A Comparative Study of Vertical and Horizontal Revenue Allocation Formulae in Nigeria, Malaysia, and Brazil: Challenges and Implications

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Abstract
This study examines the revenue allocation formulae employed in Nigeria, Malaysia, and Brazil, focusing on the vertical and horizontal distribution mechanisms. It uses a qualitative methodology to explore the complexities of revenue sharing, identify the challenges inherent in these systems, and analyse their implications for governance, equity, and development. This paper recommends optimising revenue allocation practices to achieve sustainable growth and fiscal balance by leveraging comparative insights.

1.1 Introduction

Revenue allocation remains a cornerstone of fiscal federalism, fundamentally shaping the dynamics between various government tiers and influencing economic development trajectory. It determines how financial resources are distributed and utilised, serving as a tool for addressing regional disparities, promoting equity, and fostering national cohesion. In this context, vertical allocation is the distribution of resources between the central government and subnational entities, such as states or provinces. In contrast, horizontal allocation pertains to the equitable sharing of revenues among subnational governments themselves.
The comparative analysis of the revenue allocation frameworks of Nigeria, Malaysia, and Brazil delves into their structures, criteria, and inherent challenges. These three countries were selected based on their federal governance systems and the diverse strategies they employ for revenue sharing. Nigeria represents a resource-dependent model heavily reliant on oil revenues, Malaysia illustrates a grant-based system with centralised oversight, and Brazil showcases a decentralised tax-sharing approach.

1.2 Statement of the Problems

Despite the critical importance of revenue allocation, revenue sharing continues to spark debates and conflicts across federations. In Nigeria, an over-reliance on oil revenue has exacerbated economic vulnerabilities, widened regional disparities, and undermined fiscal stability. In Malaysia, the centralised grant-based approach has successfully facilitated national development but has simultaneously raised concerns about state autonomy and fiscal imbalances. Meanwhile, Brazil's decentralised revenue-sharing system exemplifies efforts to balance fiscal equity and regional needs. However, it faces inefficiencies, frequent disputes, and administrative challenges that hinder optimal resource utilisation. The system's complexity often leads to delays and conflicts in intergovernmental financial relations.
These diverse challenges underscore the need for a comprehensive analysis of revenue allocation frameworks in different federations. This study examines these systems' persistent

equity, efficiency, and transparency issues and their broader implications for governance and sustainable development.

Existing literature predominantly focuses on individual country case studies or broad theoretical analyses of revenue allocation. Limited comparative research explores the practical implementation and outcomes of vertical and horizontal revenue allocation across countries with distinct federal systems. While studies on Nigeria emphasise its resource dependency and regional inequalities, they rarely draw lessons from other federations. Similarly, research on Malaysia and Brazil often overlooks the broader implications of their systems for other countries facing similar challenges. This study fills this gap by comparing Nigeria, Malaysia, and Brazil, identifying transferable lessons and best practices. The study contributes to the growing body of knowledge by comparing revenue allocation frameworks in three diverse federal systems. This comparison provides policymakers with actionable insights into addressing everyday challenges.

1.3 Objectives of the Study

i. To analyse the structures and criteria of vertical and horizontal revenue allocation formulae in Nigeria, Malaysia, and Brazil.
ii. To identify the challenges inherent in each country's revenue allocation system.
iii. To compare the effectiveness of revenue-sharing mechanisms in promoting equity and development.
iv. To provide actionable recommendations for optimising revenue allocation systems.

2.0 Review of Related Literature

2.1 Conceptual Framework

2.1.1 Vertical Allocation

Vertical allocation is the systematic distribution of financial resources between different levels of government, typically the central or federal government and subnational entities such as states, provinces, or local governments. This process is crucial for balancing central oversight and subnational autonomy in federations. The central government often retains a significant portion of national revenue to fund nationwide programmes, ensure macroeconomic stability, and address strategic priorities such as defence, infrastructure, and social welfare. Conversely, subnational governments require adequate financial resources to execute their constitutionally assigned responsibilities, including education, healthcare, and local infrastructure development.

