

Theoretical Construction of the Internalization of University Library Management Systems: An Exploratory Study Based on Grounded Theory (Postprint)

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Date: 2023-07-26T00:00:00+00:00

Abstract

Purpose/Significance: The internalization of library management systems is fundamental to library resource allocation and management innovation. This paper aims to reconstruct the internalization process of management systems within library organizations and explain the transformation mechanisms across different levels. **Method/Process:** Through grounded theory research on three case libraries, we construct a theoretical model for the internalization of university library management systems. From three dimensions—organizational internalization, process mechanisms, and librarian internalization—we comprehensively examine the drivers and manifestations of university library management system internalization, specifically encompassing 11 main categories, 41 categories, and 164 initial concepts. **Results/Conclusion:** The internalization of university library management systems is a process wherein, after establishing an internalization foundation for organizational adaptation within the library organization, a selection set that matches and transforms with the librarian level is formed through process mechanisms, and ultimately librarians internalize the management system based on rational calculation and group consensus, transforming it into a process of organizational internal norm internalization.

Full Text

Theoretical Construction of Internalization of University Library Management Systems—An Exploratory Study Based on Grounded Theory

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Abstract: *[Purpose/Significance]* The internalization of library management systems forms the foundation for library resource allocation and management innovation. This study aims to reconstruct the internalization process of management systems within library organizations and explain the transformation mechanisms across different hierarchical levels. *[Method/Process]* Through grounded theory research on three case libraries, this paper constructs a theoretical model of university library management system internalization, comprehensively examining the motivations and manifestations of internalization from three dimensions: organizational internalization, process mechanisms, and librarian internalization, encompassing 11 main categories, 41 categories, and 164 initial concepts. *[Result/Conclusion]* The internalization of university library management systems involves first constructing an internalization foundation for organizational adaptation within the library organization, then forming a selection set that matches and transforms the librarian level through process mechanisms, and finally achieving internalization of the management system by librarians based on rational calculation and group consensus, which is then transformed into internalized organizational norms.

Since the 21st century, as the vehicle for transmitting library missions, values, philosophies, and culture, library management systems have become critical guarantees for sustainable library development, with institutionalized management serving as the logical starting point for service delivery and resource allocation. As library services deepen and expand, the ability of libraries to better adapt to external development environments and effectively conduct resource exchange depends largely on the effectiveness of library management systems.

Research on the effectiveness of library management systems must examine the transformation mechanisms and matching processes of system internalization, ultimately providing reliable logical judgment and operational foundations for theoretical research and practical development of library institutionalized management. Existing studies have primarily examined library management systems from a holistic perspective of institutional norms, identifying key dimensions of system effectiveness and constructing corresponding theoretical frameworks and measurement scales, but have not yet analyzed how institutional norms transform into adaptive value regulations within organizations and become encoded by individuals into a consistent framework and symbolic identifiers of shared understanding. This internalization process represents the key dimension and core driver for realizing library management system effectiveness. Through inductive analysis of the process and mechanisms of university library management system internalization, this study helps identify the institutional coherence and element transformation process, while also establishing a theoretical framework for university library institutionalized management.

2 Literature Review

The concept of library management systems largely originates from the norms and order of library operations, which define organizational behavior and en-

sure consistent implementation of management systems by librarians. Most existing research treats management system effectiveness as an important orientation and theme, conducting extensive studies on the elements, dimensions, and theories of effectiveness. Some studies argue that library management system effectiveness stems from regulative elements such as clear institutional rules, transparent supervision, and rewards and punishments, where the authority's coercive power and legitimacy form the basis for management systems to constrain, regulate, and adjust individual and collective librarian behavior.

Regarding organizational-level system effectiveness, existing research suggests that the detailed decomposition of organizational goals, systematic coordination of organizational functions, and normative alignment of organizational structure constitute the foundation and guarantee for effective implementation of library management systems. Most studies believe that system effectiveness originates from structured rules that promote organizational goal achievement and governance structures that save transaction costs, which should form institutional isomorphism with external institutional environments and higher-level governance rules while establishing organizational frameworks with clear responsibilities, rights, and interests in organizational management processes. Typically, libraries have relatively complex internal institutional environments, requiring adaptive transformation and structural coherence to integrate external institutional elements and structures, gradually achieving a certain degree of integration. Some researchers have analyzed the execution of library management systems, proposing that library systems represent the unity of rules and values, constituting the totality of activities where executors transform institutional content into actual actions based on library realities.

