TAX COMPLIANCE STRATEGIES AND REVENUE GENERATION IN NIGERIA

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ABSTRACT

Tax revenue generation is crucial for economic management and development in both developed and developing countries, as it supports public services, infrastructure, and social programs, thus fostering sustainable development and economic stability. This study investigated the effect of tax compliance strategies on tax revenue generation in Nigeria, assessing the effectiveness of different approaches in closing the tax gap and boosting government revenue. This study used a survey research design to explore relationships between variables without manipulation, providing valuable insights into their connections. Primary data were collected through a structured questionnaire from 3,784 tax officials at the Federal Inland Revenue Service (FIRS) in the southwest states of Nigeria, considered knowledgeable about the subject as of December 31, 2023. The questionnaire employed a five-point

Likert scale to gather responses. The reliability and validity of the instrument were assessed using both statistical methods, like Cronbach's Alpha, and non-statistical methods. Data analysis involved descriptive statistics (mean, variance, skewness, kurtosis) and regression analysis to summarize and interpret the data. The empirical analysis revealed that both voluntary tax compliance and tax enforcement strategies significantly contributed to increasing tax revenue generation in Nigeria. This study concluded that a combined approach of encouraging voluntary tax compliance and implementing strong enforcement strategies effectively increases tax revenue generation in Nigeria. Based on the outcomes of this study, this study recommended that the government should invest in comprehensive taxpayer education programs that clearly explain tax laws, the importance of compliance, and the benefits of paying taxes.

Introduction

Tax revenue generation is crucial for economic management and development in both developed and developing countries, as it supports public services, infrastructure, and social programs, thus fostering sustainable development and economic stability (Akinadewo et al., 2023). In 2021, OECD countries had an average tax revenue of 33.8% of GDP, with high-income countries like Denmark, France, and Belgium surpassing 40% (OECD, 2022). In the U.S., individual income taxes account for approximately 41% of total revenue, while payroll taxes contribute 28% (World Bank, 2021). To address tax avoidance, the OECD launched the Base Erosion and Profit Shifting (BEPS) project. Tax revenue challenges differ based on economic structures, governance, technology, and tax policies (OECD, 2023). Developed countries suffer significant revenue losses due to advanced tax evasion tactics used by multinationals, costing between $100 and $240 billion annually. The rise of the digital economy has intensified this issue as companies move profits to low-tax jurisdictions. The OECD/G20 Inclusive Framework on BEPS offers a two-pillar solution to tackle these problems (World Bank, 2023). Additionally, aging populations in developed nations are increasing public spending on pensions and healthcare while diminishing the tax base, with the EU's old-age dependency ratio projected to rise from 31% in 2018 to 52% by 2050 (Eurostat, 2020).

In 2020, tax revenue in low-income countries averaged only 15.1% of GDP, a significant contrast to the higher rates in high-income countries. Sub-Saharan Africa exhibits some of the lowest tax-to-GDP ratios globally, with Nigeria's tax revenue at a mere 6% of GDP, well below the regional average of 16%. This low tax effort is attributed to inefficient tax administration, corruption, and a substantial informal sector. Nonetheless, reforms and the adoption of technology have led to improvements in tax revenue for some developing nations. For example, Rwanda's tax-to-GDP ratio rose from 13% in 2010 to 16.3% in 2019, driven by the implementation of electronic tax filing systems and an expanded tax base (IMF, 2020). The informal sector, which constitutes about 41% of GDP in Sub-Saharan Africa, further complicates tax collection (World Bank, 2021). Additionally, many developing countries provide extensive tax incentives, resulting in significant revenue losses, with East African countries losing 2-3% of GDP annually (World Bank, 2020). Tax compliance remains a challenge for both developed and developing countries; for instance, the IRS estimated a tax gap of $496 billion in the U.S. for 2014-2016, and India's tax-to-GDP ratio stands at approximately 11% (IRS, 2019).

Tax compliance remains a key issue in many developing countries, including Nigeria (Lawal et al., 2024). Implementing effective tax compliance strategies, both voluntary and enforced, is crucial for boosting tax revenue and supporting sustainable development and public services (Jack et al., 2024). Tax compliance is a fundamental aspect of effective revenue generation, as it underpins the funding of public services and infrastructure. In Nigeria, the challenge of achieving widespread tax compliance is exacerbated by the country's extensive informal sector, varied economic activities, and high levels of tax evasion. Despite government efforts to enhance tax administration, Nigeria still faces a significant tax gap, which hampers the government's ability to generate sufficient revenue and achieve its development objectives.