The challenge in vertical allocation lies in determining an equitable share that aligns with the expenditure responsibilities of each tier of government. A well-structured vertical allocation framework considers expenditure assignments, revenue-generating capacity, and fiscal balance. By balancing these factors, vertical allocation fosters a cooperative federalism model where central and subnational governments work toward shared national goals while addressing localised needs.

2.1.2 Horizontal Allocation

Horizontal allocation involves sharing revenues among subnational governments based on specific criteria to promote equity and efficiency within a federation. Unlike vertical allocation, which focuses on intergovernmental distribution, horizontal allocation ensures fair distribution among subnational units, such as states and local governments or municipalities, to address disparities and enhance uniform development.

2.1.3 Key Principles Guiding Horizontal Allocation

- **Fiscal Equity**: Ensuring that subnational governments have sufficient resources to provide comparable levels of public services, regardless of their revenue-generating capacity or economic disparities. The poorer regions with limited revenue streams require additional support to bridge the gap with wealthier areas.
- **Economic Efficiency**: Allocating resources to incentivise productivity and judicious use of funds. Subnational governments should be motivated to enhance their fiscal capacity without becoming overly dependent on federal transfers.
- **Accountability and Transparency**: Designing allocation formulae that are transparent, predictable, and based on objectively measurable criteria. This ensures trust among stakeholders and reduces conflicts over perceived unfairness in resource distribution.

2.1.4 Criteria for Horizontal Allocation

Horizontal revenue-sharing frameworks often incorporate multiple criteria to ensure a balanced approach. The social factor is one of the significant factors considered in the allocation formula, which includes specific demographic or societal considerations to ensure equitable distribution of resources, often addressing disparities or developmental needs across regions or entities. In fiscal allocation, especially in Nigeria's revenue allocation system, the social factor is designed to account for the unique social realities that may affect the ability of states or regions to generate revenue or provide services effectively. The social factors include population size, equality, School enrolment, hospital enrolment, and internally generated revenue efforts. Including a social factor aims to promote fairness by considering the varying capacities and needs of different regions or entities, ensuring that vulnerable or disadvantaged areas are not left behind.

2.1.4 Commonly used criteria

- **Population Size**: Allocating resources based on the population of subnational units, recognising that more populated areas require more funds for public services.
- **Fiscal Capacity**: Considering the ability of subnational governments to generate revenue from their resources. Regions with limited budgetary capacity often receive additional allocations to promote equity.
- **Regional Disparities**: Addressing economic and developmental imbalances by supporting less-developed regions.
- **Performance Indicators**: Encouraging efficient use of funds by rewarding subnational governments, demonstrating prudent financial management and achieving development milestones.
- **Land Mass**: Landmass is the total land area that a country or region occupies. It is an essential geographic variable in fiscal federalism, as it can have significant implications for resource distribution, infrastructure development, and governance. When discussing land mass revenue allocation, several factors must be considered:
- **Geographic Size and Revenue Needs**: Larger land masses often require more resources for the construction and maintenance of infrastructure, such as roads, bridges, and schools. Due to distances between regions, these regions may face higher transportation and logistics costs, which can influence the allocation of fiscal resources.
- **Decentralisation and Service Delivery**: In countries with vast land areas, decentralising fiscal responsibilities can improve service delivery. However, the sheer size of the territory may

present challenges in coordinating development projects and ensuring that resources reach all regions equitably.