Regarding librarian-level system effectiveness, existing research examines the effective operation of management systems from two aspects: librarians' compliance with systems and managers' implementation of systems, finding that cognitive patterns and cognitive abilities are the two decisive subject variables. Most studies believe that librarians' competency levels determine the degree and scope of system effectiveness because librarians' cognitive frameworks and shared understanding of management systems can effectively establish adaptability for internalizing and applying the norms transmitted by library management systems, while librarians' psychological traits and behavioral characteristics form the basis for decoding and constructing consistent frameworks based on organizational norms and beliefs. Some research from the librarian perception dimension proposes internal and external perceptions of management systems, arguing that these perceptions originate from individual internalization and cultural matching mechanisms.

Existing literature has addressed the possibility and necessity of library management system internalization from perspectives including institutional viewpoint, organizational characteristics, content hierarchy, and librarian perception, but has not systematically revealed the internalization process or provided reasonable explanations for several questions: (1) Why are some libraries more

efficient in implementing management systems than others under identical institutional environments and texts? (2) How do exogenous institutional structural elements transform into adaptive regulatory structures after entering library organizations? (3) How are management systems internalized and applied by librarians during transformation from organization to individual level? (4) How can we explain librarians' voluntary compliance with norms when reward-punishment mechanisms are ineffective or absent? Answering these questions requires deeper investigation into library organizational internal structures to seek more evidence and explanations that systematically restore the internalization process and transformation mechanisms of management systems across hierarchical structures. Therefore, this paper adopts an internal organizational perspective to reveal the internalization process of management systems.

3 Research Methods and Data Sources

3.1 Research Methods

Qualitative research is descriptive research that induces general conclusions from specific contexts, focusing on understanding the meaning and characteristics of phenomena. The grounded theory research method employs structured coding procedures consisting of three coding steps: open coding, axial coding, and selective coding. Meanwhile, for constructing indigenous management knowledge, grounded theory methods can delve into specific structures behind theories, helping researchers build theories more integrated with local contexts. This study first collected data through participant observation, in-depth interviews, and document review of case university libraries; second, analyzed the data through open, axial, and selective coding to ensure theoretical saturation; and finally constructed the theory of university library management system internalization from the data analysis process.

3.2 Data Sources

Based on the representativeness of case libraries in institutionalized management, this study selected three representative university libraries as case samples to construct the theory of library management system internalization. Library A has relatively robust structures for cultivating and managing library management systems, rich content and forms, and library leadership that attaches great importance to system construction and puts it into practice. Library B, during the promotion process, uses corresponding incentive measures to mobilize librarians' enthusiasm and creativity for service work, generating a sense of contribution, achievement, and satisfaction among librarians toward system construction. Library C places rewards and punishments in a relatively important position while implementing a structured control management model that refines and decomposes management objectives and implements accountability. The three university libraries have rich experience in institutionalized management, stable institutional environments and structures, relatively high levels of

librarian competency and professionalism, and can effectively reflect individual transformation during the internalization process.

To ensure data integrity, comprehensiveness, and authenticity, and to guarantee case study validity, this study extensively collected multi-source data including archival records, interview records, and direct observation records from case libraries, compiling a data inventory for analysis (see).

Based on literature review, this study designed interview outlines based on existing theoretical expressions regarding organizational behavior, value transmission, and librarian behavior in library management system effectiveness to ensure theoretical coherence. In-depth interview questions focused on three dimensions of system internalization: (1) organizational-level internalization of management systems; (2) transformation from organizational to librarian level; (3) librarian-level internalization of management systems. Data collection lasted nearly four months from June 2017 to October 2017, comprising 13 in-depth interviews, 6 participant observations, and 3 document reviews. To ensure consistency in data collection and interpretation, all sample data were personally observed, collected, interviewed, recorded, transcribed, and repeatedly checked by the same researcher, with each observation lasting 90-120 minutes and each interview 45-60 minutes. Finally, two-thirds of the collected interview records, observation records, and retrospective data were used for detailed coding analysis, with the remaining one-third reserved for theoretical saturation testing.

4 Grounded Theory Analysis

4.1 Open Coding

After textual processing of the data inventory, open coding was conducted following grounded theory methodology. Open coding is the foundational coding procedure in grounded theory that conceptually and categorically processes research material layer by layer. Following this procedure, 1,476 original statements and 166 initial concepts were obtained through semantic decomposition and theoretical comparison. After eliminating initial concepts with repetition frequencies below 2 times and inconsistent content expressions, 41 categories were identified. Table 2 shows each category with corresponding initial concepts and sample original statements.

