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Uncovering the Underlying Dimensions of Strategic Management Adoption in Public Higher Education Institutions in North-Eastern Nigeria: A Principal Component Analysis Approach

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Abstract
Public higher education institutions operate in an increasingly complex environment characterised by funding constraints, technological disruption, changing stakeholder expectations and growing demands for institutional accountability. These conditions make strategic management essential for institutional sustainability, responsiveness and performance. However, the organisational and environmental conditions shaping its adoption across public universities, polytechnics and colleges of education in North-Eastern Nigeria remain insufficiently understood. This paper develops a conceptual framework for examining the underlying dimensions of strategic management adoption using Principal Component Analysis (PCA). Drawing on the Resource-Based View, Institutional Theory and Dynamic Capabilities Theory, it proposes seven dimensions: strategic leadership and governance, organisational culture and readiness, financial and resource capacity, human capital and managerial competence, technological and information infrastructure, stakeholder engagement, and external institutional and environmental pressures. The paper proposes a quantitative cross-sectional survey involving personnel with relevant strategic and administrative responsibilities in public higher education institutions across the six states of North-Eastern Nigeria. PCA will be used to reduce observed indicators into a smaller number of empirically meaningful components. It offers a context-sensitive framework for understanding strategic management adoption and provides a basis for evidence-informed institutional planning and policy interventions.

Keywords: *Strategic management; higher education institutions; adoption; principal component analysis; North-Eastern Nigeria; institutional governance.*

Introduction

Higher education institutions are increasingly expected to operate beyond their traditional responsibilities of teaching, research and community service. They must respond to changing labour-market requirements, technological advancement, international competition, funding constraints and growing demands for accountability. These developments have made strategic management an important instrument for institutional direction, resource allocation and long-term sustainability (Bryson, 2018; David et al., 2020). In contemporary higher education, institutions are not judged exclusively by the number of programmes they offer or students they graduate. Their relevance is increasingly determined by their ability to produce useful knowledge, attract and retain competent personnel, develop partnerships, respond to societal needs and demonstrate

measurable institutional outcomes. Strategic management involves the formulation, implementation and evaluation of decisions that enable organisations to achieve their long-term objectives. In higher education, it provides a framework for aligning institutional priorities, available resources, organisational capabilities and external expectations. It also supports institutional adaptation in environments characterised by uncertainty and competition (Johnson et al., 2020; Mintzberg, 1994). Palladan and Adamu (2018) explain that strategic management encompasses strategy formulation, implementation and the conditions that facilitate or constrain the achievement of organisational objectives. This perspective is particularly relevant to public higher education institutions, where strategic plans must be translated into practical institutional actions. The existence of a strategic plan does not necessarily demonstrate that an institution has adopted strategic management in its actual decision-making and operational processes.

Nigerian public universities, polytechnics and colleges of education face persistent challenges involving inadequate funding, infrastructural deficits, staff shortages, limited research capacity and increasing enrolment. These challenges are not isolated administrative difficulties. They affect institutions' ability to maintain academic standards, invest in research, retain qualified personnel, modernise infrastructure and respond to changing demands. Institutions in North-Eastern Nigeria also operate within a regional environment affected by insecurity, displacement, uneven development and disruptions to educational infrastructure. These conditions create a compelling need for strategies that respond to local realities while supporting national and international expectations. The adoption of strategic management in this setting should therefore be understood in relation to the resources, leadership arrangements, organisational culture and external pressures that shape institutional decisions. Nigerian scholarship has established the importance of strategic leadership, organisational innovativeness and information technology capability in the implementation of organisational strategies in public tertiary institutions (Palladan et al., 2018). Palladan et al. (2016) also examined strategic leadership as a means of revitalising Nigerian public tertiary institutions, drawing attention to the leadership qualities required to translate institutional development strategies into practical outcomes. Palladan (2020) further discussed strategic leadership as an important construct for Nigerian public institutions, particularly in relation to organisational strategy implementation and development. These contributions are relevant because strategic management adoption is unlikely to become effective where institutional leaders lack the capacity or commitment to guide its implementation. More recently, Palladan et al. (2023) applied Principal Component Analysis to managerial factors influencing lecturers' job performance in Nigerian tertiary institutions. Their study identified motivation, recruitment processes, adoption of strategic management practices and organisational support as important components explaining variations in lecturers' job performance. The study demonstrates the relevance of PCA for examining managerial and organisational issues within the Nigerian higher education context. It also provides a methodological foundation for extending the application of PCA to a broader institutional question: what are the underlying dimensions that shape strategic management adoption in public higher education institutions?