- **Land Mass and Population Density**: Larger land masses may or may not have dense populations. In cases where the population is sparse, the cost of providing services (such as education, healthcare, and security) can increase, necessitating higher revenue allocations to underpopulated regions.
- **Terrain**: Terrain is the physical characteristics of the land surface, such as mountains, valleys, plains, forests, and deserts. The terrain of a region influences various aspects of governance, including revenue allocation, because it affects transportation, agricultural productivity, and the provision of public services. Key conceptual issues related to terrain include:
- **Infrastructure Development**: Terrain type can complicate the building and maintenance of infrastructure. Mountainous regions sometimes require more expensive engineering solutions for roads and bridges, while coastal areas may need specialised infrastructure for maritime activities. Revenue allocation systems must account for these variations to ensure that regions with complex terrain receive adequate funding for infrastructure development.
- **Agricultural Output and Resource Distribution**: Different terrains support different types of agriculture and natural resource extraction. Fertile plains are ideal for agriculture, while mountainous areas may be rich in minerals but challenging for farming. Regions with more difficult terrain might require significant financial support to develop alternative revenue sources and manage natural resources effectively.
- **Natural Disasters and Vulnerability**: Terrain also affects a region's vulnerability to natural disasters like floods, landslides, and droughts. Areas prone to such disasters require additional funds for disaster preparedness and response. A revenue allocation system must consider these factors to ensure that vulnerable regions are adequately supported in disaster risk management.
- **Economic Activities**: Terrain influences the types of viable financial activities in a region. Areas with flat terrain may be more suitable for large-scale agriculture, while mountainous or forested areas may have mining, forestry, or tourism opportunities. These economic activities impact revenue generation, affecting the distribution of resources to various regions based on their financial capacity and needs.

2.1.5 Design of Allocation Formulae

The design of allocation formulae is critical to the success of horizontal revenue sharing. Effective formulae strike a balance between ensuring equitable distribution and incentivising fiscal responsibility. They often combine fixed shares, conditional grants, and performance-based incentives to achieve multiple objectives.

2.2 Empirical Framework

Revenue allocation has been extensively studied as a key component of fiscal federalism. Scholars such as Bird and Smart (2002) highlight the principles of equity and efficiency in intergovernmental fiscal transfers. Akindele and Olaopa (2020) discuss the unique challenges of resource-dependent economies like Nigeria. Siddique (1997) examines Malaysia's grant-based system and its implications for regional development, while Rezende and Garson (2016) focus on Brazil's decentralised tax-sharing approach. This literature underscores the diversity of revenue allocation frameworks and their varying impacts on governance and development.

Chakraborty and Jha (2009) emphasise the role of horizontal equity in revenue-sharing systems, particularly in federal systems with significant regional disparities. Their study suggests that ensuring fairness in allocation helps mitigate conflicts and promotes national integration, a crucial aspect for multi-ethnic and multi-regional countries like Nigeria. **Oates (1999)** argues that decentralisation through fiscal federalism improves efficiency in the allocation of resources by matching local preferences with local expenditure decisions. This aligns with the view that decentralised revenue allocation allows for more responsive and effective governance, especially in large federations. **Bahl and Linn (1992)** explore the effectiveness of revenue allocation in promoting regional autonomy and economic development. Their research shows decentralised fiscal policies can improve public services and equitable development across regions when implemented with sound financial management.

Rodden (2006) offers a comparative perspective on how revenue allocation impacts fiscal discipline in federations. By analysing cases like the U.S. and Germany, he argues that successful fiscal federalism requires robust institutional frameworks to prevent the misuse of allocated revenues and ensure fiscal responsibility at the local level. **Rao and Singh (2005)** analyse India's experience with revenue sharing and argue that despite the complex system of transfers, revenue allocation mechanisms have contributed to a reduction in regional disparities and helped address the needs of underdeveloped states. This highlights the importance of targeted fiscal transfers in addressing inequality. **Akinlo and Akinyemi (2015)** assess the effect of revenue allocation on public service delivery in Nigeria, finding that inadequate allocation to subnational governments often leads to poor service outcomes, undermining citizens' trust in the system and contributing to governance challenges.

2.3 Theoretical Framework

The theories underpinning this study are Fiscal Federalism, Public Choice, and Resource Dependence.

