

Precision Service Methods for Academic Libraries in Transition and Their Application Practice: A Case Study of Qiongtai Normal University (Postprint)

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Abstract

[Purpose/Significance] This study investigates precise service methods for libraries during the transformation period from higher vocational colleges to undergraduate institutions, aiming to provide a referable methodology for libraries in transformation-oriented universities undergoing the “junior college to undergraduate” transition to implement rapid transformation through the application and practice of research findings. [Method/Process] By analyzing the demands of transformation on library teaching and research services as well as precise services, this study proposes precise service methods for transformation-oriented universities during the transitional period, and summarizes coping strategies for university library services during the transformation period through the application practice of the “You Push I Send” service platform constructed by Qiongtai Normal University Library. [Results/Conclusion] The precise service model launched by the “You Push I Send” service platform demonstrates the timeliness and effectiveness of providing precise services to different target audiences during the transformation period, embodying the core concept of “taking the school’s own development stage as the foothold, taking library teaching and research service demands as the starting point, and pursuing the school’s rapid development to a higher level.”

Full Text

Precision Service Methods and Application Practice for University Libraries in Transition Periods: A Case Study of Qiongtai Normal University

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Abstract

[Purpose/Significance] This study investigates precision service methods for libraries during the transition from higher vocational colleges to undergraduate institutions. Through application and practice of the research findings, it provides a reference model for rapid library service transformation in similar transitional universities. **[Method/Process]** By analyzing the demands for teaching/research services and precision services during institutional transformation, this paper proposes precision service methods for universities in transition periods. Through the practical application of the “You Push I Send” service platform at Qiongtai Normal University Library, coping strategies for library services during transitional periods are summarized. **[Result/Conclusion]** The precision service model of the “You Push I Send” platform demonstrates that, during transition periods, services should be “grounded in the university’s developmental stage, oriented toward library teaching/research service demands, and centered on the core concept of pursuing rapid advancement to higher levels.” This approach enables timely and effective precision services for different target groups.

Keywords: university transformation; precision service; application practice

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Transformation represents a crucial pathway for elevating higher education standards and an inevitable major decision faced by universities reaching certain developmental stages. The expansion of teaching scale, improvement of hardware facilities, and shifts in training objectives all provide favorable opportunities for institutional transformation. According to the Ministry of Education’s “Opinions on University Establishment Work During the 12th Five-Year Plan Period,” undergraduate schools in central and eastern China were approved in 2015, along with several independent colleges being converted to independent private undergraduate institutions. Among these, Qiongtai Teachers College successfully transformed and was officially renamed Qiongtai Normal University [1]. As a critical component of university transformation, libraries are experiencing a transition from teaching service-oriented to teaching/research service-oriented models. How to effectively manage this service transformation [5] has become a significant challenge for Qiongtai Normal University Library. Due to limitations in scale, user demographics, and teaching standards inherent in vocational college systems, the traditional library service model focused primarily on book circulation is no longer appropriate, necessitating active exploration of new service models suitable for post-transformation development.

With the advent of the big data era, numerous problems caused by massive data

(such as information bubbles and spam) urgently require solutions through precision service approaches. Consequently, personalized and precision service concepts have gained prominence, with precision service becoming both the goal of library work and a key research direction. Regarding the connotation of library precision services, Tang Bin noted that precision service involves three aspects: accurately grasping reader needs, meticulous resource allocation, and dedicated service [3]. Yang Huanchang argued that precision service builds upon universal services to address personalized user needs, establishing problem-oriented services [2]. Regarding service targets, Ding Hairong pointed out that precision service recipients range from groups to individuals [4], requiring hierarchical services. However, the prerequisite is accurately positioning the needs of each user level. Concerning implementation methods, Li Jian proposed utilizing big data, cloud computing, and mobile internet technologies to precisely identify user needs, rationally allocate disciplinary resources, and provide cross-platform integrated disciplinary intelligence services [5]. Liu Qinglin suggested collecting and analyzing small-scale reader data to establish real-time interest models [6]. Zhao Hongbo applied the RFM model from marketing to university libraries, collecting and analyzing reader data for precision services based on three indicators [7]. Regarding precision services in specific contexts, Bai Ping analyzed the characteristics and main content of library precision services in mobile new media environments and explored key issues in information push services [8].

