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Refined Operation Strategies for Library Management in Vocational Undergraduate Institutions

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Abstract: In order to adapt to the characteristics of industry-education integration in vocational undergraduate institutions and the needs of educational digital transformation, and to solve the pain points of extensive library management, this paper focuses on the refined operation of library management in vocational undergraduate institutions. The article defines the core connotation and differentiated characteristics of refined operation, supported by theories such as lean management and user profiling. It constructs a refined operation implementation system from three dimensions: resource allocation, service supply, and management process. Simultaneously, it builds a "organization-talent-technology-system" integrated guarantee mechanism and a multi-dimensional evaluation system, analyzes practical difficulties, and proposes breakthrough paths. This research aims to provide a theoretical reference for vocational undergraduate institutions to optimize the library management system, strengthen educational support capabilities, and help cultivate high-level technical and skilled personnel.

1. Introduction

Under the guidance of China's high-quality development strategy for vocational education, vocational undergraduate institutions, as the core vehicles for cultivating high-level technical and skilled talents, are accelerating the integration of industry and education, the construction of professional clusters, and the integrated reform of "work, curriculum, competition, and certification" [1]. Their practice-oriented and industry-adapted characteristics of talent cultivation place higher demands on supporting service systems. As an important support for education, teaching, and practical training in vocational undergraduate institutions, library management not only undertakes the function of resource supply but also needs to empower the improvement of talent cultivation quality through efficient services. Currently, the in-depth advancement of digital transformation in education and the widespread penetration of lean management concepts provide an important opportunity for vocational undergraduate institutions' library management to break through the bottlenecks of traditional models, and also promote the transformation of library management from "extensive operation" to "refined operation" as an inevitable trend. However, the current library management of most vocational undergraduate institutions still has many problems

of insufficient adaptation: resource allocation lacks precise demand orientation and is disconnected from the needs of professional clusters and practical training; the service model is mainly based on passive response, making it difficult to embed into teaching and practical training scenarios to provide customized services; the degree of standardization of management processes is low, and the ability of data-driven management and control is weak, resulting in low resource utilization efficiency and insufficient service effectiveness, which are difficult to meet the diversified needs of teachers and students and the reform and development demands of vocational undergraduate education [2]. In this context, exploring the connotation logic, implementation path, and guarantee mechanism of refined operation of library management in vocational undergraduate institutions is not only an internal requirement to solve the current management pain points and improve the quality and efficiency of library management services, but also an important measure to adapt to the characteristics of vocational undergraduate talent cultivation and help deepen the integration of industry and education. Based on the school-running orientation of vocational undergraduate institutions, this article systematically discusses the core points and practical strategies of refined operation of library management, providing theoretical reference and practical experience for vocational undergraduate institutions to optimize the library management system and strengthen education support capabilities.

2. Refined Operation of Library Management in Vocational Undergraduate Colleges: Connotation Definition and Logical Support

2.1 Definition of Core Concepts

Vocational undergraduate colleges, as a high-level form of higher vocational education in China, are primarily positioned to meet industrial needs. Taking industry-education integration as the core path, they aim to cultivate high-level technical and skilled personnel with a solid theoretical foundation, excellent technical skills, and professional qualities. This distinguishes them from the academic talent cultivation orientation of regular undergraduate colleges and the basic skills training positioning of junior colleges. The core demand is reflected in the precise matching of talent cultivation and industrial positions, and the deep integration of the teaching process and production practice. Refined library management is not simply a matter of process refinement. Its core essence is to rely on systematic thinking and lean concepts, take user needs as the guidance, and use standardized, normalized, and data-driven management methods to precisely control and optimize the entire library management chain. This achieves efficient coordination of resource allocation, service supply, and process control. Its core characteristics include demand orientation, process standardization, management dataization, service precision, and dynamic adaptability. The constituent elements include a precise demand identification mechanism, standardized management processes, data-driven support tools, a professional service team, and a dynamic optimization system [3].