2.3.1 Fiscal Federalism Theory

The fiscal federalism theory was propounded by Musgrave, R. in the late (1950s) and early 1960s and further elaborated by Wallace E. O. (1972). The theory examines the optimal division of responsibilities and fiscal resources between different levels of government (federal, state, and local) in a federated system. It ensures that resources are allocated efficiently and equitably to maximise societal welfare. Fiscal federalism theory is directly relevant to revenue allocation systems, particularly in federal countries like Nigeria, where resources must be shared across federal, state, and local governments. The theory provides a framework to optimise resource distribution and ensure revenue allocation mechanisms address the challenges. It ensures a fair distribution of resources to reduce regional disparities and support underdeveloped areas. In Nigeria, this is reflected in principles like the derivation formula (allocating a share to oil-producing states) and the inclusion of social factors such as population and equality. The policy encourages the efficient use of resources by aligning revenue and expenditure responsibilities with the tier of government best suited to deliver the associated services. The guideline governs the use of vertical (federal-to-state) and horizontal (state-to-state and Local government-to-local Government) allocation to address revenue disparities between regions, ensuring that all tiers of government can discharge their constitutional responsibilities.

Relevance of the theory to Nigeria's Revenue Allocation Formula

In Nigeria, the fiscal federalism theory underpins the allocation of federally collected revenues, ensuring equitable sharing among the three tiers of government. Specifically, the vertical allocation shares resources with the federal, state, and local governments. Horizontal Allocation among states considers factors like population, landmass, terrain, and derivation, which align with equity and efficiency principles.

2.3.2 Public Choice Theory

James M. B. and Gordon T. propounded the theory (1962). Public Choice Theory applies the principles of economics to the study of political decision-making. It assumes that individuals in the political process, voters, politicians, and bureaucrats, act in their self-interest, just as they do in markets. The theory challenges the assumption that governments always act in the public's best interest.

Relevance of Public Choice Theory to Revenue Allocation

Public Choice Theory explains the dynamics of state lobbying to secure favourable terms in the allocation formula, often influenced by political considerations rather than economic needs. It underscores the importance of designing allocation frameworks that mitigate rent-seeking behaviours and ensure resources are distributed based on equity and efficiency rather than political bargaining. The theory reminds us of the need for institutional reforms to minimise bureaucratic inefficiencies and enhance transparency in the revenue allocation process. Understanding self-interest-driven behaviours helps to anticipate challenges in implementing an allocation system that serves national development priorities.

2.3.2 Resource Dependence Theory (RDT)

Jeffrey P. and Gerald R. S. (1978) propounded the resource Dependency theory (RDT). This theory examines how external resources influence organisations' behaviour and decision-making processes. The central premise of RDT is that organisations are not self-sufficient; they depend on resources from their environment to survive and achieve their objectives.

Relevance of Resource Dependence Theory to Nigeria Revenue Allocation

Many Nigerian states are highly reliant on federal allocations, making them vulnerable to fluctuations in national revenue. RDT provides a framework for understanding the implications of this dependence. The theory highlights the need for sub-national governments to develop strategies for generating their revenues to reduce over-reliance on federal allocations. It explains the importance of designing allocation systems that address power imbalances and ensure all tiers of government have sufficient resources to fulfil their responsibilities. RDT emphasises the need for policies that support diversification and reduce the risk of over-dependence on single resources, such as oil revenue in Nigeria.

Integrating these theories, policymakers can design a robust revenue allocation system that aligns with Nigeria's federal structure, addresses political and economic realities, and fosters sustainable development.

3.0 Methodology

This study adopts a qualitative research approach to explore and analyse the revenue allocation systems in Nigeria, Malaysia, and Brazil. The methodology is structured to provide an in-depth understanding of the similarities, differences, and lessons that can be drawn from the comparative study of these federal systems.

3.1 Research Design

The study employs a comparative research design, particularly suited for examining how countries implement revenue allocation frameworks within their unique federal contexts. It collects data from multiple sources to ensure comprehensive analysis. The study seeks to identify patterns, practices, and policies that promote equity, efficiency, and fiscal sustainability by comparing the systems in Nigeria, Malaysia, and Brazil. The comparative approach enables the identification of best practices and potential areas for improvement in Nigeria's revenue allocation system.