Despite these contributions, there remains a need to examine how the organisational and environmental conditions associated with strategic management adoption are structured across different categories of public higher education institutions, particularly in North-Eastern Nigeria. Existing discussions often treat leadership, funding, technology, staff competence and institutional culture as separate considerations. Yet, these factors may be interrelated. For example, effective

leadership may influence resource allocation, staff commitment and the adoption of digital systems. Similarly, external regulatory pressures may encourage institutions to develop formal strategic plans, but the availability of resources and organisational readiness may determine whether those plans are implemented. Examining these factors independently may therefore provide an incomplete picture of strategic management adoption. This paper addresses the gap by developing a conceptual framework and proposing an empirical PCA approach for identifying the dominant dimensions of strategic management adoption in public higher education institutions in North-Eastern Nigeria. It argues that effective strategic management requires more than the existence of approved strategic plans. It depends on institutional capacity to formulate, implement, monitor and continuously adjust strategic decisions in response to internal capabilities and external conditions. The paper specifically seeks to establish the conceptual foundations of strategic management adoption, identify its proposed underlying dimensions, and present a methodological approach for examining how observed indicators may cluster into empirically meaningful components.

Conceptual and Theoretical Foundations

Strategic Management Adoption in Higher Education

Strategic management adoption refers to the extent to which an institution integrates strategic thinking, planning, implementation, monitoring and evaluation into its governance and administrative processes. It involves establishing institutional priorities, assessing internal capabilities, responding to environmental changes and aligning resources with strategic objectives (Bryson, 2004, 2018). Adoption should not be reduced to the preparation of a strategic plan or the establishment of a planning committee. It requires the integration of strategic priorities into budgeting, staffing, academic development, research management, infrastructure investment and institutional performance evaluation. In higher education, strategic management is more complex than conventional business planning because institutions must balance multiple objectives, including academic quality, research productivity, access, financial sustainability, staff development, stakeholder satisfaction and social responsibility (Altbach et al., 2009; Marginson, 2016). Unlike many private organisations, public higher education institutions operate under multiple accountability relationships. They must respond to government policies, regulatory requirements, professional standards and the expectations of students and communities. These demands can create competing priorities, making strategic decision-making particularly challenging. Mintzberg (1994) cautions against treating strategic planning as a substitute for strategic thinking. Institutions may possess formally approved strategic plans without demonstrating the leadership commitment, organisational readiness or resources required for implementation. Palladan and Adamu (2018) similarly discuss the importance of strategy formulation and implementation while drawing attention to factors that may constrain the effective adoption of strategic management practices. Palladan et al. (2018) provide a more specific Nigerian tertiary education perspective by examining the role of strategic leadership, organisational innovativeness and information technology capability in effective strategy implementation. These arguments suggest that strategic management adoption is best understood as a multidimensional institutional process.

Theoretical Foundations

Three complementary theoretical perspectives underpin this paper: the Resource-Based View,

Institutional Theory and Dynamic Capabilities Theory. Their combination provides a broader explanation of why public higher education institutions adopt strategic management practices and why their capacity to implement them may differ. The Resource-Based View (RBV**)** explains how organisational resources and capabilities contribute to sustained performance. Barney (1991) argues that resources that are valuable, rare, difficult to imitate and organisationally embedded can provide competitive advantage. In higher education, such resources may include qualified academic staff, effective leadership, research infrastructure, financial capacity, institutional knowledge and established partnerships (Barney & Arikan, 2001). From this perspective, strategic management adoption depends partly on an institution's ability to mobilise and deploy its resources effectively. An institution may recognise the importance of strategic planning but lack the financial, human or technological resources required to implement its priorities. The RBV therefore provides a theoretical basis for including financial capacity, human capital and technological infrastructure in the proposed framework.

