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Breakthrough and Path Optimization of the Dilemma of Public Housing Management in Universities from the Perspective of AI Empowerment

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Abstract: As a core strategic resource supporting the high-quality development of higher education, the management level of university public housing directly impacts the enhancement of educational governance efficiency. The traditional public housing management model currently faces multiple challenges including the lack of collaborative mechanisms, imbalanced resource allocation, and ambiguous distribution mechanisms, making it difficult to meet the requirements of modern educational governance. The iterative upgrades of artificial intelligence (AI) technology have provided new possibilities for transforming public housing management models. Based on literature review and logical analysis, this paper examines the current status and core challenges of university public housing management. It explores three pathways to optimize AI-powered public housing management: establishing a multi-source data integration and cross-departmental collaboration system, implementing a three-dimensional dynamic allocation model with AI-driven optimization, and developing institutional innovations with transparent allocation supervision systems. The aim is to promote the transformation of public housing management towards data-driven, dynamically regulated, and collaboratively efficient practices, providing theoretical references and practical guidance for enhancing the modernization of university governance.

Keywords: University Public Housing Management; Modernization of Governance Capacity; Dynamic Allocation; AI Empowerment.

1. Introduction

"China Education Modernization 2035" clearly states the core goal of "promoting the modernization of education governance capabilities," emphasizing the use of modern information technology to enhance the efficiency of education management. As a foundational material resource ensuring the orderly conduct of teaching, research, and administrative work, university public housing serves as the core spatial support for achieving connotative development, cultivating high-quality talents, and building disciplinary peaks. Its management efficiency directly impacts the quality of university education and core competitiveness. With higher education entering a stage of high-quality development, the trend of interdisciplinary integration has intensified, and the needs of teachers and students have become more diversified and dynamic. The limitations of the traditional extensive public housing management model have become increasingly apparent.

Artificial intelligence technology, with its robust data processing, intelligent analysis, and predictive capabilities, has demonstrated significant advantages in public management and resource allocation, providing core technological support for the refined and intelligent transformation of university public housing management. From this perspective, this paper examines the current status and challenges of university public housing management through the lens of AI empowerment, explores the construction of comprehensive and multi-level optimization pathways, and promotes the transition of university public housing management toward data-driven, dynamic, and collaborative approaches. This effort aims to provide foundational support for the modernization of university education governance.

2. Analysis of the Current Situation and Difficulties in the Management of Public Housing in Universities

From a management structure perspective, current public housing management in universities predominantly adopts a multi-departmental division model, involving functional departments such as asset management, academic affairs, research administration, and logistics support, exhibiting decentralized management responsibilities. Although most universities have established asset management departments, these primarily focus on asset registration and accounting without forming substantive authority for unified centralized management of public housing resources across the entire campus. Academic affairs and logistics departments still retain partial public housing management functions, resulting in ambiguous authority demarcation and a "multi-headed management" pattern [1]. From a management process perspective, public housing resource allocation predominantly follows the "historical legacy system" as its core logic, allocating resources based on past occupancy areas of various units, lacking dynamic adjustment mechanisms aligned with disciplinary development and faculty/student needs [2]. Management processes mainly rely on offline approvals and manual record-keeping, with prolonged cycles from demand applications to resource allocation and insufficient procedural standardization [3].

In terms of digital infrastructure development, while some universities have established basic public housing management systems, these platforms generally lack advanced features such as data integration, intelligent analysis,

and real-time alerts. Their core functionalities remain limited to basic registration and query services. Data collection predominantly relies on manual entry, resulting in issues like delayed updates, inconsistent standards, and insufficient accuracy, which hinder real-time monitoring and precise evaluation of public housing resource utilization. Notably, recent years have seen universities initiating digital audits and smart governance initiatives for public housing management. By digitizing comprehensive housing records, they are laying the groundwork for intelligent management systems. However, these efforts are still in the exploratory phase, with no mature models yet emerging for widespread adoption [4].

On the whole, the management of public housing in colleges and universities is still in the transition stage from "extensive" to "initial informatization", facing many difficulties such as lack of coordination mechanism, unbalanced resource allocation, and ambiguous distribution mechanism, and the management efficiency and resource utilization efficiency need to be further improved.

3. Path Optimization Strategies for AI Empowered Public Housing Management in Universities

3.1. Addressing the Lack of Synergy Mechanisms: Multi-source Data Integration and Cross-departmental Collaborative Optimization

With the core objective of breaking down data silos, we aim to establish a unified data warehouse for public housing management in higher education institutions [5]. The initiative defines a comprehensive data collection scope, encompassing multi-dimensional information such as basic housing details, usage patterns, demand metrics, management records, and external policy standards. A standardized data framework is developed to regulate formats, encoding, and classification, ensuring cross-source data compatibility. Concurrently, data governance is reinforced through AI-powered cleaning algorithms to correct missing or erroneous data, while assigning clear responsibilities and deadlines for departmental data updates. This enables real-time data maintenance and provides high-quality data support for AI-enhanced public housing management.

This integrated public housing dynamic allocation platform, powered by data warehouse and AI algorithms, combines core functions including data collection, intelligent analysis, and demand forecasting. It supports offline data entry and online integration, generating reports on allocation status and idle resources while ensuring mobile application compatibility across scenarios. The platform optimizes cross-departmental collaboration by clarifying asset management responsibilities, consolidating administrative functions to prevent buck-passing, and establishing data-sharing modules with AI-driven scheduling algorithms to break down departmental barriers and achieve efficient coordination.