3.1.1 Content Analysis:

Government documents, such as constitutions, revenue allocation laws, fiscal policies, and budgetary guidelines, were thoroughly reviewed to understand each country's legal and institutional frameworks governing revenue distribution. Official reports from the Revenue Mobilisation Allocation and Fiscal Commission, Ministries of Finance, and other relevant agencies provided insights into the practical implementation and challenges of revenue allocation.

3.1.2 Academic Literature

Peer-reviewed journal articles, books, and theses were analysed to understand the selected countries' theoretical underpinnings, historical evolution, and critical evaluations of revenue allocation systems. Scholarly contributions to Fiscal Federalism, Public Choice, and Resource Dependence Theories provided a theoretical foundation for data analysis.

3.1.3 Expert Case Studies

Existing case studies authored by researchers, economists, and policy analysts were incorporated to provide context-specific insights into each country's revenue allocation successes and challenges. These case studies highlighted the socioeconomic and political factors influencing revenue allocation systems and their outcomes.

3.4 Data Analysis Techniques

The collected data were analysed using thematic analysis, which involved the identification of recurring themes and patterns related to revenue allocation principles, equity, efficiency, and regional development. The study focused on:

- Examining the legal frameworks governing revenue allocation in each country.
- Evaluating the implementation mechanisms and their alignment with constitutional and policy mandates.
- Assessing the impact of revenue allocation systems on regional equity, development, and fiscal sustainability.
- Identifying best practices and areas for reform, focusing on lessons applicable to Nigeria.

3.4.1 Justification of the Methodology

The design provides a structured framework for analysing how countries address similar revenue allocation challenges in their federal systems. This framework enables a cross-country evaluation of diverse approaches to achieving equity and efficiency in resource distribution. The qualitative design allows for a detailed examination of the complexities and contextual factors influencing revenue allocation, which quantitative methods may overlook. It facilitates the integration of diverse data sources, enriching the study’s findings with depth and nuance.

3.4.2 Validity and Reliability Test

This study employs triangulation to ensure that the analysis of revenue allocation systems in Nigeria, Malaysia, and Brazil is robust, credible, and reflective of diverse viewpoints.

Data Source Triangulation

The paper utilises multiple data sources, including government documents, academic literature, and expert case studies. Each source provides unique insights into the revenue allocation systems, enabling the researcher to verify information across different contexts. The constitutional provisions and official reports from the Revenue Mobilisation Allocation and Fiscal Commission were cross-checked with findings from peer-reviewed journals and expert analyses to ensure consistency and avoid reliance on a single source of information.

Methodological Triangulation

Different data collection methods were applied, including content analysis of official documents, academic literature review, and integration of expert case studies. This diverse methodological approach minimised the risk of bias and enhanced the depth of understanding. The theoretical insights derived from the literature were compared against the practical evidence from government reports and expert narratives.

Theoretical Triangulation

The study analysed the data using multiple theoretical frameworks: fiscal Federalism, Public Choice, and Resource Dependency. Each framework offered a unique lens through which the revenue allocation systems were examined, ensuring that conclusions were not overly reliant on a single perspective. This approach provided a holistic understanding of the interplay between equity, efficiency, political motivations, and resource dependencies.

Stakeholder Triangulation

The researcher reviewed the published works and case studies of various stakeholders, such as government officials, policy analysts, and academics, and incorporated their perspectives. This diversity of viewpoints enhanced the validity of the findings by capturing a broad spectrum of experiences and opinions.

Enhancing Reliability and Validity

Comparing information from multiple sources contributed to the study's reliability and validity. It also minimised the risk of bias from relying on a single perspective or dataset. Cross-validation ensured that the findings were consistent across various sources, enhancing the credibility of the conclusions. Using diverse data sources and methods provided a more comprehensive picture of the revenue allocation systems, capturing nuances and complexities that might be overlooked. Conflicting data points were reconciled by examining additional sources or re-evaluating the evidence, ensuring the study’s conclusions were well-founded.