Institutional Theory explains how organisations respond to formal regulations, professional expectations and wider societal pressures. DiMaggio and Powell (1983) identify coercive, mimetic and normative pressures as mechanisms through which organisational practices become established. Public higher education institutions may adopt strategic management practices in response to government policies, regulatory requirements, accreditation expectations and practices observed in successful institutions. Scott (2014) similarly explains how regulative, normative and cultural-cognitive institutional elements shape organisational behaviour. This perspective is particularly relevant to public institutions because their governance and administrative processes are influenced by government decisions, regulatory agencies and professional expectations. It provides the foundation for considering external institutional and environmental pressures as a possible dimension of strategic management adoption.

Dynamic Capabilities Theory focuses on an organisation's ability to integrate, build and reconfigure internal and external competencies in response to changing environments (Teece et al., 1997). Teece (2007) identifies sensing, seizing and transforming as central processes through which organisations respond to opportunities and threats. This perspective is relevant to higher education institutions facing technological changes, funding uncertainty, shifting stakeholder demands and regional disruptions. Strategic management adoption requires institutions not only to possess resources but also to adapt and redeploy them when circumstances change. The theory therefore supports the inclusion of organisational readiness, innovation, leadership and technological capacity in the proposed framework. Together, these theories explain strategic management adoption as a product of internal resources, institutional pressures and adaptive organisational capabilities. The RBV explains what institutions possess, Institutional Theory explains the external expectations influencing their behaviour, while Dynamic Capabilities Theory explains how institutions adapt and reconfigure their resources in changing environments.

Proposed Dimensions of Strategic Management Adoption

Based on the theoretical perspectives and relevant literature, this paper proposes seven dimensions that may explain variations in strategic management adoption across public higher education institutions in North-Eastern Nigeria. The dimensions are conceptually distinct but may be empirically related. Their final structure will be determined through the proposed PCA.

Strategic Leadership and Governance

Leadership provides direction, establishes institutional priorities and influences the commitment required for strategic management implementation. Institutional leaders are responsible for communicating strategic objectives, coordinating decision-making, mobilising resources and ensuring accountability. Strategic leadership is particularly important in public higher education because institutional strategies must be translated into coordinated actions across faculties, departments, directorates and administrative units. Palladan et al. (2016) identify strategic leadership as a significant consideration in revitalising Nigerian public tertiary institutions. Their discussion highlights the need for institutional leaders capable of confronting organisational challenges and directing institutional development. Palladan (2020) similarly emphasises the role of strategic leadership in organisational strategy implementation and development. These arguments suggest that strategic management adoption should not be treated as the responsibility of planning officers alone. It requires commitment from principal officers and other institutional managers who influence decisions and supervise implementation. Effective governance also requires transparent decision-making, clearly defined responsibilities, institutional accountability and consistent monitoring of strategic initiatives. Strategic leadership and governance may therefore be reflected in indicators such as management commitment, clarity of strategic direction, participation in decision-making, accountability arrangements and regular evaluation of institutional priorities.

Organisational Culture and Readiness

Organisational culture influences how members understand and respond to institutional change. Institutions characterised by openness, collaboration, innovation and learning are more likely to support strategic initiatives than those dominated by rigid administrative practices. Cameron and Quinn (2011) explain that organisational culture shapes internal behaviour, management priorities and institutional effectiveness. Schein and Schein (2017) similarly demonstrate how shared assumptions and values influence organisational responses to change.Organisational readiness includes staff willingness to participate in strategic processes, acceptance of institutional reforms and the presence of a learning-oriented environment. It also involves the extent to which institutional members are prepared to reconsider established procedures and embrace new approaches to teaching, research, administration and resource management. Palladan et al. (2018) associate organisational innovativeness with effective strategy implementation, suggesting that an institution's openness to new ideas may influence the practical adoption of strategic management. In the context of North-Eastern Nigeria, organisational readiness may be especially important because institutions may need to adjust their priorities in response to changing security, economic and educational conditions. A culture that encourages learning, collaboration and problem-solving may improve the institution's ability to implement strategic decisions.