In response to these challenges, various tax compliance strategies have been implemented, ranging from legal enforcement and penalties to taxpayer education and incentives (Aluko et al., 2023). These strategies aim to increase voluntary compliance, reduce tax evasion, and ultimately enhance revenue collection (Ige et al., 2023). However, the effectiveness of these strategies remains a subject of debate, particularly in a context characterized by economic volatility, limited resources, and varying levels of public trust in government institutions (Adeola & Olalekan, 2023; Lawal et al., 2024). This study aims to investigate the effect of tax compliance strategies on tax revenue generation in Nigeria, assessing the effectiveness of different approaches in closing the tax gap and boosting government revenue. By examining the impact of these strategies within the Nigerian economy, this study seeks to provide insights into how the country can optimize its tax system to achieve more sustainable revenue generation and support its economic development objectives.

Literature Review

This section reviews important studies related to the variables in this research, providing context and background by examining previous findings. It highlights the connections between these studies and their relevance to the current investigation.

Conceptual Review
This section provides clear definitions for the key concepts and variables in the study. These definitions are essential for ensuring a consistent understanding and accurate interpretation of the study's findings.

Tax revenue generation
Khan and Jain (2020) define tax revenue generation as the process by which governments secure income from various sources, such as sales, services, taxes, and investments, to finance their operations. This definition encompasses diverse income-generation methods, both business-related and governmental, emphasizing the fundamental goal of providing financial resources for operational needs. Kotler and Keller (2016) describe tax revenue generation as the strategies and activities used to create income through sales, marketing efforts, and other business activities. This view focuses on the commercial aspects, particularly sales and marketing, as primary income sources for businesses. According to the OECD (2021), tax revenue generation involves collecting funds through taxes, fees, and other public revenue sources to support public services, infrastructure, and social programs. This definition highlights the crucial role of taxation and public revenue in funding government activities and underscores the importance of effective revenue collection for supporting public welfare and infrastructure.

The World Bank (2020) defines tax revenue generation as the methods used by governments and institutions to boost financial resources through development projects, foreign aid, and investment initiatives aimed at economic growth and poverty alleviation. This definition links revenue generation with broader economic objectives, highlighting how it supports development and enhances economic conditions. It underscores the importance of strategic revenue utilization in achieving developmental goals. Eldridge and Mervyn (2017) and Aluko et al. (2022) describe tax revenue generation for nonprofits as obtaining funding through donations, grants, sponsorships, and fundraising events to support their missions and operational needs. This definition focuses on the unique income sources for non-profits, contrasting with commercial or governmental sources, and reflects their dependence on philanthropic and community support to maintain their activities.

In this study, tax revenue generation is defined as the process by which governments or tax authorities increase and expand their financial resources through the effective implementation and enforcement of tax laws and regulations. This involves various activities aimed at ensuring that individuals and businesses fulfill their tax obligations, thereby contributing to the government's revenue. These efforts are crucial for boosting government revenue, which supports public services, infrastructure development, and social programs, ultimately promoting economic stability and growth.

Tax compliance strategies

According to OECD (2020), tax compliance strategies are the organized approaches and methods used by tax authorities to ensure that taxpayers follow tax laws and regulations. These strategies can include audit programs, enforcement actions, and educational initiatives for taxpayers. This definition highlights the role of tax authorities in developing and implementing strategies to encourage compliance, stressing the importance of both proactive and reactive measures in maintaining a compliant tax system. In the view of Jack et al. (2024), tax compliance strategies are efforts aimed at influencing taxpayer behavior through incentives, penalties, and information dissemination to promote voluntary adherence to tax responsibilities. This perspective focuses on the psychological and motivational aspects of tax compliance, emphasizing the need for strategies that address taxpayer attitudes and behaviors to improve voluntary compliance.

The World Bank (2021) defines tax compliance strategies as the policies and regulations formulated by governments to establish a framework that encourages tax adherence through clear guidelines, streamlined procedures, and effective enforcement mechanisms. This definition underscores the role of policymaking in fostering a supportive environment for tax compliance, emphasizing the need for well-defined rules and enabling policies to facilitate taxpayer adherence. From a technological perspective, tax compliance strategies involve employing digital tools and systems, such as electronic filing and data analytics, to enhance tax administration and improve compliance monitoring (OECD, 2020). This approach highlights the integration of technology in tax compliance, recognizing the advantages of technological advancements in making tax processes more efficient and minimizing the risk of errors or evasion.

