

Application of Systems Theory in the Administration and Management of Colleges of Education in Nigeria: A Qualitative Perspective

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Abstract

Organization is a complete system and it is operational with its own objectives in mind, these objectives are accomplished when there is no distortion in the system. However, the study explores the use of systems theory (ST) in the administration and management of colleges of education in Nigeria. Two research questions were coined to guide the study. Furthermore, qualitative approach was employed, the desk-top research was used to gather information (data). The data which was in textual form was subjected to open coding and categorisation. After categorization, the emergence of these themes was subjected to content analysis. Findings indicated that system theory framework is adopted by provosts in the administration and management of colleges of education for optimal efficiency. However, sub-systems at times bring about the distortion in the communication channel which render the entire system ineffective. Based on the findings, it is recommended among others that provost of colleges of education in Nigeria should adopt system theory framework to ensure harmony in the organization.

Keywords: Systems Theory, administration, management, Colleges of Education

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Introduction

In an era marked by rapid change and increasing complexity, educational institutions must operate as dynamic systems capable of adapting both internal and external pressures. Within this context, the Systems Theory (ST) has become a valuable approach for enhancing organisational effectiveness and coherence. Originating in the 1920s, through the work of Austrian biologist Ludwig von Bertalanffy, ST provides a framework for understanding organisations as interrelated and interdependent components working collectively towards shared goals. Bertalanffy first presented his idea at a philosophy seminar at the University of Chicago (Akintola, 2025). He argued that no phenomenon could be fully understood in isolation; rather, it must be examined as part of an interconnected whole an argument that challenged the reductionist approaches dominant in early twentieth-century science.

In recent years, scholars have increasingly recognised the relevance of ST to educational management, viewing institutions as networks of interdependent subsystems that must function harmoniously to achieve shared objectives. Elujekwute et al. (2022) argued that usage of ST to educational administration enhances coordination, information flow, and feedback processes. Similarly, Adebisi et al. (2019) highlighted that systemic thinking improves organisational performance and responsiveness within Nigerian public institutions. Educational organisations, particularly Colleges of Education, operate in complex environments characterised by multiple internal dynamics and external influences. To navigate these challenges, administrators must adopt holistic management strategies that ensure institutional focus, adaptability, and effective decision-making.

The Colleges of Education in Nigeria occupy a pivotal role in the preparation of teachers and the advancement of pedagogical practice; yet their effectiveness is largely contingent upon sound administrative systems (Elujekwute et al., 2022). In Nigeria, many such institutions continue to encounter significant administrative challenges such as fragmented management structures, duplication of functions, inadequate feedback mechanisms, and poor coordination of resources. These systemic inefficiencies impede institutional performance and obstruct the attainment of educational goals (Adebisi et al., 2019). In addition to the above assertion, educational administration in Nigeria is bedeviled by challenges such as

inadequate funding, weak leadership, infrastructural deficits, and policy instability (Ogunode & Terhemba, 2021; Ukozor, 2022). The existence of these challenges in spite of the existence, usability and functionality of ST as opined by Ludwig von Bertalanffy is worrisome. Based on the foregoing, this study is out to explore ways ST could be used within Colleges of Education to enhance administrative efficiency. Based on the above assertion, the study is guided by the following research questions as stated below: How do the principles of systems theory reflect in the administration and management of Colleges of Education in Nigeria? What are the major challenges that hinder the effective use of systems theory in the administrative and management colleges of Education in Nigeria?

What is a ‘system’?

A system is composed of a whole made up of interacting parts, therefore, systems scientists in both the natural and social sciences fields interact between parts to understand effectively the complexities of reality (Lalande & Baumeister 2015). According to Arnold and Wade (2015, p.7), systems is a, “group or combinations of interrelated, interdependent, or interacting elements which form collective entities.” A system therefore connotes a set of parts that are interrelated so as to function as a whole in order to achieve a common purpose. For instance, school organisations with all their institutional components that make them function as a whole (Smith-Acuña, 2026). All organisations are open systems in that they interact with their environment to survive. The basic system theory of organisations is made up of five major components such as inputs, a transformation process, outputs, feedback, and the environment (Memarian & Doleck, 2025). In this theory, inputs consist of the material, human, financial, or information resources required to produce goods and services of varied quantities and qualities. The transformation process is the application of production technology by management to change the inputs into outputs_(Mwambia, 2020). The outputs are the tangible products and services of the organisation that possess a market value or user utility.