Financial and Resource Capacity

Strategic management implementation requires adequate financial, physical and administrative resources. Institutions may formulate ambitious strategic plans but struggle to implement them when funding is insufficient or resource allocation is poorly aligned with institutional priorities. The RBV provides a useful explanation of how resource availability and deployment influence organisational capabilities (Barney, 1991). In public higher education institutions, financial capacity may include government allocations, internally generated revenue, research grants, endowments

and partnerships. The availability of functional infrastructure, laboratories, libraries, classrooms, accommodation and administrative facilities may also influence strategic management adoption. However, resource capacity should not be understood solely in terms of the amount of money available. It also includes the institution's ability to allocate resources according to strategic priorities, monitor expenditure and reduce avoidable waste. An institution may receive substantial funding without achieving its strategic objectives if financial decisions are poorly coordinated or disconnected from institutional priorities. Conversely, institutions operating under limited resources may achieve meaningful outcomes where they adopt effective prioritisation, partnership development and resource mobilisation strategies. Financial and resource capacity is therefore expected to capture both resource availability and the institutional ability to deploy available resources strategically.

Human Capital and Managerial Competence

Human capital represents the knowledge, experience and competencies available within an institution. Becker (1964) identifies education, training and skills as investments that improve individual and organisational productivity. Strategic management requires personnel who can undertake environmental analysis, formulate institutional strategies, manage projects, monitor performance and evaluate outcomes. Palladan et al. (2023) demonstrate the relevance of managerial factors to lecturers' performance in Nigerian tertiary institutions. Their PCA study identified motivation, recruitment processes, adoption of strategic management practices and organisational support as important components explaining variations in lecturers' job performance. Although their study focused on lecturers' performance rather than the institutional adoption of strategic management, it provides relevant evidence that managerial and organisational conditions deserve empirical attention in Nigerian higher education. Human capital and managerial competence in the present study may include the availability of qualified personnel, management training, strategic planning skills, project management competence, staff development and succession planning. The ability of academic and administrative staff to understand institutional objectives and translate them into departmental activities is also important. Strategic management adoption is unlikely to be sustained where institutional personnel lack the knowledge and skills required to implement strategic initiatives.

Technological and Information Infrastructure

Digital technologies increasingly influence institutional planning, administration, teaching, research and stakeholder communication. Strategic decisions depend on timely and reliable information. Institutions with functional management information systems, digital records, data analytics and effective communication infrastructure may be better positioned to monitor performance and respond to emerging challenges. Bharadwaj et al. (2013) explain how digital technologies have become integral to organisational strategy rather than merely supporting operational activities. Vial (2019) also demonstrates that digital transformation involves organisational changes arising from the adoption of digital technologies. Palladan et al. (2018) provide a Nigerian tertiary education perspective by identifying information technology capability as an important consideration in effective strategy implementation. For public higher education institutions, technological infrastructure may include functional internet access, management information systems, digital libraries, electronic records, institutional databases and systems for monitoring staff and student performance. Technology also supports communication between

management and institutional stakeholders. However, the presence of computers or internet facilities alone does not demonstrate strategic technological capability. Institutions must be able to use information systems to support planning, decision-making, monitoring and institutional learning.

Stakeholder Engagement

Higher education institutions operate within networks of internal and external stakeholders, including government agencies, academic staff, students, parents, employers, alumni, professional bodies and host communities. Strategic management is more likely to reflect institutional needs when these stakeholders participate in identifying priorities and evaluating outcomes. Freeman (1984) emphasises the importance of considering stakeholders whose interests may affect or be affected by organisational activities. Bryson (2004) similarly explains how stakeholder identification and analysis contribute to effective public-sector strategic planning. Stakeholder engagement can improve institutional legitimacy, responsiveness and implementation support. It may also enable institutions to identify opportunities for collaboration, funding, research partnerships, industrial attachment and community development. In public higher education institutions, stakeholder participation may take different forms, including consultations, representation on committees, feedback mechanisms, alumni engagement, employer partnerships and collaboration with government and community organisations. The quality of engagement matters as much as its existence. Institutions should provide meaningful opportunities for stakeholders to contribute to institutional priorities rather than limiting participation to ceremonial or administrative exercises.