In this study, tax compliance strategies refer to the systematic and targeted approaches implemented by governments or tax authorities to improve the effectiveness of tax collection and increase overall revenue. These strategies are designed to ensure that taxpayers fulfill their tax responsibilities, thereby maximizing the funds available for public services and infrastructure. They include deliberate measures and policies aimed at promoting adherence to tax laws, minimizing tax evasion and avoidance, and enhancing revenue collection. This approach combines efforts to encourage voluntary tax compliance with enforcement actions to optimize taxpayer adherence and broaden the revenue base.

Voluntary tax compliance strategy - according to Braithwaite (2019) voluntary tax compliance strategy involves measures and initiatives designed to encourage taxpayers to willingly meet their tax obligations without the need for coercion or enforcement. This broad definition underscores the importance of creating an environment where taxpayers are motivated to comply with tax laws out of their own volition. It highlights the reliance on positive incentives and educational efforts rather than punitive measures. Kopczuk and Slemrod (2016) described voluntary tax compliance strategy focuses on understanding and influencing taxpayer behavior through insights into psychological and social factors, thereby enhancing voluntary compliance. This definition emphasizes the use of behavioral insights to design strategies that address the underlying factors affecting taxpayer compliance, such as trust, fairness, and perceived legitimacy of the tax system.

Jack et al. (2024) described voluntary tax compliance strategy includes the implementation of efficient tax filing systems, simplified procedures, and clear communication to make it easier for taxpayers to comply with their tax obligations. This definition focuses on reducing the complexity and burden associated with tax compliance. By improving the administrative aspects of tax systems, this strategy aims to facilitate easier and more accessible compliance for taxpayers. In the context of legal and ethical frameworks, a voluntary tax compliance strategy involves creating a tax system that is perceived as fair and transparent, thereby encouraging voluntary adherence to tax laws by building trust in the tax authorities (Torgler, 2017). This definition highlights the role of fairness and transparency in fostering voluntary compliance. It stresses that a well-designed tax system, which taxpayers view as equitable and honest, can enhance their willingness to comply.

Tax enforcement strategy - Dube and Cummings (2021) describe tax enforcement strategy as the methods and actions employed by tax authorities to ensure compliance with tax laws, including monitoring, auditing, and penalizing non-compliant taxpayers. This broad definition covers the core components of tax enforcement, highlighting the comprehensive approach needed to manage compliance. It underscores the importance of various enforcement activities in maintaining the integrity

of tax systems. Tax enforcement strategy refers to the integration of advanced technologies, such as data analytics and digital tools, to enhance the detection of non-compliance, streamline audit processes, and improve overall enforcement efficiency (OECD, 2022). This definition emphasizes the role of technology in modernizing tax enforcement. It reflects the growing importance of digital tools in improving accuracy and efficiency in identifying and addressing tax evasion.

According to Slemrod and Bakija (2022) tax enforcement strategy involves using behavioral insights to design and implement policies that encourage voluntary compliance and discourage tax evasion by understanding and addressing taxpayer behavior and decision-making processes. This definition highlights the application of behavioral science in tax enforcement. It suggests that understanding taxpayer psychology can enhance the effectiveness of enforcement strategies by making them more responsive to actual behaviors. Tax enforcement strategy employs a risk-based approach to prioritize enforcement actions based on the likelihood of non-compliance, focusing resources on high-risk areas and taxpayers to maximize the efficiency and impact of enforcement efforts (IMF, 2023). This definition underscores the need for a targeted approach in tax enforcement. By focusing on high-risk areas, authorities can optimize resource allocation and enhance the effectiveness of their enforcement activities.

Theoretical Review
This study examined the tax benefit theory and used it as a foundational framework for the research.

Tax benefit theory
The Tax Benefit Theory, developed by Martin Allingham and Agnar Sandmo in their 1972 paper, suggests that individuals' adherence to tax regulations is influenced by their perception of the benefits received from paying taxes (Allingham & Sandmo, 1972). The theory proposes that people weigh the advantages of tax compliance, such as access to public goods and services, against the costs, including fines and legal risks (Andreoni et al., 1998). This theory has been extensively applied in taxation, finance, and accounting. For instance, Alm et al. (2023) investigated the role of transparency in enhancing voluntary tax compliance, grounding their study in the Tax Benefit Theory. Similarly, Nkurunziza and Mugisha (2023) examined the role of tax enforcement strategies on revenue collection in Rwanda, and Kithinji and Wanyama (2022) assessed the impact of enforcement strategies on revenue generation in Kenya, both basing their studies on the Tax Benefit Theory.