Current research on library precision services features more theoretical studies than practical applications, more methodological explorations than environmental applicability studies. For the newly transformed Qiongtai Normal University, library service levels, target audiences, and research capabilities lag far behind those of established undergraduate institutions. Therefore, existing precision service methods cannot be directly adopted; instead, the library must explore suitable precision services based on its own developmental stage.

2. Analysis of Library Teaching/Research Service Status and Precision Needs

The vision of teaching/research teams determines the future development space of a university. Institutional transformation and curriculum changes impose higher-level requirements on both faculty and students, creating urgent needs for deeper library services. During this critical transition period, libraries shoulder the important mission of guiding researchers to enhance their innovation capacity [9]. To fulfill their bridging responsibilities and provide efficient, precise services during this transformation, libraries must thoroughly understand both their own service status and user needs.

2.1 Service Status Analysis

Comparative studies between vocational colleges and undergraduate institutions reveal several common problems in vocational college management systems:

- (1) **Resources Exist but Data Does Not** [10]. During the “vocational-to-undergraduate” transition, commercial databases, print resources, and other materials have reached undergraduate-level quantities. However, services remain database-centered and closed: databases operate independently with insufficient data-based services. Most libraries lack their own disciplinary service platforms (as at Qiongtai Normal University), and vast print collections remain undigitized, creating objective barriers to use and reducing user engagement with the library.
- (2) **Readers Exist but Are Not Understood** [10]. Due to limited funding, staffing, and research capacity in vocational colleges, libraries lack self-developed application service platforms (primarily relying on database vendors) and research output management systems. Consequently, although service is theoretically user-centered, libraries lack channels to understand users, making in-depth analysis of research directions and service needs impossible.
- (3) **Insufficient Deep Disciplinary Service Capacity**. Compared to undergraduate institutions, vocational colleges started later in deep disciplinary services. Services like discipline-specific librarian support, scientific novelty searches, and citation verification are rarely provided [11], or if available, only in limited scope (e.g., few disciplines or databases).

2.2 Precision Needs Analysis

2.2.1 Precision Classification of Service Targets Precision services require precise classification of service objects. Based on whether users share homogeneous needs, this study divides them into groups and individuals (see [Figure 1: see original paper]). Group users comprise individual users sharing common attributes and information needs, such as departmental user groups or research field-based communities. Individuals refer to single users.

2.2.2 Precision Positioning of Different Service Object Needs User needs divide into explicit and implicit categories. Explicit needs are directly articulated by users, while implicit needs require mining through problem manifestations or behavioral analysis. For transitional universities like Qiongtai Normal University that lack service platforms and underlying user data, the library established a disciplinary service team to investigate key issues: low publication levels, declining user engagement, and current disciplinary service needs. Through multiple discussions and exchanges with departments and research frontlines, user needs and problems were collected.

- (1) **Explicit Needs**. Survey results of explicit user needs are summarized in :
 - **Group Needs for Electronic Centralized Management of Research Achievements**: Departmental achievement management is scattered and difficult to share; some achievements remain stored in paper or CD format, inconvenient for utilization.

- **Group Research Homepage Needs:** Departments submitting annual achievement statistics face time-consuming deduplication (especially when querying multiple databases) and data standardization issues; historical data is updated only annually without dynamic mechanisms; occasional need to understand other teams' achievements.
- **Individual Research Homepage Needs:** No unified personal achievement management platform exists, requiring time-consuming ad-hoc searches; existing personal pages have fixed content requiring manual updates with significant delays; occasional need to understand other experts' achievements.
- **Personalized Recommendation Needs:** Researchers hope the application platform can recommend content related to their research.