External Institutional and Environmental Pressures

Public higher education institutions are influenced by government policies, regulatory requirements, accreditation processes, economic conditions, technological developments and societal expectations. Institutional Theory explains why organisations adopt particular practices partly in response to external pressures (DiMaggio & Powell, 1983; Scott, 2014). In Nigeria, public higher education institutions operate within a regulatory environment shaped by government policies, funding arrangements and quality assurance requirements. Accreditation and professional standards may encourage institutions to formalise their planning and monitoring processes. Institutions may also adopt strategic practices by observing the approaches used by other institutions or responding to expectations from funding and development partners.

In North-Eastern Nigeria, environmental conditions may include insecurity, displacement, infrastructure disruptions and uneven economic development. These factors may influence institutional priorities, resource mobilisation and the ability to implement long-term plans. Strategic management adoption must consequently reflect both national policy expectations and the realities of the regional operating environment. This dimension therefore considers the extent to which institutions recognise, monitor and respond to external pressures when formulating and implementing their strategic priorities.

Conceptual Framework and Research Propositions

The proposed framework positions the seven dimensions as interconnected components of strategic management adoption in public higher education institutions. It assumes that strategic management adoption is not adequately explained by a single organisational condition. Rather, it

emerges from the combined influence of leadership, culture, resources, personnel, technology, stakeholders and external pressures. The proposed dimensions and their indicative measurement areas are presented below.

Proposed dimension	Principal indicators
Strategic leadership and governance	Leadership commitment, strategic direction, accountability and monitoring
Organisational culture and readiness	Innovation, collaboration, learning orientation and change readiness
Financial and resource capacity	Funding adequacy, infrastructure and resource allocation
Human capital and managerial competence	Staff competence, managerial skills and professional development
Technological and information infrastructure	Digital systems, data availability and ICT infrastructure
Stakeholder engagement	Participation, communication and external partnerships
External institutional and environmental pressures	Government policies, regulation, accreditation and environmental uncertainty

The framework generates seven propositions:

P1: Strategic leadership and governance constitute an important dimension of strategic management adoption in public higher education institutions.

P2: Organisational culture and readiness represent an underlying dimension of strategic management adoption.

P3: Financial and resource capacity constitute a significant dimension of strategic management adoption.

P4: Human capital and managerial competence represent an important dimension of strategic management adoption.

P5: Technological and information infrastructure constitute an underlying dimension of strategic management adoption.

P6: Stakeholder engagement represents an important dimension of strategic management adoption.

P7: External institutional and environmental pressures constitute an underlying dimension of strategic management adoption.

These propositions guide empirical investigation rather than establish predetermined statistical relationships. PCA will determine whether the proposed indicators cluster into the anticipated components or reveal a different empirical structure. For instance, leadership and organisational culture may emerge as separate components or combine into a broader organisational capability component. Similarly, financial capacity and human capital may demonstrate strong relationships depending on the perceptions and experiences of respondents. The empirical structure should therefore be determined by the data rather than imposed in advance.