The Tax Benefit Theory posits that taxpayers are more likely to comply with tax regulations when they perceive clear benefits from their contributions. Governments can enhance compliance by showing how tax revenues are used to fund crucial public services and infrastructure, which builds taxpayer trust and leads to higher compliance rates and increased revenue generation. Effectively communicating the tangible benefits of tax payments is crucial for fostering a culture of compliance and optimizing revenue collection. However, the theory has its limitations. It tends to oversimplify human behavior by assuming that individuals rationally and accurately assess the costs and benefits of tax compliance (Alm et al., 2023). Critics like Torgler (2017) argue that it neglects psychological, social, and cultural factors that influence tax compliance, and Kotler and Keller (2016) suggest it fails to consider the complexity and diversity of taxpayer behavior. In the context of this study, Tax Benefit Theory serves as a foundational framework by highlighting the reciprocal relationship between taxpayers and government services. It supports the analysis of tax policies and their impact on compliance, suggesting that taxpayers' willingness to comply increases when they perceive direct benefits from their contributions. This theoretical perspective is vital for understanding the motivations behind tax compliance and the effectiveness of tax policies, especially in areas where the development of public services and infrastructure is a significant concern.

Empirical Review
This section provides a detailed review of existing literature on tax compliance strategies and revenue generation. It situates the current research within the broader academic context, emphasizing key findings, methodologies, and identifying gaps in the literature.

Voluntary tax compliance strategy and tax revenue generation
Jack et al. (2024) conducted an in-depth study on the impact of tax compliance strategies on revenue generation in Rivers State, Nigeria. By utilizing both secondary and primary data sources, the

researchers analyzed the effects of voluntary tax compliance and enforcement strategies on key taxes, such as personal income tax and stamp duties. The study used regression analysis to test its hypotheses, revealing a significant positive relationship between these strategies and tax revenue generation. This finding underscores the importance of both encouraging voluntary compliance through incentives and enhancing enforcement mechanisms to improve tax collection. The study highlights the necessity of a balanced approach in tax policy to optimize revenue generation. Similarly, Bird and Zolt (2022) investigated the role of tax incentives in promoting voluntary compliance and increasing revenue generation. The study showed that incentives targeting small and medium-sized enterprises significantly boosted compliance by 18% and led to a 10% increase in overall revenue.

Falana et al. (2024) investigated the impact of digital tax administration on tax compliance within the informal sector in the Southwest states of Nigeria. The study utilized a survey research design to gather primary data through a structured questionnaire distributed to artisans, street vendors, small-scale traders, service providers, and other self-employed individuals in the region, who typically operated outside formal tax channels. A total of 600 questionnaires were distributed, out of which 547 were completed and returned, providing a substantial and representative sample. Participants with relevant characteristics for the research were selected using purposive sampling. The reliability of the questionnaire was assessed using a Cronbach's Alpha test. Data analysis included descriptive statistics (such as mean, variance, skewness, and kurtosis) and inferential statistics (including correlation and regression analysis). The regression results revealed that technical know-how and digital payment platforms had positive and statistically significant effects on tax compliance within the informal sector in the Southwest states of Nigeria.

Lawal et al. (2024) assessed the impact of tax compliance on Nigeria's tax collection capacity. The study adopted an ex-post facto research design. Secondary data were primarily obtained from the Central Bank of Nigeria Statistical Bulletin and the Federal Inland Revenue Service Management. The dataset covered the period from 2001 to 2021 and was analyzed using Johansen's co-integration test and descriptive statistics. The results revealed that as tax rates and penalty rates increased over time, Nigeria's tax revenue also tended to rise, indicating that higher tax rates and stricter penalties were associated with improved tax revenue generation. Additionally, the study found that elevated audit penalty rates could discourage taxpayers from complying with tax regulations, leading to reduced tax revenue, while lower audit penalty rates might encourage compliance and result in higher tax revenue. Feld and Frey (2023) further examined the influence of taxpayer education programs, finding that enhanced educational initiatives improved compliance rates and increased tax revenue by 15%. Kleven et al. (2023) demonstrated that behavioral nudges, such as personalized messages, could raise compliance rates by 12%. Pomeranz (2022) and Pérez and Núñez (2023) also found that electronic filing systems and improved taxpayer services substantially boosted compliance and revenue. Torgler and Schaltegger (2023) and Alm and Martinez-Vazquez (2023) added that strong social norms and transparent tax administration practices could further enhance voluntary compliance and revenue generation by 16% and 22%, respectively. These studies collectively emphasize the multifaceted nature of effective tax compliance strategies, highlighting the need for a combination of incentives, education, behavioral insights, and administrative transparency to optimize tax revenue.