3.2. Addressing Resource Allocation Imbalances: Dynamic Allocation Model and AI-Driven Optimization

With AI empowerment as the core, we establish a three-dimensional dynamic allocation model integrating "demand forecasting, resource matching, and dynamic adjustment" to achieve precise allocation and efficient utilization of public housing resources [6]. The demand forecasting dimension uses discipline planning, changes in faculty and student numbers, and adjustments in teaching and research tasks as key inputs, employing AI algorithms to predict the types and quantities of public housing needs across different periods and departments. The resource matching dimension leverages these forecasts, considering the existing stock, functional attributes, and current usage status of public housing to optimize supply-demand alignment. The dynamic adjustment dimension establishes a real-time feedback mechanism to promptly refine allocation plans, overcoming the limitations of traditional static distribution methods.

To ensure efficient model operation, it is essential to develop and optimize AI prediction algorithms tailored for university scenarios. In the short term, historical data and semester cycles can be used to forecast monthly and quarterly demands, with appropriate AI algorithms deployed for routine allocation. For long-term needs, deep learning mechanisms should be integrated with academic planning, enrollment policies, and talent recruitment strategies to predict demand trends over three to five years [7]. Additionally, an algorithm optimization mechanism should be established to continuously update models with new data, incorporating ensemble learning algorithms to reduce errors and enhance prediction reliability, thereby enabling precise and dynamic public housing allocation.

3.3. Breaking the Fuzziness of the Distribution Mechanism: Institutional Innovation and the Construction of a Transparent Distribution System

With institutional innovation as the foundation, a paid-use mechanism for public housing equipped with AI capabilities has been established [8]. AI algorithms are employed to calculate usage costs and resource value, enabling the formulation of differentiated fee structures. This economic lever guides rational housing utilization, with practices from some universities providing references for institutional implementation. The collected fees are exclusively allocated to public housing maintenance and upgrades, creating a virtuous cycle of "use-pay-upgrade". Concurrently, a multi-dimensional performance evaluation system is constructed, leveraging AI to establish relevant indicator frameworks. The system automatically generates assessment results, which are then linked to departmental evaluations and resource allocation, thereby strengthening incentives and constraints [9].

With fairness as the core principle, we establish an open and transparent public housing allocation system. By leveraging AI-powered platforms, we disclose housing inventory, allocation criteria, application procedures, and results to safeguard faculty and students' rights to information and oversight. Standardized allocation rules are formulated through AI algorithms to eliminate human interference. An online application and review process is implemented, utilizing intelligent verification algorithms to authenticate and validate application materials. Integrated with full-process traceability, smart supervision, and AI-powered inspection technologies, this system ensures comprehensive oversight, enforcing strict regulations to maintain standardized, orderly, and equitable public housing management.

4. Conclusion and Outlook

China's public housing management in higher education institutions is at a critical juncture transitioning from extensive management to preliminary informatization. Core challenges including insufficient collaborative governance, inefficient resource allocation, and ambiguous distribution rules have become major constraints on advancing modern educational governance. AI technology, with its robust data processing, intelligent analysis, and predictive capabilities, provides effective support for resolving these issues. By implementing three key approaches—multi-source data integration and cross-departmental collaboration systems, three-dimensional dynamic allocation models with AI-driven optimization, and institutional innovation alongside transparent allocation supervision systems—this technology can drive a fundamental transformation in public housing management. Such transformation will shift from experience-driven to data-driven approaches, from static management to dynamic regulation, and from fragmented governance to collaborative efficiency, ultimately enhancing management effectiveness and resource utilization efficiency.

To advance AI integration in university public housing management, we must deepen collaboration by leveraging existing digital inventory systems and smart governance practices. This requires developing scalable implementation strategies to expand AI applications in smart maintenance and energy-efficient operations. Universities should conduct customized research based on their unique educational characteristics to create tailored AI solutions. Equally crucial is establishing robust data security protocols and privacy protections, while continuously refining algorithm models and management platforms. These efforts will ensure a steady transition to AI-powered public housing management, providing a solid foundation for modernizing university governance.

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References

[1] Chen Yu. Research on the Reform of Public Housing Management in Universities from the Perspective of Cross-departmental Collaborative Governance[J]. Higher Education Management, 2020,14(2):105-113.

[2] Li Jun. The Dilemma and Solutions of Public Housing Management in Universities [J]. China Higher Education, 2021 (12): 56-58.

[3] Zhang Ming. Current Status and Trends of Artificial Intelligence Technology in University Management [J]. China Electro-Education, 2022(8):98-104.

[4] Wei Liping. Strengthening State-owned Asset Management and Enhancing Asset Utilization Efficiency [EB/OL]. https://www.gxust.edu.cn/info/1271/32214.htm, 2024-11-15.

[5] Li L. Application of data warehouse technology in university resource management [J]. Computer Engineering and Applications, 2021,57(16):234-241.

[6] Wang Jian. Application research of artificial intelligence in public resource allocation [J]. China Administrative Management, 2022(5):112-118.

[7] Liu M. Modernization Path of University Asset Management from a Data-Driven Perspective [J]. Journal of Education Accounting, 2021,32(4):78-84.

[8] Zhao G. Practice and Exploration of the Paid Use System for Public Housing in Higher Education Institutions [J]. Educational Exploration, 2020(7):102-106.

[9] Huang Y. Research on Fairness Guarantee of Public Housing Management in Universities from the Perspective of Intelligent Supervision [J]. Heilongjiang Higher Education Research, 2022(3):45-51.