As earlier mention before, System Theory (ST) was pioneered by Ludwig von Bertalanffy in the 1930s. Bertalanffy explained that any system is an open system to allow input and output within the system. His work challenged reductionist scientific approaches by arguing that understanding any phenomenon requires examining the whole rather than isolated parts. This

scholar opined that ST provides an interdisciplinary framework for understanding complex phenomena across nature, society, and scientific fields. Similarly, Chin et al. (2025) argued that ST promotes a holistic lens through which researchers can analyse relationships, structures, and dynamics within systems. For example, in the context of higher education such as Colleges of Education, faculties, departments, registry, bursary, directorates, among others can be viewed as sub-systems that are interconnected and function collaboratively to determine institutional effectiveness. ST offers a robust conceptual lens for examining how colleges of education should operate, adapt, and respond to internal and external pressures, hence making it highly relevant in the administration of any organisation.

On the issue of subsystem, it is referred to the flow of information from individual units or components of an organisation back to the larger system to support monitoring, regulation, and improvement of the system. Here, Memarian and Doleck (2025) argued that subsystem represents a smaller, functional element within a broader organisational structure such as a department, unit, or administrative division. In fact, in subsystem, there exist feedback mechanisms which enable these subsystems to evaluate their performance relative to established benchmarks and initiate corrective actions where necessary (Memarian & Doleck, 2025). Feedback mechanism may positively reinforce effective behaviours, successful outcomes, or negatively signalling a deviation from desired standards and prompting adjustments (Okoye & Ojiako, 2021). For instance, students' enrollment, staff appraisals, or achievement of students after examination may serve as feedback loops that inform decision-making processes within academic department. Subsystem feedback creates a dynamic and self-regulating cycle that promotes adaptability, resilience, and continual improvement (Lakomski & Evers, 2020). This is done through consistent feedback loops, which an organisation depends to enhance its ability to respond to internal inefficiencies and external pressures, hence improving stability and overall performance (Austin & Jones, 2024). In the context of Colleges of Education in Nigeria, effective feedback mechanisms allow units such as Academic Boards, Examinations Committees, Quality Assurance Committees, Departments and Faculties, among others to align their functions with institutional goals.

Relevance of ST in higher education

The relevance of ST on colleges of education administration in Nigeria cannot be underestimated. Elujekwute et al (2022) examined ways in which ST enhances effective and efficient educational management in the country. These scholars argued that the provost of these institutions adopt holistic approach to administration, by recognising that each subsystem such as faculty, department, bursary, registry, sport unit, among others contributes to the larger extent system's goals. Elujekwute et al (2022) held that the relevance of ST is out to ensure that an organization is effectively and efficiently managed. Similarly, Lai and Lin (2017) submitted that applications of ST to organizational communication cover a wide range of theories, such as structural functionalism, communication network models, structuration theory, chaos theory, complex adaptive systems and self-organizing systems theories, social systems theory, and self-selective systems theory. Similarly, Rapp and Corral-Granados (2024) apply systems thinking to the Nigerian educational system through the lens of knowledge management. They contend that knowledge creation and dissemination are not merely technical processes but systemic ones in which knowledge flow across subsystems (primary, secondary, tertiary). Furthermore, Akintola (2025) said that ST helps to mediate between student conflict management in tertiary institutions by emphasizing the need for dynamic interaction among subsystems students, faculty, and administration to restore balance and facilitate constructive conflict resolution.

In a similar circumstance, ST is highly relevant to educational administration as it provides a comprehensive framework for understanding and managing the complex, interconnected components of educational organizations. The introduction of ST to the organizational context then led to a new string of empirical studies, focusing on how the systems theory can be applied to understand organizational behavior and communication, and how organizations evolve due to interaction with surrounding environments. Lunenburg and Ornstein (2021) held that recognising and advocating that organizations progressively had to function as open systems and that potential for growth and increased deficiency depended on how well they knew their environments. The open systems model was developed to demonstrate how organizations should develop communication processes that allow exchange of information and adaptation to feedback from external environments such as economic, political, or social (Lai & Lin, 2017). Applying ST in educational

administration facilitates goal orientation and effective resource allocation by ensuring that different subsystems align their functions cohesively to fulfill institutional objectives (Nesprava, 2020).