4.0 Results and Discussion

Table I: Comparative Analysis of Revenue Allocation Systems

Country	Vertical Allocation	Horizontal Allocation	Challenges
Nigeria	Federal: 52.68%, States: 26.72%, LGAs: 20.6%	Based on population, equality, landmass, etc.	Overreliance on oil, regional disparities
Malaysia	Centralised grant-based system	Based on fiscal need, population, and disparities	Limited state autonomy, lack of transparency
Brazil	Decentralised tax-sharing system	Based on population, per capita income, regional needs	Fiscal imbalances, frequent disputes

Sources: RAF Act, Malaysian Ministry of Finance, Brazilian Fiscal, World Bank Report, OECD

4.1 Discussions of Table 1

This table provides an overview of Nigeria, Malaysia, and Brazil's vertical and horizontal revenue distribution allocation systems and each system's associated challenges. These countries have distinct approaches to fiscal federalism, which is reflected in how resources are allocated among different tiers of government (federal, state, and local) and across regions within the country.

4.1.1 Nigeria's Revenue Allocation System

- **Vertical Allocation**

In Nigeria, the federal government receives **52.68%** of the revenue, while the **states** are allocated **26.72%**, and the **local government areas (LGAs)** receive **20.6%**. This vertical allocation is determined by the **Revenue Mobilisation Allocation and Fiscal Commission (RMAFC)**, which aims to ensure an equitable distribution of resources at the federal, state, and local levels. The allocation percentage is influenced by Nigeria’s federal structure, which balances power and responsibility across different levels of government.

Horizontal Allocation

The horizontal allocation, which determines how revenue is distributed among the states and LGAs, is based on several factors, including population, equality, and landmass. These criteria ensure that areas with larger populations or more significant needs (such as vast land areas or underdeveloped regions) receive a fair share of federal revenue. However, this method can sometimes favour more populous states, disadvantaging less populated but resource-rich regions.

Challenges

Nigeria’s revenue allocation system heavily depends on oil revenues, exposing the country to global oil price fluctuations and reducing other sectors' fiscal stability. The allocation system has been criticised for exacerbating regional inequalities. Wealthier states with higher populations often receive more funds, while poorer, less populated states may struggle to meet their development needs.

4.1.2 Malaysia's Revenue Allocation System

Vertical Allocation

Malaysia employs a **centralised grant-based system**, where the federal government controls revenue distribution. The central government allocates funds to the states through grants rather than a set percentage allocation, providing flexibility in adjusting resources based on economic conditions and priorities.

Horizontal Allocation

The horizontal revenue allocation in Malaysia is primarily determined by fiscal need, population, and regional disparities. The allocation system balances states' financial needs by considering their population size and economic inequality. This system seeks to support states with fewer resources or higher fiscal needs, fostering greater economic equality.

Challenges

The centralised system has been criticised for limiting state governments' autonomy in managing their finances. State governments have limited flexibility to raise revenues, making them highly dependent on federal allocations. The revenue allocation system based on discretionary grants can lack transparency, as states depend on the federal government's discretion to determine their share of funds. This lack of transparency may lead to perceptions of favouritism or unfair treatment, with some states potentially receiving more resources than others without clear justification.

4.1.3 Brazil's Revenue Allocation System

Vertical Allocation

Brazil's decentralised tax-sharing system divides revenue between the federal government, states, and municipalities. This system allows for more distributed control over fiscal resources, with each level of government having a direct stake in the revenue collection process. The system reflects Brazil's commitment to decentralisation, empowering regional and local governments to manage and allocate resources for their development.

Horizontal Allocation

Brazil's horizontal allocation is based on population, per capita income, and regional needs. This method ensures that regions with higher populations, lower per capita income, or more significant development needs receive a larger revenue share. The system is designed to promote regional equity, ensuring poorer regions benefit from more substantial funding to address disparities in education, healthcare, infrastructure, and overall economic development.