2.2 Theoretical Support System for Refined Operation

Lean management theory provides the core logical basis for library management process optimization. This theory originated in the field of business management. Its core is to eliminate redundant links and waste in the process, and to achieve a dual improvement in management efficiency and quality. Its application logic in library management is reflected in the value of the entire process of procurement, cataloging, circulation, and collection. It eliminates ineffective links such as complicated processes, vague responsibilities, and idle resources in traditional management, and establishes a "streamlined, efficient, and clear" standardized process. At the same time, relying

on the concept of continuous improvement, it realizes the dynamic optimization of the library management process, providing theoretical support at the process level for refined operation. User profiling theory is the core support for achieving precise service. Its core principle is to collect and analyze multi-dimensional information such as user identity characteristics, behavioral data, and demand preferences to build a panoramic user profile and accurately locate the differentiated needs of different user groups. The allocation of library resources in vocational undergraduate colleges needs to be based on this theory, breaking through the traditional "average" and "discipline-oriented" allocation model. It combines core factors such as the focus of professional group construction, the intensity of practical teaching needs, and resource utilization efficiency to optimize the allocation ratio of resources between paper and digital, academic and practical training, and basic and characteristic resources, to build a resource allocation system suitable for vocational undergraduate talent training [4].

2.3 Realistic Logic for Promoting Refined Operation of Library Management in Vocational Undergraduate Colleges

The industry-education integration talent training model puts forward precise requirements for library management, which is the core external driver for promoting refined operation. At present, vocational undergraduate colleges generally focus on the construction of professional groups, and build a "position, course, competition, certificate" integrated curriculum system around the core technical fields of the industry. The proportion of practical teaching has increased significantly, which requires library management to break through the traditional extensive model of "emphasizing academics and neglecting practice," accurately connect with the industrial needs, practical training projects, and post standards of different professional groups, and provide targeted resources and services. The contradiction between the upgrading of diversified needs of teachers and students and the insufficient supply of library services promotes the implementation of refined operation. With the improvement of the digital literacy and demand levels of teachers and students in vocational undergraduate colleges, single and standardized library services can no longer meet the needs: teachers need composite resources and customized services suitable for curriculum design, practical training guidance, and technology research and development; students need fragmented and scenario-based skill improvement resources and convenient services; and school-enterprise partners need special resource support for post training and technology docking. Refined operation can effectively alleviate this supply-demand contradiction by accurately identifying needs and optimizing service supply [5]. The internal demand for quality improvement and efficiency enhancement of library management in the context of educational digital transformation provides an opportunity and support for refined operation. At present, the educational digital strategy is being implemented in depth, and the application of digital technology in university management is becoming increasingly widespread, providing technical tools for data collection, analysis, and control for refined library management.

3. Core Implementation Dimensions of Refined Library Management in Vocational Undergraduate Institutions

3.1 Refined Resource Allocation

Refined resource allocation is the core foundation of refined library management in vocational undergraduate institutions. Its core logic is to break the traditional "averaged" and "experience-based" allocation model and build a full-cycle dynamic mechanism of "research-configuration-adjustment-optimization," with the adaptation of teacher and student needs