To comprehend the lifecycles of an organization, research has also looked into the pathology of organization that had failed altogether or in specific areas. For example, why did a school under-perform? The reason is that it could be the school could not match up with changes in computer application in administration. If feedback mechanisms were not in place to ensure that subsystems achieve a state of equilibrium, especially after an organizational change, then toxins could hit the subsystem. According to Lai and Lin (2017), pathology exists in any system when a subsystem is unstable for prolonged periods of time. Additionally, ST was used to analyze the pitfalls of such organizations and to develop models for organizations to adjust their subsystems to changing environments. It is appropriate to say that a good communicative relationship between a teacher and a student, and a stable feedback system in place, enhances teaching and learning. On the issue of school curriculum, it is believed that both the educator and the practitioner should test the feasibility and usefulness of any curriculum change, particularly so in schools that taught professional skills like teaching (Fiore, 2013).

Marketing was another where system theory is applied. Due to the diversity of skills needed by marketing departments, marketing teams should be made up of personnel with various specialties such as management, psychology, consumer research, and statistics. Considering how much they depend on other departments for resources, marketing personnel should also interact with personnel from other functional areas in the organization, as they needed to communicate effectively and depend on other departments for their campaigns to be effective. This was essentially applicable to all other subsystems that depended on other subsystems for resources. As international trading started to increase in volume, it was also necessary for marketing teams to understand the complex and unfamiliar cultures they were pushing their products into. Proper learning of their new environments and adapting to it would make marketing efforts more effective.

Theoretical Framework Underpinning the study

The theory that underpins the study is ST. This theory was propounded by Austrian biologist Ludwig von Bertalanffy around 1937s. However, the formal development and wider recognition of this theory occurred in the 1950s by other Bertalanffy's apostles. Bertalanffy introduced this theory as an interdisciplinary framework aimed at understanding complex systems as cohesive wholes composed of interrelated and interdependent parts. His foundational work emphasised that systems cannot be fully understood by simply analyzing their individual components in isolation. Rather, the interactions and the organization of the whole are crucial (Mwambia, 2020). Bertalanffy's ST was revolutionary because it applied universally across disciplines such as biology, sociology, psychology, administration, management, education to mention, but few.

On the issue of education which this study focused, the theory provides a valuable lens to address the complexity of educational institutions. Colleges of Education, as open systems, consist of multiple interconnected subsystems including academic staff, administrative units, students, and external stakeholders. The theory explains the interdependence of the education system which helps school principals, understand that the efficiency of the college depends on the harmonious functioning and communication among these subsystems. Feedback mechanisms mandated by the theory enable continuous monitoring, evaluation, and adjustment of educational processes, which are critical for quality assurance and resource optimization in the colleges. Moreover, the open system perspective encourages these institutions to adapt to external environmental changes, such as policy reforms and socio-economic shifts, thereby maintaining their relevance and efficiency. Hence, Systems Theory not only explains organizational dynamics but also guides practical strategies to enhance organizational efficiency through integrated, adaptive, and holistic management in Colleges of Education in Nigeria (Guy-Evans, 2020).

METHODOLOGY

The study adopts a qualitative approach. However, this qualitative approach used is to make sense of how the theory is applied in the administration and management of Colleges of Education in Nigeria. Based on the qualitative approach used, the appropriate paradigm used to tease out the study was interpretive paradigm. This interpretive paradigm ensures that there is need to

make deep and detailed descriptions and explanations about the phenomena under study (Muzari at al, 2022). In other words, this interpretive paradigm is used to make sense of ways in which Colleges of Education in Nigeria is managed by the provost to ensure acceptable desired result.

On the issue of the method used by the researcher for data generation, desk-top research was used to gather the information. Desk-top research in qualitative research is the collection and analysis of non-numerical existing data such as academic literature, government reports, media, or organisational documents online (Rijal, 2020). In fact, the reason for the used of desk-top information is that ST is being adopted to explain vividly ways in which Colleges of Education is administered and managed for the benefits of Nigerians. This desk-top research allows the researcher to critically evaluate previous studies, reports, documents, academic articles to identify patterns, principles, and practical applications of ST in educational administration and management. The document used in this study comprises all documented literature that relates to ST, policy documents on ST, and research reports related on ST. From all indications, no interview was conducted since it was a desk-top research.