4.2 Axial Coding

Based on categories obtained from open coding, axial coding identifies logical relationships between categories and establishes contexts through cluster analysis. This paper conducted inductive clustering on the 41 categories from the open coding phase, connecting similar categories situationally, typologically, and strategically to ultimately form 11 main categories (structural fusion, leadership behavior, repeated reinforcement, regulatory norms, communication coordination, organizational adaptation, value matching, cognitive transformation,

rational calculation, group consensus, normative internalization), which were classified into three dimensions: organizational internalization, process mechanisms, and librarian internalization. Table 3 shows the main categories, corresponding categories, and category connotations.

4.3 Selective Coding

Selective coding is a crucial stage for clarifying relationships between main categories, extracting core categories, and describing the “storyline” of the phenomenon. By examining existing research conclusions and analyzing relationships between categories in the case libraries’ management system internalization process, this study employed the canonical model—an important analytical tool in grounded theory—to discover relationships between categories and connect them, thereby establishing logical links as shown in Table 4 .

Through further 梳理 of relationships between canonical models, the storyline describing the phenomenon systematically connects core categories with other categories, demonstrating the entire evolutionary process and structural relationships of case libraries’ management system internalization. Meanwhile, using the reserved one-third of data for theoretical saturation testing revealed no new important concepts, categories, or typical relationships, indicating that the theoretical model from this grounded theory research has reached saturation. Analysis of the 11 main categories reveals the following storyline: libraries first construct structured and ordered organizational structures and management hierarchies through overall resource allocation and regulation processes, enabling institutional internalization in organizational operations to form institutional culture and value identification compatible with organizational management, completing organizational-level internalization. On this adaptive foundation, systems internalized at the organizational level accumulate value matching patterns and cognitive transformation processes that can be identified and absorbed by librarian internalization mechanisms through value transmission and regulatory norms, advancing institutional internalization from organizational to librarian level. Under the combined effects of rational calculation and group consensus, librarians internalize and apply the value criteria and behavioral norms provided by process mechanisms, ultimately forming normative internalization within the library and completing librarian internalization. Normative internalization then re-promotes a new round of organizational internalization through regulatory rationality, forming a cyclical mechanism of library management system internalization.

5 Theory Construction

Based on grounded theory analysis of case university libraries’ management system effectiveness, this study’s theoretical model includes three modules: (1) Organizational internalization. Libraries first construct internalization foundations and dynamic guarantees for organizational adaptation by establishing

structural fusion and stable order through communication coordination and repeated reinforcement of regulatory norms and leadership behaviors, creating organizational safeguards based on management system effectiveness. (2) Process mechanisms. During transformation from organization to librarians, management systems must maintain consistency at the value level and stability at the cognitive level to ensure effective transformation and smooth transmission of system effectiveness. (3) Librarian internalization. In the librarian internalization process, rational calculation constitutes the premise and foundation, while group consensus serves as reference and guarantee. Their relative independence and inclusiveness are key factors in forming university library normative internalization and the main driving force for effective integration of management system effectiveness at individual cognitive and collective action levels. After completing librarian internalization, the mutual transformation between normative internalization and regulatory rationality should be ensured to promote cyclical internalization and further advance management system effectiveness. The overall theoretical model is shown in Figure 1 [Figure 1: see original paper].

5.1 Organizational Internalization

The organizational internalization dimension of university library management systems comprises six main categories: structural fusion, leadership behavior, repeated reinforcement, regulatory norms, communication coordination, and organizational adaptation. Overall, organizational internalization emphasizes that libraries can effectively construct internalization foundations and dynamic guarantees for organizational adaptation within the organization. First, libraries transform preset management system content and rules into management activities by implementing hierarchical management, 逐级负责, and accountability systems, making library structural elements orderly and reasonable. Management authorization provides clear power and authority for library work, while management actively promotes and demonstrates the connotation and value of management systems, enabling continuous transmission consistent with the overall value system. Second, through organized learning and understanding, librarians rapidly integrate into management system construction, ensuring effective enhancement of core functions during system advancement while fully considering external environmental characteristics. Third, stable expectations from standardized institutional structures provide coercive authority for rule establishment and execution, with 健全的 monitoring mechanisms for internal rewards and punishments. Librarians develop contribution and satisfaction feelings toward system construction through conditional stimulation and clearly understand individual behavioral choice spaces through conditional constraints. Finally, shared beliefs and values exist among librarians in management activities, and organizational communication structures can reduce uncertainty in selective behaviors. Through information dissemination, experience exchange, and knowledge sharing across hierarchical levels, librarians and management can communicate key information timely. Democratic management that widely solicits librarian opinions through transparent processes enhances librarians'

commitment to management systems through transmitted values and sense of belonging, establishing key consensus that mobilizes work enthusiasm.