(2) **Implicit Needs.** Beyond user behavior analysis, problems themselves represent the most direct implicit needs. Focusing on implicit requires analyzing problem causes. This study approaches implicit needs by examining problems, analyzing causes, and summarizing needs (see):

- **Low Publication Quality:** Predominantly Chinese general journals with few core or foreign-language publications. Causes include insufficient research capacity, lack of understanding of journal ranking systems leading to blind submission choices, lack of foreign-language databases (primarily Chinese sources), and absence of institutional publication requirements. Implicit needs: journal guidance, foreign-language resource services, and application platform construction.
- **Declining Library Engagement:** Beyond commercial databases, no application platforms integrate research work with resource retrieval; users prefer convenient search engines like Baidu over professional databases due to cross-database operation barriers and better cross-platform knowledge association. Implicit needs: unified retrieval, cross-boundary integration, and data interconnection.

2.2.3 Needs Hierarchy Division Needs are hierarchical and interdependent, with lower-level needs supporting higher-level ones. Therefore, precision services must intervene layer by layer according to need hierarchy. For example, application platform construction forms the foundation for other service needs (see [Figure 2: see original paper]). Personal homepage needs, unified retrieval needs, cross-boundary integration/data interconnection needs, research guidance needs, and foreign-language resource service needs all require different service modules and functions on the application platform. Personal homepage achievement information can aggregate upward to form group research homepages, which further aggregate to enable centralized university-level achievement management. Finally, based on personal achievement data and user behavior analysis on the application platform, targeted, precise proactive recommendation services can be provided.

In summary, precision service requires personalized approaches for different ser-

vice targets and hierarchical implementation considering institutional research status, need urgency, and supportive relationships among multiple needs.

3. Library Precision Service Methods

3.1 Group Precision Service Methods

- (1) **Centralized Research Achievement Management:** Establish a university-wide achievement management system to centrally and standardize manage research outputs by category (journals, conferences, monographs, patents, etc.), digitizing and categorizing paper materials to enable barrier-free sharing across the university.
- (2) **Group Research Homepage Needs:** Located above individual homepage needs, this can be addressed by regularly harvesting data from individual homepages based on member affiliations, solving dynamic update issues.
- (3) **Publication Journal Guidance:** Journal selection obstacles constitute fundamental research problems requiring guidance services. Establish dedicated information guidance sections organizing journals by core collections, premium journals, and OA journals, providing professional and convenient query services.
- (4) **Foreign-Language Resource Services:** Given limited foreign-language database users and expensive resources during early transformation stages, libraries can integrate free online OA foreign-language resources [12] and join library consortia or national university alliances [13] for resource sharing and cooperative document delivery services.
- (5) **Application Platform Construction:** Platform construction forms the cornerstone of precision services. Qiongtai Normal University began building the “You Push I Send” application service system in 2014, establishing knowledge service modules to address immediate needs while gradually improving other application platforms according to future development.
- (6) **Unified Retrieval:** Given limited development capacity, Qiongtai Normal University introduced the Hainan Provincial Digital Library retrieval platform, co-developed with Chaoxing Company, which effectively solves database integration issues and enables one-stop searching.
- (7) **Cross-Boundary Integration and Data Interconnection:** Libraries invest substantial resources annually to support disciplinary development and research needs. However, database vendors provide relatively independent, single-type resources, conflicting with researchers’ desires for cross-database information display in centralized spaces. Single-access approaches cannot effectively leverage information advantages. Only by effectively linking various resources into a networked inter-access structure can resource value be deeply mined while providing convenient services.

To address cross-boundary integration needs, the library cooperates with third-party technical service providers, providing data for the application platform based on purchased resources and accumulated achievements. Dynamic links create an interconnected grid structure maximizing resource utilization and meeting user needs.