Jack et al. (2024) demonstrated the importance of a balanced approach combining voluntary compliance and enforcement strategies to enhance tax revenue in Rivers State, Nigeria, further exploration is needed to confirm that voluntary compliance influences revenue generation in another state in Nigeria. Additionally, Bird and Zolt (2022), Feld and Frey (2023), and Kleven et al. (2023) highlighted the positive impact of voluntary tax compliance strategy such as tax incentives, education programs, and behavioral nudges on compliance rates, yet there is a lack of comprehensive studies examining how these elements collectively affect revenue in developing countries like Nigeria. Furthermore, Pomeranz (2022) and Pérez and Núñez (2023) emphasized the role of electronic filing systems and taxpayer services, but there is a need for more detailed investigations into how these systems interact with voluntary compliance strategies to optimize revenue. This study seeks to fill these gaps by analyzing the combined effects of various voluntary compliance strategies and identifying best practices for enhancing tax revenue generation through a holistic approach.

Hassan et al. (2021) emphasized that tax revenue, a primary national income source, was crucial for a country's financial stability. Any leakage caused by non-compliant behavior had the potential to

negatively impact the country and, ultimately, its citizens. To address tax non-compliance, the study categorized compliance strategies into two approaches: deterrence and accommodative. It was recommended that tax authorities should not focus solely on deterrence measures, such as tax audits and penalties aimed at offenders. Instead, they were encouraged to adopt strategies that preserved the compliance of existing taxpayers, motivated future taxpayers to adhere to tax laws, and rehabilitated non-compliant taxpayers using accommodative methods. The study employed a survey method to examine individual taxpayers' perceptions of compliance strategies implemented by the tax authority, which included the threat of punishment, tax education programs, treatment by the tax authority, and the Special Voluntary Disclosure Program (SVDP). The research explored the influence of these strategies on tax compliance behavior. The findings revealed that individual taxpayers in Malaysia had a positive perception of the compliance strategies provided by the Inland Revenue Board of Malaysia (IRBM). Furthermore, the threat of punishment, treatment by the IRBM, and the SVDP demonstrated a significant positive relationship with tax compliance. However, the study recommended improvements to the tax education programs as their influence was found to be insignificant.

Ofori et al. (2021) investigated the combined effects of industrialization and ICT diffusion on resource mobilization in Africa. The analysis utilized data from 42 African countries covering the period 1996–2020. The study provided robust evidence, using the dynamic system GMM approach, demonstrating that while industrialization and ICT diffusion independently enhanced (i) goods and services tax (GST) and (ii) profits, corporate, and income tax (PCIT) mobilization efforts in Africa, the impact of industrialization was particularly significant when coupled with ICT diffusion. Specifically, the findings revealed that ICTs amplified the influence of industrialization on GST, whereas only ICT usage and ICT skills were relevant for PCIT. Furthermore, the research identified ICT thresholds that necessitated complementary policies. It concluded that industrialization and ICTs served as necessary and sufficient conditions for tax revenue mobilization below certain ICT thresholds. However, beyond these thresholds, additional policies were required to sustain the positive impact on tax revenue mobilization.

The research gaps in this study arise from the limited exploration of the combined effects of various voluntary compliance strategies on revenue generation in developing countries like Nigeria. While studies such as Jack et al. (2024) highlight the significance of balancing voluntary compliance and enforcement strategies in Rivers State, there is a lack of evidence from other Nigerian states. Furthermore, Bird and Zolt (2022), Feld and Frey (2023), and Kleven et al. (2023) emphasize the role of incentives, education programs, and behavioral nudges, yet these elements' collective impact on tax revenue remains understudied. Similarly, the contributions of electronic filing systems and taxpayer services, as noted by Pomeranz (2022) and Pérez and Núñez (2023), require deeper investigation in the context of voluntary compliance strategies. Moreover, Hassan et al. (2021) highlight the importance of accommodative measures alongside deterrence strategies, but their application in Nigeria remains underexplored. This study seeks to address these gaps by evaluating the holistic influence of voluntary tax compliance strategies on revenue generation and identifying best practices tailored to Nigeria's unique socio-economic environment. This study, therefore, hypothesizes as follows:
H1: Voluntary tax compliance strategy has a significant effect on tax revenue generation in Nigeria.