Challenges

Despite the decentralised system, fiscal imbalances remain a significant issue in Brazil. Wealthier states often retain a larger revenue share, while poorer states with more critical needs may struggle to meet their obligations. This disparity can lead to underfunded programmes in some regions and exacerbate inequality. The decentralised system has resulted in frequent conflicts between the federal government and states over revenue distribution, especially concerning the share of taxes collected by the federal government. These disputes reflect tensions over autonomy and equity in fiscal management.

4.2 Comparison and Key Insights

Vertical vs. Horizontal Allocation

All three countries operate with a vertical allocation system that divides revenue between different levels of government. However, the method of distribution differs significantly. Nigeria uses fixed percentages, Malaysia relies on discretionary grants, and Brazil practices tax-sharing. This difference in approach reflects each country's unique political and fiscal priorities, with Nigeria and Brazil aiming for more decentralised systems and Malaysia maintaining a more centralised budgetary structure.

Challenges Across Countries

Despite their different approaches, all three countries face challenges related to regional disparities, fiscal imbalances, and inefficiencies in the allocation process. Nigeria and Brazil's decentralised systems face imbalances in wealth distribution, while Malaysia's centralised system struggles with transparency and state autonomy.

Political and Economic Context

The challenges faced by these countries are deeply tied to their political and economic contexts. Nigeria's oil-dependent economy creates vulnerabilities in the allocation system. Malaysia's centralised approach may reflect a desire for national unity, and Brazil's decentralised system is linked to its commitment to regional equity and federalism.

4.3 Relevance to Nigeria's Revenue Allocation System

By comparing Nigeria's revenue allocation system with those of Malaysia and Brazil, several key lessons emerge:

- **Diversification of Revenue Sources**: Nigeria could benefit from diversifying its revenue sources to reduce overreliance on oil.
- **Transparency and Autonomy**: Malaysian lessons suggest that increasing transparency and giving states greater autonomy in managing their finances could enhance the system's fairness.
- **Equitable Distribution**: Brazil's focus on equitable distribution, considering both per capita income and regional needs, offers a model for addressing Nigeria's regional disparities.

5.0 Findings

5.1 Nigeria's Formula Exacerbates Economic Vulnerability Due to Its Dependence on Oil Revenue

The findings indicate that Nigeria's revenue allocation system, which heavily depends on oil revenue, has significant implications for its fiscal stability. Oil revenue accounts for over 50% of the federal government's income, and this over-reliance makes the country highly susceptible to the volatility of global oil prices. When oil prices fall, Nigeria's revenue stream diminishes sharply, which causes budgetary shortfalls and disrupts the country's fiscal planning. Additionally, the allocation system, where the federal government receives the largest share (52.68%), perpetuates this vulnerability by disproportionately concentrating financial power at the federal level, often at the expense of states and local governments.

Economic Impact: Nigeria's dependence on oil revenue makes its economy vulnerable to external shocks. When oil prices drop, the country's revenue is reduced, and its capacity to invest in crucial sectors like healthcare, education, and infrastructure is hindered. This can lead to economic stagnation and underdevelopment in states that do not have significant oil resources.

Regional Disparities: The allocation formula also deepens regional disparities. States that are geographically distant from oil-producing areas or not involved in oil extraction often find themselves at a disadvantage. These states rely heavily on federal allocations, which can be insufficient to meet their developmental needs. As a result, there are widening inequalities between oil-producing and non-oil-producing states.

5.2 Malaysia's Grant System Achieves Fiscal Balance but at the Expense of State Autonomy

Malaysia's revenue allocation system, which uses a centralised grant-based model, has successfully achieved fiscal balance by redistributing resources to needy states. However, the trade-off is a loss of state autonomy. In this system, the federal government retains significant control over fiscal resources while distributing grants to states based on fiscal need, population size, and regional disparities.

