

Research on Lean Improvement of Business Processes of Online Student Affairs Service Platforms in Colleges and Universities

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Abstract: Online student affairs service platform in colleges and universities primarily deals with the administration affairs for students; its business process efficiency influences not only the student's satisfaction but also the school management efficiency. Most of the platforms have directly transplanted the processes from offline models with obvious problems such as node redundancy, collaborative friction and information transmission loss during operations which need urgent path improvement to optimize them. Based on lean improvement theory, we build an analysis framework of student affairs service processes in colleges and universities, analyzing the structural characteristics and operational logic of the processes, identifying their types and causes of efficiency loss, revealing the internal mechanism of performance deviation, proposing three improvement strategies such as node simplification and integration, collaborative information transmission optimization and construction of supporting mechanisms. This provides a complete research chain from problem diagnosis to solution design aimed at providing theoretical reference and methodological support to improve the process efficiency and optimize the operation of the platforms.

Keywords: Online Student Affairs Service Platforms in Colleges and Universities; Business Processes; Lean Improvement; Process Structure Optimization; Value Delivery Mechanism

Introduction

As the informatization advances in colleges and universities, the online student affairs service platforms in colleges and universities have become the hub between students and administrative departments. The focus of the platform construction has always been on its system development level rather than considering the rationality and operational efficiency of their own business processes. A large number of offline processes are simply migrated into online with problems such as complex hierarchy and excessive control; the perception of processing cycle among students has not been greatly reduced at all. No matter how much technology we invest, it can't substitute the scientific soundness of the processes themselves. Existing literatures mostly focus on system design and user acceptance, there is little research about process-level diagnosis and improvement methodologies, and no lean improvement analysis path suitable for college service scenarios has been established so far. This study adopts lean improvement theory as a tool, establishes an analytical framework based on process structure, identifies problems systematically, diagnoses mechanisms, designs improvement plans aiming to provide a theoretical basis for improving the service efficiency and operational quality of the platforms.

1. Current Situation Review and Problem Diagnosis of Business Processes of Online Student Affairs Service Platforms in Colleges and Universities

1.1 Structural Characteristics and Operational Logic of Business Processes of Online Student Affairs Service Platforms

The structural characteristics of the business processes of online student affairs service platforms can be examined from two dimensions: the vertical hierarchy and the horizontal interfaces of the process chain. In the vertical dimension, a process usually includes the student initiation end, departmental review nodes, functional department approval nodes, and result feedback nodes. These nodes form a hierarchical, progressive, and serial structure, and the number of nodes directly

determines the overall length of the process. In the horizontal dimension, processes involving multi-department collaboration generate parallel branches and convergence nodes, forming a series-parallel hybrid network topology. This structure means that the actual operational path of the process is not a single linear one; rather, there is selection or combination among multiple possible paths^[1].

From the perspective of operational logic, the essence of the business processes of online student affairs service platforms is to transform the traditional offline face-to-face handling model into an online circulation model based on information systems. The core operating mechanisms include form-driven logic, state transition logic, and permission matching logic. Form-driven logic requires each service item to use a standardized electronic form as its information carrier, and the completeness and standardization of form fields constitute the prerequisite for process advancement. State transition logic divides a process into several discrete states, such as pending submission, pending review, under review, returned for modification, and completed; sequential transitions or conditional transitions of states define the operational trajectory of the process. Permission matching logic ensures that only users with corresponding role identities can perform operations in specific stages. This mechanism safeguards process standardization while also constituting the institutional root of process rigidity.

1.2 Efficiency Loss in Business Process Operation and Its Typological Attribution

In general, there is an efficiency loss when operating a business process; it mainly manifests itself through two aspects: time dissipation and information attenuation. In terms of the first aspect (time dissipation) the overall processing cycle of a process is far larger than that of the sum of the pure processing time at each stage -- their difference corresponds to waiting loss and idle loss in this process, most of which accumulate on the handover between stages and approval backlog. As regards information attenuation, the original information provided by students will experience information loss or information distortion while being transmitted from one stage to another because of format conversion, comprehension deviation, or repeated entry, so that subsequent stages need extra communications for correction, leading to communication loss and rework loss.