Tax enforcement strategy and tax revenue generation
Adeola and Olalekan (2023) investigated the effectiveness of tax enforcement strategies in Nigeria, focusing on the role of technology and taxpayer education in enhancing revenue mobilization. By analyzing tax revenue data from 2010 to 2020 and conducting surveys and focus group discussions, the study utilized a longitudinal design to assess the impact of different enforcement strategies. Econometric models revealed that technology-driven enforcement strategies, such as e-filing and data analytics, significantly enhanced revenue generation. Additionally, taxpayer education programs were found to improve compliance rates. These strategies collectively contributed to a 20% increase in revenue collection, underscoring the importance of modern technological interventions and educational initiatives in boosting tax revenues. Nkurunziza and Mugisha (2023) examined tax enforcement strategies in Rwanda, particularly the effects of audits, penalties, and taxpayer services on revenue performance. Using a descriptive research design, they analyzed secondary data from the Rwanda Revenue Authority and conducted structured interviews with tax officials and business owners, covering the period from 2014 to 2021. The study revealed that intensified audit activities and penalties for non-compliance positively impacted revenue generation. Additionally, the provision of taxpayer services, such as support centers and online resources, improved voluntary compliance. This comprehensive

approach resulted in a 12% increase in revenue collection, highlighting the effectiveness of robust enforcement measures and taxpayer support services in enhancing tax revenues.

Jack et al. (2024) explored the impact of tax compliance strategies on revenue generation in Rivers State, Nigeria. The study focused on key Nigerian taxes like personal income tax and stamp duties, using both secondary and primary data sources to achieve its objectives. Regression analysis demonstrated a positive relationship between voluntary tax compliance, enforcement strategies, and tax revenue. These findings, along with those from Adeola and Olalekan (2023) and Nkurunziza and Mugisha (2023), emphasize the critical role of effective tax enforcement and compliance strategies in improving revenue generation. By employing a mix of technology, educational initiatives, audits, penalties, and taxpayer services, these studies collectively suggest that well-rounded enforcement strategies can significantly enhance tax revenue collection in developing countries.

Adeola and Olalekan (2023) highlighted the significant impact of technology and taxpayer education on revenue generation in Nigeria, their study may not fully explore how these elements interact with other enforcement strategies. Nkurunziza and Mugisha (2023) demonstrated the effectiveness of tax enforcement strategy such as audits, penalties, and taxpayer services on tax revenue in Rwanda but did not delve deeply into the combined effects of these measures across different sectors. Jack et al. (2024) focused on the relationship between tax compliance strategies and revenue generation in Rivers State, Nigeria, yet the research lacks a comprehensive evaluation of how various enforcement approaches interact to enhance revenue generation. This study seeks to fill these gaps by providing a more integrated analysis of diverse tax enforcement strategies and their cumulative effects on revenue generation, offering a nuanced understanding of how different measures can collectively enhance tax revenue in developing countries.

Abdu and Adem (2023) examined the tax compliance behavior of taxpayers in Ethiopia. Their study aimed to identify the determinants and challenges associated with tax compliance behavior. Taxes were highlighted as crucial sources of government revenue, enabling the financing of infrastructure, investment, and the provision of essential services to citizens. Tax compliance was described as adhering to tax laws and regulations set by the government and tax authorities, while tax non-compliance referred to a lack of willingness to abide by these laws. Tax non-compliance posed significant challenges for the government and tax authorities in achieving adequate revenue collection. Non-compliance hindered the state's ability to collect sufficient revenue. The primary challenges to tax compliance in Ethiopia included the complexity of the tax system, inefficiency of tax authorities, limited tax knowledge and awareness, taxpayers' negative perceptions, unprofessional conduct of tax assessors, lack of tax training, a lack of transparency in the tax system, arbitrary tax estimations, personal financial constraints, political instability, and the absence of timely tax audits.

Vieira et al. (2023) sought to explore the relationship between tax compliance and self-regulation by the Federal Revenue of Brazil. The study focused on Brazilian individuals who had been notified by the Federal Revenue, with data obtained from the annual inspection plan reports of the Federal Revenue of Brazil covering the years 2015 to 2018. Pearson's Correlation test was employed to analyze the relationship between the variables. The findings revealed a positive relationship between tax compliance and self-regulation, indicating that as individuals received notifications from the Federal Revenue, tax collection increased. Furthermore, the study demonstrated that tax collection rose as tax refunds decreased, a change attributed to the rectification of health-related expenses.