to teaching and practical training as the core. The precise construction of a resource demand research mechanism requires close adherence to the construction of vocational undergraduate professional clusters and the core of practical teaching, establishing a "multi-subject, multi-channel, normalized" research system. On one hand, the library should establish connections with the secondary colleges, the academic affairs office, and the practical training center within the school. Through regular seminars, course alignment meetings, etc., it should accurately identify the course offerings, practical training programs, job standards, and skill competition requirements of each professional group, in order to clearly define the key direction for resource allocation. On the other hand, the library uses digital management platforms to collect data such as the borrowing behaviors of teachers and students, resource usage, and demand feedback. It also captures the implicit needs of teachers and students through questionnaires and online messages. At the same time, the library establishes connections with enterprise partners, synchronizing industry technological updates and post-training resource demands, to form a "teaching - practical training - industry" three-in-one demand database. The optimization of existing resources needs to be based on utilization efficiency, carrying out systematic screening, integration, and revitalization to solve the contradiction between resource idle and insufficient supply [6]. The supply of incremental resources needs to focus on the three core dimensions of practical training, skills, and industry, and build a differentiated resource system. Paper resources should focus on supplementing practical literature such as practical training textbooks, industry standard compilations, skill operation manuals, and industry case collections. Digital resources should focus on purchasing virtual simulation practical training resources, vocational qualification certification courses, industry cutting-edge technology databases, etc.

3.2 Refined Service Supply

The core of refined service supply is to break through the limitations of the traditional "passive response" service and build a three-dimensional service system of hierarchical classification, scenario embedding, process optimization, and feedback closed-loop based on the entire "teaching-practical training-employment" scenario of vocational undergraduates. Hierarchical and classified services need to accurately adapt to the needs of different subjects to achieve precise drip irrigation of service supply. For teachers, the library could provide customized services such as curriculum resource customization, practical training literature push, scientific research project literature support, and teaching case compilation to assist teachers in integrating resource packages suitable for curriculum and practical training. For student, the library could provide differentiated services according to grade and learning stage. Lower grades focus on basic resource navigation and information literacy training, while higher grades focus on practical training resource docking, vocational qualification certification guidance, and employment post resource recommendation. For school-enterprise cooperation enterprises, the library could provide special services such as post-training resource sharing, technical literature retrieval, and employee skill improvement guidance to help promote the deep integration of industry and education. The extension of scenario-based services needs to embed services into core scenarios such as curriculum teaching and practical training to achieve seamless docking of services and needs. Service process optimization needs to take standardization and convenience as the goal, simplify redundant links, and improve service timeliness. Building a feedback closed-loop is the key to continuous service optimization, building a closed-loop system of "demand collection-service implementation-evaluation feedback-optimization iteration." The library could collect teachers' and students' evaluation opinions on service quality, content, and timeliness through online questionnaires, service evaluation systems, seminars, and other channels, establish feedback ledgers, and clarify rectification responsibilities and time limits. And the feedback opinions should be

regularly summarized and analyzed to sort out service shortcomings, and improve service capabilities in a targeted manner to achieve continuous iterative upgrades of service quality.

3.3 Refinement of Management Processes

The refinement of management processes requires the support of digital technology to standardize, regulate, and digitize the entire library management chain, achieving operational goals of clear responsibilities, improved efficiency, and optimized costs. The standardization and regulation of the entire process of procurement, cataloging, and circulation are the core focus of refined management. In the procurement stage, the library should develop procurement standards and processes based on demand orientation, clarify the operational specifications and evaluation indicators for each stage, such as procurement project establishment, demand justification, supplier selection, bidding procurement, acceptance and warehousing, and eliminate blind procurement and process loopholes. In the cataloging stage, the library should adopt unified metadata standards and cataloging specifications, combine with the characteristics of vocational undergraduate resources, optimize cataloging field settings, focus on marking information such as professional groups and practical training projects adapted to resources, improve the accuracy of resource retrieval, and establish a cataloging quality audit mechanism to ensure the accuracy and completeness of cataloging data. In the circulation stage, the library should develop standardized systems such as borrowing rules, overdue processing, and compensation for resource damage, regulate operational processes such as borrowing, returning, renewing, and reserving, and rely on intelligent equipment to realize the automatic collection and recording of circulation data, and improve the standardization level of circulation management. Digital tools need to focus on the real-time collection, analysis, and application of management data to achieve data-driven management. The refinement of post responsibilities needs to build a clear assessment and collaboration mechanism to improve management execution. The refinement of cost control needs to achieve efficient allocation of funds and human resources and reduce operating costs.