3.2 Individual Precision Service Methods

- (1) **Personal Research Homepage Needs:** Personal homepages form the foundation for group homepages and centralized university achievement management, requiring one-stop retrieval and dynamic content updates. This is achieved through an expert achievement acquisition module on the self-built platform (see [Figure 3: see original paper]). By setting “author & institution & update frequency,” the data acquisition module generates search conditions for various databases, sends retrieval commands, then normalizes, deduplicates, and merges results from multiple databases into a local achievement repository to support expert personal homepage generation. A timer periodically awakens the data acquisition program for dynamic updates.
- (2) **Personalized Recommendation Needs:** Personalized recommendation is the core of precision services. By segmenting service objects and combining mass with personalized services, libraries can elevate their services to higher levels. During the vocational college stage, libraries primarily provided mass services with insufficient personalized services. To meet undergraduate-level researchers’ personalized needs (e.g., research field tracking), a two-step approach is adopted:
 - **Step 1:** Build the application platform and expert achievement management system, providing content customization and expert tracking services. Collect user search, feedback, and operation data; use expert achievement information for data mining to identify research directions and interests.
 - **Step 2:** Combine expert research field information with behavioral analysis data to provide content-based or collaborative filtering recommendations on the application platform.

4. Library Precision Service Application Practice

Based on user needs research and precision service method exploration, Qiongtai Normal University Library began constructing the “You Push I Send” disciplinary service platform in 2014. Driven by user needs (“push”), it integrates resources and “sends” them to users, deeply integrating institutional, university, and provincial resources to provide precision services for disciplinary development. This represents a beneficial attempt by Qiongtai Normal University Library to meet transformation challenges.

4.1 “You Push I Send” Precision Service

The “You Push I Send” system represents the library’s first step in precision service practice. After multiple revisions, the current system integrates four major modules: Expert Scholars, Course Construction, Publishing Institutions, and Private Customization (see [Figure 4: see original paper]), addressing different user needs.

4.1.1 Expert Scholar Services Expert scholar services primarily address personal research homepage needs, group research homepage needs, and centralized electronic management of research achievements.

For personal homepage needs, the system provides expert achievement acquisition and automatic update functions. By inputting expert name, affiliated institutions, department, time range, and update cycle, the system retrieves expert achievement information, performs deduplication and verification, and forms personal homepage data. A timer periodically updates expert information and automatically pushes it to personal homepages (see [Figure 5: see original paper] and [Figure 6: see original paper]). Personal homepage data also interconnects with purchased resources like Wanfang and VIP through full-text links, enabling convenient centralized viewing and navigation within purchased resources to meet data interconnection needs.

For group homepage needs, the module can create departmental homepages that synchronize data updates with expert personal homepages based on expert-department affiliations, meeting departmental needs for achievement statistics, updates, and standardization. Additionally, the module provides team construction management, allowing creation of arbitrary research teams beyond administrative divisions and establishing literature-member-team associations to aggregate team homepages from member achievements (see [Figure 7: see original paper]).

For centralized electronic management, the module stores all expert achievements on university servers, providing sharing services across departments to overcome communication barriers.

4.1.2 Publishing Institution Query Services The “Publishing Institution Query” module provides journal guidance services for research novices. Established to address faculty difficulties in journal verification, it offers both general queries and advanced searches by premium collections, core collections, and quality journals, with star-rated () recommendations (see [Figure 8: see original paper]). This helps users easily identify important publication sources and avoid blind journal selection.

4.1.3 Course Construction Services Course construction constitutes an important component of research achievement management, focusing on organizing and managing multimedia resources. The university has accumulated

numerous institutional, provincial, and national quality courses (see [Figure 9: see original paper]), currently scattered across departments or stored as CDs in the library, hindering sharing. The module uploads multimedia courses to public file servers, catalogs metadata (course title, department, instructor, etc.), and establishes links between catalog records and video files to provide cross-departmental course sharing services.

4.1.4 Private Customization Services The private customization module (see [Figure 10: see original paper] and [Figure 11: see original paper]) implements the first step of personalized recommendations. Based on user customization, it provides content recommendations using purchased resources and expert achievement data. This satisfies users' needs to track other experts' research outputs and, through integration with the Hainan Provincial Digital Library platform, enables convenient cross-database navigation and topic tracking based on customized content. Accumulated user data from private customization will support the second step of intelligent recommendation implementation.