Oladele et al. (2021) examined the relationship between tax enforcement measures and revenue generation in Nigeria, focusing on specific objectives such as assessing the relationship between tax enforcement measure dimensions and value-added tax. The study population comprised 26 tax offices across the South-South region of Nigeria, with 900 staff members from the Federal Inland Revenue Service (FIRS). A sample size of 277 FIRS staff was determined using the Taro Yamane formula. Primary data were collected through a questionnaire administered to respondents. Pearson Product Moment Correlation Coefficient, supported by the Statistical Package for Social Sciences (SPSS) version 23.0, was employed to test the null hypotheses. The study's findings indicated that tax penalties had a significant relationship with value-added tax, while tax amnesty showed a strong relationship with value-added tax. Overall, the results demonstrated a positive relationship between tax enforcement measures and revenue generation.

Oyedokun et al. (2021) evaluated the performance of tax policies by examining their impact on revenue generation in Nigeria. The study focused on tax policy and revenue generation, analyzing various tax incentives embedded in different tax laws. It assessed how taxation and tax policies influenced Nigeria's economy and examined the effectiveness of indirect tax policy and tax incentive policy as governmental strategies for alternative revenue generation. The research utilized primary data collected through structured questionnaires, targeting responses from FIRS officials, tax consultants, and taxpayers. The data were analyzed using multiple regressions to determine the relationships among the variables. The results revealed positive correlations of 0.279 for indirect tax policy and 0.265 for tax incentive policy. The findings indicated that tax policies had a significant relationship with revenue generation in Nigeria. This study addresses several research gaps identified in prior literature. Adeola and Olalekan (2023) emphasized the importance of technology and taxpayer education for revenue generation in Nigeria but lacked a comprehensive analysis of their interaction with other enforcement strategies. Similarly, Nkurunziza and Mugisha (2023) highlighted the impact of audits, penalties, and taxpayer services in Rwanda but did not explore the sector-specific effects of these measures. Jack et al. (2024) focused on compliance strategies in Rivers State, Nigeria, but did not examine the interplay of various approaches for optimizing revenue generation. Moreover, studies like Abdu and Adem (2023) and Vieira et al. (2023) explored compliance behavior and self-regulation, respectively, yet left gaps in understanding enforcement strategies within broader tax systems. Finally, Oladele et al. (2021) and Oyedokun et al. (2021) assessed enforcement measures and tax policies but did not investigate their cumulative or integrative effects on revenue generation. This study aims to bridge these gaps by conducting a holistic evaluation of diverse enforcement strategies and their combined influence on tax revenue generation in Nigeria, offering insights into how these measures can be harmonized for maximum effectiveness. It is, therefore, hypothesized that:

H2: Tax enforcement strategy has a significant effect on tax revenue generation in Nigeria.

Conceptual Framework
Figure 1 provides a visual depiction of the conceptual framework illustrating the interaction between the independent and dependent variables in this study. The independent variable, Tax Compliance Strategies, encompasses two primary components: voluntary tax compliance strategy and tax enforcement strategy, which represent proactive and regulatory approaches to improving compliance. These strategies are analyzed for their influence on the dependent variable, Tax Revenue Generation, which reflects the total revenue collected through various tax streams. By mapping these relationships, the figure highlights how the integration of voluntary compliance initiatives, such as taxpayer education and incentives, alongside enforcement measures like audits and penalties, collectively impacts the efficiency and effectiveness of tax revenue generation.

Figure 1: Conceptual Framework
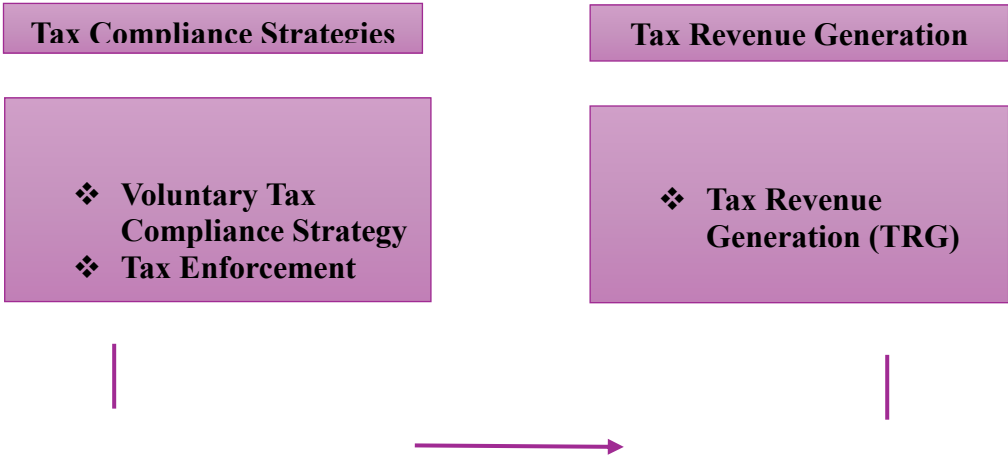
Source: Authors' Concepts (2024)