4. Ensuring Mechanisms and Optimization Paths for Refined Operation of Library Management in Vocational Undergraduate Colleges

4.1 Construction of a Multi-Dimensional Guarantee System for Refined Operation

The effective implementation of refined operation of library management in vocational undergraduate colleges requires a guarantee system integrating organization, talent, technology, and systems to form a mutually supportive and collaborative guarantee pattern, providing comprehensive support for refined operation. The core of organizational guarantee is to establish a cross-departmental collaborative working mechanism for refined operation, breaking the limitations of the library as a single operating entity. A leading group for refined operation should be established, led by the school leader in charge, with the library as the core, and the participation of the academic affairs office, training center, information center, secondary colleges, and representatives of key cooperative enterprises. The boundaries of rights and responsibilities of each entity should be clarified: the library is responsible for overall planning, process design, and specific implementation; the academic affairs office and secondary colleges are responsible for demand docking and coordination of teaching and training resources; the training center provides support for training scenarios and feedback on needs; the information center ensures the construction and operation and maintenance of the technical architecture; and enterprise representatives participate in the construction of characteristic resources and the formulation of service standards. At the same time, the library should establish a normalized collaborative

mechanism of monthly communication, quarterly review, and annual assessment to coordinate and solve cross-departmental collaboration problems in a timely manner, forming a joint force for operation promotion of "vertical linkage and horizontal collaboration". Talent guarantee focuses on the ability cultivation and echelon construction of compound management teams to overcome the talent shortage in refined operation. The technological guarantee focuses on strengthening the iteration and safe operation and maintenance of the digital management platform, building a solid foundation for technical support. It is necessary to rely on the existing library management system to iterate functions, add refined operation modules such as demand research and analysis, resource utilization statistics, service quality evaluation, and post performance control to achieve full-process data management and control. The system guarantee takes standardization, assessment, and incentive systems as the core to standardize the refined operation process.

4.2 Evaluation System and Iterative Optimization of Refined Operations

Constructing a scientific evaluation system is crucial for examining the effectiveness of refined operations and promoting continuous optimization. It is necessary to adhere to the principles of specificity, comprehensiveness, and operability, and establish a closed-loop evaluation mechanism of "indicator construction - method application - result implementation." The construction of evaluation indicators focuses on the characteristics of vocational bachelor's degrees, and builds a multi-dimensional indicator system from four core dimensions: resources, services, management, and benefits. The resource dimension focuses on evaluating resource suitability and utilization efficiency, including indicators such as the proportion of specialized practical training resources, the matching rate of resources and professional clusters, the activation rate of existing resources, the timeliness of resource updates, and the degree of cross-entity resource sharing. The service dimension focuses on service accuracy and quality, covering indicators such as the coverage rate of layered and classified services, satisfaction with scenario-based services, the completion time of service processes, the resolution rate of consultation questions, and the response speed to the needs of teachers and students. The management dimension focuses on process optimization and effectiveness, including indicators such as the compliance rate of full-process standardization, the coverage rate of digital tool applications, the implementation of post responsibilities, the efficiency of fund use, and the smoothness of cross-departmental collaboration. The benefit dimension takes into account both short-term results and long-term value, including indicators such as the increase in resource utilization efficiency, teacher and student satisfaction scores, the supporting role for teaching practice, and the enabling effect of industry-education integration. The evaluation method adopts a comprehensive evaluation approach combining quantitative and qualitative methods to ensure that the evaluation results are objective and comprehensive. Quantitative evaluation relies on the digital management platform to collect data on indicators in each dimension, and uses statistical analysis methods to quantify scores, which directly reflects the operational effectiveness; qualitative evaluation collects subjective evaluations of resource allocation, service supply, and management processes by conducting symposiums, in-depth interviews, and online questionnaires with teachers, students, and enterprises. Experts from the same industry and representatives from the industry are invited to evaluate the professionalism and suitability of refined operations to make up for the limitations of quantitative evaluation. The core of the evaluation result application is to establish a feedback-based operational strategy iteration mechanism to form a closed-loop management of "evaluation-feedback-optimization-improvement".