4.2 “You Push I Send” System Service Effects

Developed through user participation and repeated testing, the “You Push I Send” platform was promoted university-wide in May 2015, receiving unanimous praise from researchers: 479 registered users (covering all faculty), 415 expert profiles created, approximately 4,000 achievement records collected, with 283 customized theme/expert records and 93 participating users (about 20% of registrants).

Regarding achievement repository construction, researchers showed strong interest in personal homepages and actively improved their information. By December 2017, personal homepages were established for all faculty, though initially limited to achievements at the current institution. During promotion, users requested expanding the expert achievement repository to include achievements from previous institutions, providing direction for future work: collecting experts' historical institution information to build comprehensive personal homepages. Departmental feedback indicated the system not only enabled university-wide achievement sharing but also significantly reduced annual statistics compilation time and solved data update delays. For multimedia course management, users hoped to incorporate more free video resources like MOOCs and push them through private customization based on research fields.

Regarding research guidance, through vigorous promotion, the system largely solved blind journal selection problems. Among the one-third of users who initially selected journals blindly, a follow-up survey six months after launch revealed that most now knew how to identify appropriate journals.

Regarding personalized recommendations, the user customization-to-system-push model initially addressed researchers' personalized information needs, though true intelligent recommendation remains a future goal. Currently,

various application systems and achievement repository construction are accumulating data for intelligent recommendation.

The platform received positive evaluation from assessment experts during the “2015 Hainan Provincial University Library Evaluation.” Hainan College of Economics and Trade Library and Hainan Vocational and Technical College Library showed strong interest and organized staff exchanges.

Conclusion

Theoretical guidance and practical improvement represent the value of theory and the significance of practice. Precision services require both theoretical guidance and practical validation. Qiongtai Normal University’s hierarchical, prioritized precision service attempts based on transitional user needs and institutional development stage have yielded valuable insights:

- (1) Precision services originate from precise needs analysis and object positioning. Only with clear understanding of service targets and their needs can services be effectively targeted.
- (2) Service method selection must consider institutional development stage rather than blind imitation.
- (3) Precision services involve not only meeting user needs but also effectively utilizing existing resources. Single-access service models should be transformed into networked inter-access patterns—the broader and denser the network links, the greater the value and convenience for centralized user operations.
- (4) Resource digitization is crucial. True digitization involves not merely scanning paper files but organizing them into searchable content.
- (5) Achievement repository construction and self-built application platforms are keys to all other precision services. Mining achievement repositories reveals researchers’ fields and hotspots, while analyzing user behavior data on application platforms helps understand user activities and interests—essential foundations for precision services.

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Author Contributions

Yang Yanhong: Proposed the paper framework and wrote the manuscript;
Hao Dan: Provided technical support and revised the manuscript;
Wang Yanxi: Provided technical support;
Liu Zhongkai: Conducted needs investigation.

Precision Service Method and Application Practice of University Library in Transformation Period: A Case Study of Qiongtai Normal University

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Abstract: [Purpose/significance] This article aims at the research of the precision service method of libraries in the transitional period from higher vocational schools to undergraduate colleges. Through the application and practice of the research results, a kind of precision service method that can be used for reference is provided for the university library that implements the rapid transformation service in the transition period of the promotion from junior college to undergraduate. [Method/process] By analyzing the demand for library teaching and research services and precision services in the transition period, the precision service method in the transition period is studied and proposed. Based on the construction of the “YOU PUSH I SEND” service platform of Qiongtai Normal University Library, some coping strategies of university library services in the transition period are summarized and verified. [Result/conclusion] The precision service model of the “YOU PUSH I SEND” platform shows that based on the development of the college itself, taking the demand of library teaching and research service as the starting point, and taking the pursuit of the university’s rapid development to a higher level as the core concept, the precision service oriented to different service objects in the transition period is timely and effective.

Keywords: university transformation; precision service; application practice

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

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