Methodological Approach: Principal Component Analysis

Research Design and Population

The proposed study adopts a quantitative cross-sectional survey design involving public higher education institutions in North-Eastern Nigeria. The geographical coverage will include

Adamawa, Bauchi, Borno, Gombe, Taraba and Yobe States. The institutional population will comprise public universities, polytechnics and colleges of education operating within the region. Including the three categories of institutions is important because strategic management practices may differ according to institutional mandates, governance structures, funding arrangements and administrative traditions. The study will target academic and non-academic personnel with relevant knowledge of institutional planning, administration, resource management and strategic decision-making. These may include principal officers, deans, directors, heads of departments, planning officers, heads of units and other appropriately positioned staff. Respondents should have sufficient institutional experience to assess strategic management practices and the conditions influencing their adoption. A structured questionnaire will be developed from the seven proposed dimensions. Approximately 35 observable indicators may initially be considered, subject to literature review, expert assessment and pilot testing. Responses may be measured using a five-point Likert scale ranging from strongly disagree to strongly agree. The questionnaire should include clear statements that capture actual institutional practices rather than only general opinions about the importance of strategic management. Content validity will be strengthened through expert review involving specialists in strategic management, higher education administration and research methodology. A pilot study may be conducted in selected institutions outside the final sample or with respondents who will not participate in the main survey. Feedback from the pilot study will be used to improve the clarity, relevance and consistency of the measurement items. An initial sample target of approximately 300–400 respondents is proposed, subject to the final number of indicators, institutional distribution, expected response rate and adequacy of the correlation matrix. Sample adequacy should not be determined through a simple respondent-to-variable ratio alone. The strength of correlations, communalities, number of indicators and stability of the extracted components are also important considerations (MacCallum et al., 1999; Mundfrom et al., 2005). A proportionate approach to institutional representation may be adopted to ensure that universities, polytechnics and colleges of education are adequately represented.

Data Analysis

PCA will be used to examine the structure of the observed indicators and identify a smaller set of components that account for substantial variation in the data. PCA is a data-reduction technique that transforms correlated variables into a smaller number of uncorrelated linear combinations called principal components (Jolliffe & Cadima, 2016). It is particularly useful where a study begins with a relatively large number of indicators and seeks to identify a more manageable structure without losing an excessive amount of information. The suitability of PCA for examining managerial and organisational dimensions in Nigerian tertiary institutions has local empirical support. Palladan et al. (2023), in their study of 322 lecturers in Nigerian tertiary institutions, employed PCA to identify managerial factors influencing lecturers' job performance. Their findings indicated that motivation, recruitment processes, adoption of strategic management practices and organisational support accounted for 73.6% of the total variance. Although their study examined managerial factors influencing lecturers' performance rather than strategic management adoption itself, it demonstrates the applicability of PCA to identifying dominant managerial dimensions within the Nigerian higher education context. The present study extends this methodological application to the broader question of strategic management adoption.

The analysis will proceed through five stages. First, the dataset will be screened for missing observations, outliers, response patterns and unsuitable distributions. The correlation matrix will be examined to establish whether sufficient relationships exist among the indicators. Variables that show very weak relationships with the remaining indicators may require reconsideration because PCA is most informative when meaningful relationships exist within the dataset. Second, the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's Test of Sphericity will be applied to assess sampling adequacy and whether the correlation matrix is suitable for component extraction. A KMO value of at least .60 may be considered a minimum practical threshold, although higher values are preferable (Kaiser, 1974). Bartlett's test should be statistically significant, indicating that the correlation matrix differs sufficiently from an identity matrix. These tests will provide preliminary evidence regarding the suitability of the data for PCA.

Third, component retention will be guided by parallel analysis, the scree plot and theoretical interpretability rather than relying exclusively on the eigenvalue-greater-than-one rule. Parallel analysis compares observed eigenvalues with those generated from random data and offers a more defensible basis for determining the number of components to retain (Horn, 1965; Hayton et al., 2004). The scree plot will also be examined to identify the point at which additional components contribute relatively little explanatory information. Fourth, an appropriate rotation procedure will be selected. Because the proposed dimensions may be correlated, an oblique rotation such as Promax or Direct Oblimin may be preferable. Component loadings, cross-loadings and communalities will be examined to determine whether individual indicators contribute meaningfully to the extracted components. Indicators with weak loadings or substantial cross-loadings may be reviewed or removed based on statistical and theoretical considerations (Costello & Osborne, 2005; Fabrigar et al., 1999; Watkins, 2018). The final interpretation should be guided by the common meaning of the indicators retained within each component. Finally, internal consistency will be examined for the resulting components using suitable reliability estimates. The retained components will be interpreted and labelled based on their empirical composition and theoretical meaning. The findings should report the KMO statistic, Bartlett's test, eigenvalues, percentage of variance explained, component loadings, communalities and reliability estimates. These details will enable readers to assess the adequacy of the analysis and the strength of the resulting component structure.