Causes of such kind of efficiency losses are process redundancy loss, collaboration friction loss and information transmission loss respectively. The process redundancy loss results from redundant review nodes, repeat confirmation and formalized steps kept for management inertia which has little value added but constantly consuming operation resource; Collaboration friction loss results from blurred boundary of responsibilities, inconsistent approval standard and bad interface between departments when multiple departments take part in a process, leading to significant case returns and cross department communication that lengthens the service processing cycle; Information transmission loss means submitting the same information again at various nodes in a process, or information transmission across different systems relies on manual transfer, its essence is the disconnect between information collection and information reuse^[2].

1.3 Analysis of the Internal Mechanism of Process Performance Deviation

Formation Mechanism of Process Performance Deviation: According to the inherent defects of process design logic and dynamic change of the operating environment. In terms of process design, the existing construction method of online student affairs service platforms is mostly direct migration of offline business processes, which fully copies all review nodes and control mechanisms used in face-to-face handling scenarios into the online scenario. The migration logic does not take into account the lubricating effect of informal communications in linking nodes under the offline processes, leading to an amplification of the strictness of each node in online processes with a significant increase in process rigidity; at the same time, it lacks differentiation among handling mechanisms for different service types (simple affairs sharing the same process channel as complex affairs), leading to overpayment of process cost by simple affairs according to their complexity.

Operational Constraint Side: There are two types of constraints for the real execution of a process -- one comes from system functional boundaries, another comes from organizational operational inertia. The first one means that the conflict between the standard preset on operations at each stage provided by the platform vs process flexibility. In cases where we require flexible judgment when handling actual affairs, there do not exist any elastic channels inside the process structure to cope with exceptional situations (we need to resort to use human intervention outside the system to fill the gap), this human intervention behavior is out of process design which increases management cost and

undermine the whole consistency of the process; Organizational operational inertia reflects in the lagging response of different departments to process improvements. Some redundant stages in a process might have been found but approval habits formed by departments due to their risk aversion considerations will impact the execution of processes and prevent them from fully adopting the established simplified paths in actual operation. There's a permanent gap between process design improvement and actual operational performance.

2. Theoretical Basis and Analytical Framework for Lean Improvement of Business Processes of Online Student Affairs Service Platforms in Colleges and Universities

2.1 Core Logic and Applicable Boundaries of Lean Improvement of Business Processes

The essence of lean improvement of business processes originates from the fundamental ideas of elimination of waste and continuous improvement in the concept of lean production theory. In a service-oriented process context, we move away from physical consumption (in manufacturing stages), towards time and information consumption (in process operation). The essence of lean improvement focuses on non-value-added activities in process operation mainly; it continuously improves process efficiency through identification and elimination of those stages/operations that are not contributing directly toward the final handling outcome. Implicitly assumed here is that there will always exist an unexplored space for improvement in any process – with the focus of improvement being not about overturning the whole structure of the process, rather looking into each element within the process item by item and optimising them locally^[3].

The application logic of lean improvement on the processes of online student affairs service platforms in colleges and universities has its applicability boundary and conditional constraints. The output of student affairs service process differs with production and manufacturing processes: Firstly, it is not physical product but service behavior; Second, the measurement standard of process quality includes many subjectivity by students' experience. At that time, lean improvement pays attention to efficiency indicators, ignore the integrity of service utility. Secondly, there are external limitations because of administrative management system and business norms. There may be some stages which seem redundant at efficiency level, they might play the roles of risk prevention and control or compliance review; if we just remove them, there will be a decline in process control. So, the application of lean improvement in service processes follows the different principle of keeping necessary control nodes and streamlining unnecessary consumption nodes, no absolute minimization of process stage number.