To ensure the trustworthiness of the information gotten from the archive, the archivist was asked whether the sources in which the texts are gotten from primary sources and are authentic. With the acceptance that the texts are not pirated, the research made use of the texts as it were selected. With the selection of the texts for the study, the texts were subjected to open coding. Open coding is a commonly used tactic that was originally developed within the grounded theory methodology but has since proliferated across other qualitative methodologies (Mohajan & Mohajan, 2022). Drawing from Mohajan and Mohajan's (2022) position, open coding enables the researchers to collect data and assembled, categorised, and thematically sorted. Williams and Moser (2019) opined that open coding provides an organized platform for the construction of meaning. From the emergence of themes from the coded data, the emerging themes was analysed using content analysis. Sirilakshmi at al (2024) says that the use content analysis in qualitative research is because it provides a highly systematic, transparent way to distill large volumes of text such as interview transcripts, media articles, or documents into meaningful themes and patterns without losing contextual nuance.

Ethical Considerations

Even though the study used secondary data, ethical considerations remain important. Therefore, the study ensures ethical issues were adhered to. For example, a letter was written to archivist for permission to access the archive. Similarly, all texts used in the write up of the paper was cited in APA 7th edition format and intellectual property was respected.

Results

It is appropriate to use content analysis to analyse the data, because Mayring (2021) opined that it is a tool used by qualitative researchers to determine the presence of certain words, themes, or concepts within some given qualitative data, that is, textual materials. Moreover, for clarity, coherence, and logical presentation of the data, effort was made to use table to demonstrate ways in which ST is adopted by the provost in administration and management of colleges of education in Nigeria.

Research Question 1: How do the principles of systems theory reflect in the administration and management of Colleges of Education in Nigeria?

Table 1: Reflection of Systems Theory Principles in Administrative and Management Practice in Colleges of Education

Systems Theory Principle	Different Units in Colleges of Education	Summary of the activity
Holistic organisation	Office of the Provost, Registry, Bursary, Faculties, Depts., Exam., Directorates, etc	Provost's office coordinates all units through the appointment of principal staff in the college.
Interdependence	All units in the college function independently on its own.	Different units relate with one another to function in the college
Feedback Mechanism	Students' evaluation, NCCE accreditation reports	Students' performance in exam., Sports and Report of accreditation from NCCE
Open-System Interaction	Engagement with NCCE, Ministry of Education, TETFund and International bodies	College interacts with external bodies for funding, supply of books and regulation.
Homeostasis (Stability)	Crisis-management committee, review panels for curriculum, sports, exams. Admission, tuition fees.	College stabilises the system through various panels set up to review the disruption of the unit(s).
Synergy	Joint committee of Deans, Admission, Academic planning, Etc	Collaboration by Deans enhances better outcomes in the system.

Source: Compiled by researchers, 2026

Table 1 indicated that ST play a crucial role in the administration and management of college of education in Nigeria. The system (College of Education) is holistic with the office of Provost coordinating the activities through principal staff such as Deans, Heads of Department, Registrar, Bursar, Librarian, Directors, etc. These principal officers differently function their units effectively and efficiently.

In spite of the fact that the principal officers function independently in their various units, however, in order to make the entire system to function smoothly for the accomplishment of desired objectives, the different units function interdependently. For instance, though registry department work independently to ensure the students are admitted, however, the students have to be shortlisted by the Head of departments and authenticate by the Deans before submission to registry.

Feedback mechanism is paramount in colleges of education. Examination Committee (EC) organizes examination for the students. The failure or pass rate recorded during examination informed Department and Faculty Boards of pass or failure rate of the students in the said examination. Similarly, the functionality and workability of each department is measured by NCCE during the accreditation exercise. The panelist sent by NCCE to assess the department either give success or fail verdict. However, the decision of the panelist determines the way forward of the department. In another circumstance, the report of accreditation by NCCE inform the college of the required staff strength and the necessary facilities. From the above discourse, it is appropriate to state that the administration and management of colleges of education in Nigeria is a typical reflection of ST which function independently and also require one another other to function the entire system. Again, it allows for the synergy to be generated because of the communication channels are open in a properly functioning system such as colleges of education in Nigeria.