This organizational internalization process responds to existing discussions on the integration of library organizational structure and management systems: (1) Organizational structure's adaptability to management systems reflects the level and degree of library institutionalized management, strongly promoting system construction, while rule consciousness established by management systems and order norms established by hierarchical structures facilitate librarians' familiarity with and understanding of management systems. (2) Management's behavioral roles and value tendencies themselves represent management systems, solidifying actions into relatively stable behavioral references. Management's behavioral performance and value guidance positively influence librarians and decisively affect value transmission and orientation, with librarians adopting corresponding attitudes and choices based on management behavior. (3) Through education and training, librarians become familiar with and understand management systems, enhancing professional knowledge and skills while strengthening organizational attachment and psychological commitment. By strengthening training and integrating value transmission systems, management systems are encoded into symbolic identifiers, ensuring consistency between systems and organizational operations through comprehensive understanding. (4) Meeting librarians' value expectations during participation effectively enhances their initiative and contribution to system construction, ensuring effective implementation. Management system internalization is a gradual cyclical process, not simple centralized institutional cognition, requiring close communication and long-term interaction to help librarians understand system positioning and establish organizational culture with value 契合.

5.2 Process Mechanisms

The process mechanism dimension of library management systems comprises two main categories: value matching and cognitive transformation. Overall, process mechanisms emphasize that management systems can form action orientations and selection sets matching librarian values and behavioral transformation based on organizational adaptation. First, post-transformation systems gradually form basic requirements compatible with librarian cognitive levels, enabling librarians to define behavioral understanding standards and scales, judging execution costs and effects based on their competency levels. Second, post-transformation systems gradually form action orientations matching librarian value expectations, allowing librarians to identify professional behaviors conforming to moral cognition based on personal value criteria. Finally, post-transformation systems gradually form basic norms matching collective action criteria, enabling librarians to formulate personal development plans according to specific organizational management conditions, satisfying their interests and demands during system implementation and achieving self-realization.

This process mechanism responds to existing discussions on library management

system effectiveness and adaptability: (1) In process mechanisms, librarians have general standards and structural scales for behavioral preferences and conceptual understanding. Value systems established through organizational adaptation must match librarians' overall value systems to be effectively identified and absorbed, providing stable behavioral expectations for value judgment and reducing uncertainty and cognitive costs during expectation processes. (2) Librarians' value concepts and behavioral characteristics exhibit compatibility in management system construction, forming harmonious, positive, and sustained relationships with relevant groups and specific work. (3) Librarians self-adjust during system construction, providing reliable information for emotional and behavioral choices, including familiarity, understanding, and discrimination of work content. After interpreting and adaptively absorbing institutional elements and processes, librarians transform them into internal experiences and modify original cognitive frameworks to establish new cognitive structures. (4) During system construction, librarians weigh input costs against benefit returns to form final decisions and interest relationships, always seeking benefit-maximizing balances. The involved interest relationships must possess a certain degree of importance for librarians—when expected returns exceed expected costs, librarians transform into system construction; otherwise, they transform out.

5.3 Librarian Internalization

The librarian internalization dimension comprises three main categories: rational calculation, group consensus, and normative internalization. Overall, librarian internalization emphasizes that librarians can internalize management systems based on individual cognition and group consensus, transforming them into internal organizational norms and value criteria. First, constrained by value judgment sets in process mechanisms, librarians conduct rational thinking and interest trade-offs about system processes, performing rational calculations after comparing value preferences with system objectives through self-persuasion. Second, constrained by behavioral choice sets in process mechanisms, librarians' behavioral habits and emotional trajectories can be effectively integrated by group consensus, generating identification and belonging feelings that form overall centripetal force and charisma, transforming transmitted values into self-identified values. Finally, as librarians share more institutional beliefs and psychological foundations that dominate their behavior, long-term reinforcement of rule consciousness accumulates stable and positive emotional choice patterns and interest calculation paths, generating positive psychology and inclusive emotions toward library work, ultimately forming trust, understanding, and execution of systems through psychological internalization activities.