2.2 Analysis of the Value Delivery Mechanism of Student Affairs Service Processes

Value delivered via student affairs service processes is accumulated on how well every step of the process operations meets students' needs; every step is supposed to play its part as a stepping stone between an initial service request and final handling result. Effectiveness of value delivery requires satisfaction for two conditions: first condition refers to the degree of matching performed by each stage with their place in the process (i.e., doing the work that should be done at the right time), while second one refers to maintaining the integrity and accuracy of the original information upon transferring it among stages since the attenuation/distortion of information during transmission reduces the value contribution capability of later stages.

Contributing value Divide every stage into two kinds, i.e., direct value creating type and indirect value supporting type. Direct value-creating nodes perform substantive operations (information verification, qualification confirmation, etc.) where their quality and efficiency will directly impact students' satisfaction with service results if they involve in affairs processing; on the contrary, indirect value-supporting nodes help the process go smoothly (affairs triage, material transfer, status notification), without changing the processing status of affairs itself, providing indispensable operating conditions for value creation. Loss in value delivery mechanism mostly happens during the transition interval between these two types of nodes. One can see there's too long waiting time of indirect supporting stages for direct value stages, or misunderstanding in information transmission in supporting stages causing subsequent direct stages spend extra effort to correct information. Value of lean improvement identifies and compresses ineffective consumption in such transition intervals, giving direct value-creating nodes a full proportion of operating time.

2.3 Process Improvement Analysis Path Based on Structural Optimization

The analytical path we take on our study attempts to improve process structure. We believe that the performance of a process depends upon its structure. Redundancy/disorder in the structure will necessarily manifest itself as poor operation with low efficiency/quality fluctuation. Optimization and adjustments from the structural perspective are fundamental and lasting. The establishment of our analytical path begins by giving an operational description for process structure; then breaking down the process structure into three analyzable dimensions (node composition, path form, and connection mode), answering three questions: What is done in the process? In what order it is done? How are the steps related to each other?^[4]

Evolution of these three dimensions. The node composition analysis answers the question of "whether all stages in the process are necessary" and determines the nodes that have no substantial function, treating those as candidates for streamlining; the path form analysis answers the question of "whether there is a more concise possible direction for the process"; investigating if we could triage different service types at the process entry point so as not to burden simple affairs by complex processes; connection mode analysis answers the question of "whether waiting between stages can be compressed". By investigating possibilities of changing serial connections into parallel ones, finding opportunities for compression at the process sequence level. This logical line of this analysis path gradually moves from the local to the whole and from the static to the dynamic: Firstly, find out which nodes can be removed, Secondly, decide how to arrange the rest of nodes more optimally, Thirdly, optimize the time coordination among nodes. Analysis results at every level serve as the input conditions for the process improvement plan, providing an analytical base for the specific development of improvement strategies in Chapter 3.

3. Improvement Paths and Optimization Strategies for Business Processes of Online Student Affairs Service Platforms in Colleges and Universities

3.1 Strategies for Streamlining and Integrating Process Nodes and Reconstructing Stages

Streamline and integrate process nodes based upon the outcome of node value assessment: Integrating the low-value retained nodes and functionally overlapping nodes that were discovered in the previous chapter within the scope of streamlining. The identification of low-value retained nodes is focused on the actual functionality of nodes in the process; those which only transmit information without any substantial judgment functions, those with the same approval content being repeatedly verified at different levels, and those who rarely trigger return or modification operations in operation records are identified as feasible for streamlining. Functionally overlapping nodes we use a merge instead of delete approach by concentrating the scattered review functions in multiple places into one stage for execution so as to reduce the number of nodes while keeping the integrity of review functions.

Stage Reconstruction includes two aspects: differentiated design of process paths and rearranged stage sequences. We first setup service classification standards on the process entry point to match different kinds of affairs with differentiated process channels; complex affairs keep the full review chain to control controllable risks but simple affairs go through by a compressed fast track without wasting resources caused by mismatched process design and the nature of affairs. Then we find out review stages which have no prerequisite dependency relationship and change their arrangements from serial relationships into parallel relationships. Meanwhile, confirmatory operations like format verification or material completeness check will be pushed forward to the student submission end for completion to reduce mid-process returns due to information that does not meet requirements^[5].