Research Question 2: What are the major challenges that hinder the effective use of systems theory in the administrative and management colleges of Education in Nigeria?

Table 2: Administrative and management Challenges Affecting Systems Theory Usage

Challenge Category	Specific Identified	Challenges	Summary of Effect on the System
Structural Challenges	Fragmented departments; duplication of duties		Weakens interconnectedness and causes inefficiencies.
Operational Challenges	Slow decision-making; bureaucratic delays		Breaks feedback loops and reduces responsiveness.
Resource Constraints	Insufficient funding; inadequate ICT facilities		Limits system integration and modernization.
Communication Barriers	Poor flow of information; top-down communication		Reduces collaboration and weakens interdependence.
Human Factors	Staff resistance to change; low administrative capacity		Prevents adoption of systemic reforms.
Policy and Compliance Issues	Difficulty implementing NCCE standards		Creates gaps between policy expectations and actual practices.

Source: Compiled by Researchers, 2026

The above table 2 showed that administrative and management challenges that affect colleges of education. In fact, these challenges are systemic and multi-layered. For instance, the fragmentation of departments, directorates and units weaken interconnectedness and brought about inefficiencies. Similarly, the operation of these department, directorates and units bring about slow decision-making and bureaucratic bottle neck. Furthermore, the feedback mechanism which ought to strengthen the system is delay.

Again, on the issue of lack of resources, the fund to function these departments, units and directorates is a major concern in the college of education. The provost of these college of education finds it difficult to utilize available fund to all the sub-system. Furthermore, it is very customarily to hear staff complaining of inadequate office tables, computers, instructional materials, among others. In another vein, poor communication develops between these sub-systems. In fact, this poor communication reduces collaboration among staff and weakens interdependence. In similar circumstance, lack of collaboration among staff brings about crisis in the system.

Discussion

Findings from research question one indicated that colleges of education in Nigeria is holistic, interdependent, open system, with stability mechanism to function smoothly. To candid, it is appropriate to state that each sub-system function independently and at the same time, it needs other sub-systems to function the larger system. Additionally, this organization is open-system, therefore, there are input and output of energy in the larger system which

allow the said organization to accomplish its mission, vision and objectives. These findings is in agreement of Liu, Zhuang and Shen (2023) who reported that system compose of several sub-systems which each sub-system functions to promote the functionality of the larger environment. In the same vein Rapp and Corral-Granados (2024, p.12) argued that ST “the educational aims and objectives can be achieved, when all facets of the economy or policy formulation and implementation or agencies work in harmony and in this regard, both the Ministry of Education and the school administrators/managers can harmoniously work together towards translating the policy statements into reality when they realize that, they are all parts of a common system which is education.”

In a similar circumstance, the findings from research question two have shown that the major challenges that hinder the effective use of systems theory in the administrative and management colleges of Education in Nigeria were systemic and multi-layered in nature. It was established that the fragmentation of system into sub-system brought out communication breakdown, inefficiency in the provision of fund, and weak interdependence. Moreover, it was discovered from the findings that staff in the sub-system are align to organizational reform, hence create the gap between policy formulation and implementation in the system. The findings agreement with the position canvassed by Ogunjimi et al. (2019) who argued that if the improvement in one aspect of the system is incompatible with all the other components of the system, then the change is rejected as the system tries to control itself in order to maintain a stable state after the disturbance.

Conclusion

ST remains a valuable framework for understanding and improving the administration and management of colleges of education in Nigeria. This theory emphasised the interconnectedness of all component parts which help in understanding an organization as dynamic and functional one. Colleges of education in Nigeria adopt this theoretical framework in its administrative and management practice. However, it was established that the lapses noticeable in communication channel, inadequate allocation, among others resulted in the misadministration and management of the colleges of education in Nigeria.

Recommendations

Based on the findings of this study, the following recommendations are made:

1. In line with the ST, colleges of education in Nigeria should be well-funded to ensure that sub-units within the system is effectively operational.
2. Provost of colleges of education in the country should adopt participatory decision-making to enhance the collaboration of sub-system (departments, registry, bursars, among others) to ensure the functionality of the system.

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