This librarian internalization process responds to existing discussions on librarians' cognition and execution of management systems: (1) Librarian internalization reflects shared situations faced in motivation and behavior, transforming transmitted elements and processes into self-identified value criteria and forming consistent understanding for system execution. When cost-benefit calculations

of compliance or violation are less complex than individual cognition, system internalization is completed through rational calculation. (2) Through deep understanding of system construction significance, behavioral roles, and functions, librarians consciously uphold the original value of management systems when behavioral expectations are mutually 协同. Actively seeking understanding of basic connotations, value concepts, and ultimate goals generates collective consistent action, with librarians actively obtaining relevant information to fulfill their roles in system construction and putting system commitment into practice through action adaptation. (3) Although external incentives and rewards/punishments remain the main explanation for norm compliance, long-term cultivation of shared values enables librarians to effectively resist immediate interest temptations and convert normative behavior into core behavioral objectives out of consideration for implicit constraints in internal value systems. When cost-benefit calculations become too complex, system internalization is completed through overall group consensus. (4) Librarians gradually achieve cognitive sharing and common understanding through organizational management activities and interactions, where values and management systems mutually constrain and promote each other. System establishment requires familiar and identified values as foundation and premise, while considering commonly accepted habitual behaviors and value systems. From rational calculation and interest equilibrium perspectives, cognitive and value systems constitute the basis for communication, understanding, collaboration, dominance, or compliance among librarians, requiring appropriate consistency between librarians' value systems and libraries' pursued values and prevailing rules.

6 Research Conclusions and Outlook

Systematic exploration and process analysis of university library management system internalization from an organizational internal perspective extends and expands existing research on library management system effectiveness, effectively reconstructing the internalization process and transformation mechanisms across hierarchical structures and further clarifying logical levels and analytical foundations in theoretical frameworks. Through grounded theory research on three case libraries, this study constructs a theoretical model of university library management system internalization and proposes the following conclusions: (1) Library management systems do not directly affect internal management and behavior but require combination with situational elements and individual cognition during organizational management processes, undergoing a systematic and complex internalization process to function. (2) Library management system internalization is a continuous hierarchical transformation process, where transformations at organizational and librarian levels correspond to different sources of adaptability and coherence—institutional structures and elements cannot 跨层级 internalize but must follow hierarchical paths layer by layer, using inter-level process mechanisms for transformation and transmission. (3) Organizational-level internalization takes the effective construction of organizational adaptation within library organizations as its foundation, with internaliza-

tion between organizational and librarian levels depending on whether process mechanisms can establish effective value matching and cognitive transformation. (4) The core of librarian internalization is cognitive internalization—when organizational adaptation foundations form individual and group matching and transformation through process mechanisms, librarians can internalize management systems based on rational calculation and group consensus, transforming them into organizational normative internalization, which then re-promotes new rounds of organizational internalization through regulatory rationality, forming a cyclical mechanism.

Overall, this study provides a complete process perspective and holographic evolution for understanding the coherence of university library management systems within organizations, offering a clear analytical framework and theoretical support for subsequent research on structures, hierarchies, and motivations in the internalization process. Based on this, the following recommendations are proposed for university library institutionalized management: (1) After clarifying system objectives, establish structural fusion and order stability through communication coordination and repeated reinforcement of regulatory norms and leadership behaviors, constructing organizational safeguards based on management system effectiveness. (2) During transformation from organization to librarians, maintain consistency at the value level and stability at the cognitive level to ensure full transformation and smooth transmission of system effectiveness. (3) In the librarian internalization process, recognize that rational calculation is the premise and foundation, while group consensus serves as reference and guarantee—their relative independence and inclusiveness are key factors in forming university library normative internalization and the main driving force for effective integration of system effectiveness at individual cognitive and collective action levels. (4) System internalization is a process of internal hierarchical adaptation and dynamic structural adjustment—after completing librarian internalization, ensure mutual transformation between normative internalization and regulatory rationality to promote cyclical internalization and further advance management system effectiveness.

This study has certain limitations. Case selection overemphasized data availability and analytical convenience, with small interview sample sizes, and the conceptual model's reliability and validity have not undergone large-sample testing. Future research should repeatedly compare the model with other samples for continuous optimization and correction to perfect the theory of library management system internalization.

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Author Contributions: Zhu Ming: responsible for research design, data collection, data analysis, and paper writing; Liao Xizhu: responsible for paper writing.

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