It is important to distinguish PCA from common-factor exploratory factor analysis. Although both techniques can reduce a large number of observed variables, PCA explains total variance, whereas common-factor analysis focuses on shared variance attributable to underlying latent constructs (Fabrigar et al., 1999; Jolliffe & Cadima, 2016). If the principal objective is to identify latent organisational constructs rather than reduce observed indicators, common-factor analysis may be more appropriate. The choice of PCA in this paper reflects its primary objective of identifying a parsimonious empirical structure of strategic management adoption indicators. The study will not interpret the extracted components as causal determinants unless an appropriate subsequent explanatory analysis is conducted.

Expected Contributions and Implications

Theoretically, it offers a context-sensitive framework that brings together internal organisational conditions and external environmental pressures in explaining strategic management adoption. By

integrating the Resource-Based View, Institutional Theory and Dynamic Capabilities Theory, the paper recognises that institutional strategy is shaped by the resources available to an institution, the expectations imposed by its operating environment and its capacity to adapt to changing conditions. This integrated perspective is particularly relevant to public higher education institutions operating under resource constraints and complex governance arrangements.

Methodologically, the paper proposes PCA as an empirical approach for identifying the dominant dimensions underlying strategic management adoption. Rather than treating all indicators as equally important or assuming that the seven proposed dimensions will emerge unchanged, the approach allows the data to reveal the most defensible component structure. It also extends the methodological direction demonstrated by Palladan et al. (2023), who applied PCA to managerial factors in Nigerian tertiary institutions. The present study moves the application towards a broader examination of institutional strategic management adoption across different categories of public higher education institutions.

Practically, the framework may provide guidance for institutional leaders and policymakers. If leadership and governance emerge as dominant components, institutional interventions may prioritise strategic leadership development, accountability and improved coordination across management levels. If financial capacity or technological infrastructure dominates, policymakers may need to reconsider resource allocation, infrastructure investment and digital transformation priorities. Where human capital and managerial competence are prominent, institutions may strengthen management development, staff training and succession planning. If stakeholder engagement emerges as an important component, institutions may improve participatory planning and partnerships with employers, government agencies, alumni and host communities.

The framework may also assist regulatory and funding agencies in assessing institutional readiness for strategic reforms. Rather than evaluating strategic management solely through the existence of a written strategic plan, institutional assessments could consider whether the necessary leadership, resources, personnel, technology and monitoring arrangements are available to support implementation. In this way, the study could inform institutional strategic plans, staff development programmes, quality assurance arrangements and government policies on higher education reform.

Conclusion

Strategic management adoption is increasingly important for public higher education institutions operating in environments characterised by resource constraints, technological change and growing demands for institutional accountability. Yet, its effective implementation depends on more than the preparation of strategic plans. It requires leadership commitment, organisational readiness, adequate resources, competent personnel, technological infrastructure, stakeholder participation and the ability to respond to external pressures. This paper proposes a seven-dimensional framework for investigating strategic management adoption in public higher education institutions in North-Eastern Nigeria. By applying PCA, the proposed empirical study will identify how observed indicators cluster into meaningful components and establish a more parsimonious understanding of the conditions supporting strategic management adoption. It also builds on Palladan's contributions to strategic management practices, strategy implementation, strategic leadership and PCA in Nigerian tertiary institutions. The central message is that public higher education institutions must move beyond planning as a formal administrative exercise and

develop the organisational capabilities needed to anticipate change, make informed decisions and translate institutional priorities into measurable outcomes. The time has come for institutions to get in front of change rather than continually react to it. Strategic management should become an embedded institutional practice, supported by capable leadership, informed decision-making, adequate resources and continuous organisational learning.

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