Fiscal Balance and Equity: Malaysia's approach addresses regional inequalities by ensuring that underfunded or less economically developed states receive more financial assistance. This has led to more significant fiscal equity across states, ensuring that no state is left behind regarding public service delivery and infrastructure development.

Reduced State Autonomy: However, the heavy reliance on federal grants for funding has led to states having limited fiscal autonomy. They cannot generate revenue through local taxes or manage their financial affairs. This dependency has constrained the ability of states to implement policies suited to their unique needs and may stifle innovation and flexibility in governance.

Challenges of Centralization: The lack of transparency in how grants are distributed and the centralised decision-making process can result in dissatisfaction among states, particularly if they perceive that the allocation does not fairly reflect their needs. Moreover, the lack of a precise revenue-raising mechanism means states have limited incentive to improve their revenue generation.

5.3 Brazil's Tax-Sharing Approach Promotes Equity but Struggles with Inefficiencies and Disputes

Brazil's decentralised tax-sharing system promotes equity by allocating resources based on population, per capita income, and regional development needs. This model is designed to reduce regional disparities and ensure that states with fewer resources have the support they need to fund essential services.

Promoting Equity: Brazil's system promotes equitable resource distribution, ensuring poorer regions receive a fair share of revenue to address their specific challenges. This approach helps to alleviate regional disparities, ensuring that all states, regardless of their economic capacity, have the resources to meet their citizens' needs. It also avoids the concentration of resources in wealthy regions, which could otherwise exacerbate economic inequality.

Inefficiencies and Disputes: Despite its equitable focus, Brazil's system is plagued by inefficiencies. Wealthier states continue to demand a larger share of resources, while poorer states often argue that their needs are not adequately addressed. The system has also led to frequent disputes between the federal and state governments over the fairness of allocations, with states sometimes contesting the amount of revenue they receive relative to their population or economic situation.

Fiscal Imbalances: The decentralisation of fiscal power has led to fiscal imbalances. Some states may continue to experience budget deficits due to insufficient federal transfers or the inability to generate local revenue. Additionally, states with more robust economies may still struggle to meet the needs of their poorer populations, as the formula used does not always reflect regional economic potential or the local tax effort.

6.0 Conclusion

This research examined the revenue allocation systems in Nigeria, Malaysia, and Brazil, focusing on their vertical and horizontal allocation methods and the challenges each country faces. The findings reveal that Nigeria's allocation formula exacerbates economic vulnerability due to its overreliance on oil revenue, leading to regional disparities and financial instability. Malaysia's centralised grant-based system achieves fiscal balance but compromises state autonomy and limits local revenue-generating capacity. Brazil's decentralised tax-sharing system promotes equity but faces inefficiencies and frequent disputes, particularly between the federal and state governments.

These findings suggest that while each country aims to achieve equity and fiscal balance, they must address inherent challenges such as over-dependence on central resources, regional inequalities, and inefficiencies in revenue distribution. The study highlights the need for diversification, transparency, and greater autonomy for local governments to foster sustainable and equitable development.

7.0 Recommendations

The following are the recommendations drawn from the comparative study of Nigeria, Malaysia and Brazil's revenue allocation and its challenges:

Nigeria should consider diversifying its revenue sources, mainly through expanding tax revenues from sectors beyond oil. This would include strengthening its tax collection systems, incentivising local businesses, and formalising informal sectors. Nigeria (Revenue Mobilisation Allocation and Fiscal Commission) could also explore alternative allocation methods that place less emphasis on oil revenue and more on economic diversification and regional needs. The revenue allocation formulae should be regularly reviewed to meet changing economic realities.

Malaysia could benefit from creating a more balanced system where states can raise revenues through local taxes, giving them more control over their financial decisions and encouraging regional economic development. The federal government should also consider increasing transparency in the allocation process to build trust and cooperation between federal and state governments.

Brazil could improve its tax-sharing formula to ensure more efficient resource distribution by incorporating need-based factors and tax effort into the allocation model. Greater transparency and better mechanisms for resolving disputes between federal and state governments could also help ease tensions and improve cooperation.

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