3.2 Strategies for Information Transmission Optimization and Friction Resolution in Process Collaboration

Optimizing information transmission aims at achieving collection uniformity and ease of use. In the collection process, merge and organize the information fields required for various types of affairs on the platform, identify those information modules with high degree of overlap and adopt modular collection rather than scattered filling; establish data connection between systems to achieve automatic retrieval and backfilling of existing information. The format standardization and definition of field in information exchange among review nodes are unified throughout the transmission process to avoid misinterpretation caused by inconsistent presentation form. Information tracking mechanism based on

service number as primary key is established while dealing with cross-departmental collaborative affairs, enabling each department to consult all processing records and conclusion opinions of previous stages during review, thus reducing the occurrence of repeated inquiry and secondary verification because of information asymmetry.

Friction Resolution Strategies: Standardize the institutionalized connections in responsibilities during the collaboration process. Different understanding about the scope of review authority and judgment standards among departments is the main reason for the friction between collaborations. Design a set of standardized handover documents with specifications of information content, format and time limits needed at every stage to transmit to downstream stages. **Annotated Explanation Mechanism:** If there are returned affairs, we require reviewers to give specific reasons and correction instructions when returning an affair. **Automated Status Triggering Mechanism:** Set up triggers at key connection points of the process so that after completing one stage, it will automatically notify the next responsible person. **Parallel Countersignature Mechanism:** For types of affairs which need joint adjudication by multiple departments, we adopt parallel countersignature instead of sequential circulation, once each department issues their own opinion, the platform can sum up all opinions into the final conclusion.

3.3 Supporting Measures and Operational Safeguard Mechanisms for Process Improvement

With assisted revision of rule texts and adaptive adjustments of technical parameters. Changes not only occur on the number of steps but also changes on sequence arrangement in this streamlined process. Process steps, attribution of review authority, time limit standards stipulated in the original business specification documents and operation manuals need to be revised with the matching rule content according to the improved process design. Responsibility attribution needs to be redefined (or incorporated) when canceling reviewing positions because of node merging to avoid a responsibility vacuum from process streamlining. Form templates and interface configuration where the process runs should be changed based on an improvement plan like new comprehensive forms for merged stages; new opinion summary interfaces for the parallel approval mode^[6] etc..

Building operational safeguard mechanism starts from process status monitoring and abnormal response: For monitoring, we construct a monitoring system that contains timeliness indicators (average duration per stage and proportion of overdue affairs) and quality indicators (return rate and average number of submissions for the same affair), visualize it into a panel so that process managers can find out problematic stages easily; for abnormal response, we preset graded handling plans according to different types and severity level of process abnormalities. We establish an accumulation mechanism for operational feedback, classify and record process problems and improvement suggestions put forward by both student side and execution side, summarize them regularly as input basis for further iteration optimization, so that process improvement goes beyond a single adjustment to be continuously cycling.

Conclusion

In this paper, based on the logical thread of "problem diagnosis—the theoretical construction—improvement design", we have studied the lean improvement of business processes for online student affairs service platforms in colleges and universities. The review shows the structure features (vertical hierarchy and horizontal interfaces), operational logic of platform processes; finds three kinds of efficiency losses including process redundancy loss, collaboration friction loss, information transmission loss, which indicates that migration inertia, system boundaries, and organizational inertia are the deep-seated causes of performance deviation. In terms of the applicability boundary of lean improvement under student affairs service scenario, we constructed an analysis framework with three aspects: node composition, path form, and connection mode. For the improvement strategies, we designed improvement plans from three directions: node streamlining and integration, collaborative information transmission optimization, and supporting safeguard mechanisms. Further exploration into quantitative evaluation of improvement effects or the influence of difference in process characteristics among different colleges and universities on strategy adaptability is possible.

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