwidth. The interactive interface of system design should follow general design principles, lower the threshold of technical operation and avoid implicit discrimination caused by digital literacy differences. Only through the balanced investment in infrastructure and the

transformation of aging and dilution can we ensure that the technical dividend will benefit all groups, and make the voluntary reporting change from a behavior of relying on resource accumulation to a rational choice based on personal ability, thus promoting the healthy operation of the social mobility mechanism at the macro level and preventing the gap between the rich and the poor from further solidifying the educational stratification.

5.2 The Integration of Career Education and Subject Selection Decision-making

The limitation of short-term application service is easy for the separation of students' long-term development and immediate interests, so information guidance must be extended to long-term career development planning. Colleges and middle schools should cooperate to build a through-going education chain, break the passive situation of policy propaganda in the enrollment season, and integrate the guidance of subject selection into the daily teaching system. The service content should not only be limited to the matching analysis of admission scores, but also introduce professional aptitude test and industry development trend prediction. This deep integration requires the data model to have multi-dimensional portrait ability, so that every information push becomes a potential career enlightenment. By establishing such a long-term mechanism, it can effectively alleviate the short-sighted decision-making made by candidates because of information blind spots and improve the degree of job matching.

5.3 Dynamic Feedback and Self-evolution of the System

In the context of the iterative adjustment of the new college entrance examination policy, it is required that information service system has a high degree of adaptability and evolutionary ability. A theoretical feedback regulation model is the key to ensuring the vitality of the system. The model should include multi-source information such as policy interpretation from government departments, feedback data from universities and the actual behavior trajectory of candidates. Through periodic system review, the system can automatically identify the impact of rule changes and adjust the internal algorithm parameters to maintain its openness and adaptability. In addition, it is necessary to set up a special third-party monitoring agency to continuously evaluate the service effect, find data deviation or ethical risk in time and make corrections. This self-evolution mechanism ensures the resilience of the system in the face of future uncertainty and provides a sustainable technical support path for the modernization of educational governance.

6. CONCLUSION

This article analyzes the college application service system under new NCEE background, and summaries the information supply-demand tension rising from institutional change. Simple administrative instructions or market self-issuance are unable to effectively respond to the current complex selection and combination environment. It is necessary to rely on a collaborative governance model led by the government, responsible by universities, and involving society to break down information barriers. Building an information service architecture with dynamic adaptability is not only a technical requirement for improving admission efficiency, but also an institutional guarantee for maintaining educational equity. During implementation, it is necessary to be vigilant about the potential "information cocoon" effect that algorithm recommendations may bring, establish an ethical bottom line for human-machine collaboration, and ensure that technology always serves educational goals. In future practical exploration, emphasis should be placed on bridging the digital divide to ensure that candidates from remote areas have equal access to quality information. Information services should not be limited to auxiliary tools during the exam preparation stage, but should be internalized as a career planning system that runs through high school education, helping students establish clear self-awareness in the early stages of subject selection. The purpose of the proposed theoretical framework is to provide solid theoretical support for achieving the new NCEE goals, emphasizing that technology serves people rather than replacing human judgment. By clarifying the rights and responsibilities of all parties, optimizing cooperation mechanisms, and adhering to public value orientation, it is expected to build a more open, transparent, and efficient ecological environment for college application.

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