4.3 Practical Dilemmas and Breakthrough Paths

The refined operation of library management in vocational undergraduate institutions faces

multiple dilemmas in practice. Precise strategies and multi-dimensional efforts are required, while grasping future trends to achieve upgrades and breakthroughs. The current core dilemmas are mainly reflected in three aspects: insufficient technology adaptation, where the existing management systems of some institutions are functionally outdated, making it difficult to support the data collection, analysis, and control needs of refined operation. Furthermore, the adaptation between technology and teaching practice scenarios is insufficient, resulting in a "disconnect between technology and demand." The talent gap is also prominent, as existing librarians often lack lean management concepts and digital skills, and there is an insufficient reserve of interdisciplinary talents, making it difficult to meet the professional requirements of refined operation. Finally, uncoordinated collaboration exists, with unsound school-library and school-enterprise collaboration mechanisms, inaccurate demand docking, and resource-sharing barriers that have not been completely broken down, resulting in limited operational effectiveness due to the efforts of a single entity. Breakthrough paths need to focus on three dimensions: technology empowerment, talent quality improvement, and synergistic efficiency enhancement. In terms of technology empowerment, an "iterative upgrade + scenario adaptation" strategy should be adopted to optimize the modular functions of existing systems, prioritize the development of refined modules adapted to teaching practice scenarios, and introduce lightweight third-party tools to supplement functions for institutions that do not yet have the conditions for comprehensive upgrades. It is also necessary to strengthen in-depth cooperation with technology service providers to customize refined operation solutions that are adapted to the characteristics of vocational undergraduates, so as to achieve accurate matching of technology and needs. In terms of talent quality improvement, a "training + introduction + practice" integrated training model should be constructed to expand the coverage and depth of training, and to make targeted efforts to make up for skill shortages. It is also important to accurately introduce scarce interdisciplinary talents to optimize the talent structure, build a practical exchange platform, and organize librarians to study in outstanding institutions and conduct in-depth research in enterprises to improve practical abilities. In terms of synergistic efficiency enhancement, sound school-library and school-enterprise collaboration mechanisms should be established, collaboration agreements should be signed to clarify the responsibilities and rights of resource sharing, demand docking, and service supply. A unified demand survey and feedback platform should be established to open up information transmission channels, and schools and enterprises should be encouraged to jointly build and share characteristic resource libraries to achieve coordinated supply of resources and services, and to break the barriers of collaboration. The future trend presents a development direction of deep integration of intelligence and refinement. It is necessary to rely on technologies such as artificial intelligence, big data, and the Internet of Things to realize the intelligent upgrade of refined operation.

5. Conclusion

The refined operation of library management in vocational undergraduate colleges is an inevitable choice to adapt to the high-quality development of vocational education and the deepening promotion of industry-education integration. Its core is to rely on lean concepts and digital technology to achieve the precise upgrading of resources, services, and management. This study confirms that the refinement of resource allocation, service supply, and management processes are the core of operations, which needs to be supported by a multi-dimensional guarantee system and driven by a scientific evaluation system to form a closed-loop mechanism of "implementation-guarantee-evaluation-optimization." At present, the refined operation faces difficulties such as insufficient technology adaptation, talent shortages, and uncoordinated collaboration, which need to be solved through technology empowerment, talent quality

improvement, and collaborative efficiency enhancement. In the future, promoting the deep integration of refinement and intelligence and building a cross-regional collaborative operation pattern are the development directions of library management in vocational undergraduate colleges. The operation framework and strategies constructed in this paper provide a feasible solution for improving the effectiveness of library management and empowering the cultivation of vocational undergraduate talents.

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