Methodology

This study utilized a survey research design to explore the relationships between variables in their natural context without manipulation, providing valuable insights into their connections. This approach enables systematic data collection, which helps in testing hypotheses and addressing research questions. Primary data were collected through a structured questionnaire from a population of 3,784 tax officials from the Federal Inland Revenue Service (FIRS) in the southwest states of Nigeria, who were deemed knowledgeable about the research topic as of December 31, 2023, according to FIRS statistics. A questionnaire employing a five-point Likert scale (Strongly Agree = 5, Agree = 4, Undecided = 3, Disagree = 2, Strongly Disagree = 1) was utilized to collect responses. The instrument's reliability and validity were evaluated through statistical techniques, including Cronbach's Alpha, as well as non-statistical approaches. Data analysis incorporated descriptive statistics, such as mean, variance, skewness, and kurtosis, alongside regression analysis to highlight essential characteristics and draw broader inferences about the population.

Sample size and sampling techniques
To establish the sample size, the Krejcie and Morgan formula was applied, leading to a sample of 351 people out of a total population of 3,784. According to Krejcie and Morgan (1970), the sample size is calculated as follows:

$$S = \frac{x^2 n(1-p)}{d^2(n-2) + x^2 p(1-p)}$$

Where:
S = required sample size
x^2 = the table value of chi-square for 1 degree of freedom at the desired confidence level (3,784 for 95% confidence level)
n = population size
p = population proportion (assumed to be 0.5 for maximum sample size)
d = degree of accuracy (the margin of error, e.g., 0.05 for ±5%)
The sample size is therefore = 351

Reliability tests
The validity and reliability of the primary data were evaluated by the study using Cronbach's Alpha technique. This method assessed the dependability of the research instrument in addition to the internal consistency of the measurement scales. The Cronbach's Alpha test findings are summarized in Table 1. According to the findings, the values of VTC, TES, and TRG are, respectively, 0.7166, 0.731, and 0.7049. This indicates that the survey's consistency was enough for high-stakes evaluation in line with the goals of the study.

Table 1: Cronbach's Alpha

Item	Obs	Sign	item-test correlation	item-rest correlation	interitem covariance	alpha
VTCS	351	+	0.8402	0.6342	0.3756695	0.7166
TES	351	+	0.8412	0.6218	0.3716268	0.7315
TACS	351	+	0.8408	0.6466	0.378303	0.7049
Test					0.3751998	0.792

Source: Authors' Computation (2024)

Model specification
This study adopted the econometric model created by Jack et al. (2024) in the study on tax compliance strategies and revenue generation in River State, Nigeria. The model is specified as follows:

$TRG_t = f(TCS_t)$ …………………………………………………………..…*equation (i)*
$TRG_t = f(VTC_t, TES_t)$ …………………………………………………...……….*equation(ii)*

The broad model is represented as:
$TRG_t = \beta_0 + \beta_1 VTC_t + \beta_2 TES_t + \varepsilon$ …………………..…………………….....*equation (iii)*
Where:
TRG_t = Tax Revenue Generation
TCS = Tax Compliance Strategies
VTC_t = Voluntary Tax Compliance Strategy
TES = Tax Enforcement Strategy
β_0 = Constant
Σ = Stochastic Error Term
β_0 = Intercept
$\beta_1, \beta_2, \beta_3$ = The Coefficients of the independent variable

The *a-priori* expectation = $\beta_1, \beta_2, > 0$. This implies that a positive relationship is expected between the explanatory variables and the dependent variable.

Analysis of Results and Discussion of Findings
In this section, survey data is analyzed, and each variable is tested against three hypotheses. The factors outline the goals of the investigation, and the findings are given.

Descriptive Statistics
This section describes the dataset that was utilized for the inquiry. Raw data is displayed using descriptive statistics, and several tools are employed for comprehension and interpretation.

Demographic information
This study has 351 respondents. Lagos State had 60 responses, representing 17.09% of the population. Furthermore, 65 respondents (18.52% of the population) came from Oyo State. Ogun State had 62 (17.66%) respondents, followed by Osun State with 56 (15.95%). 56 (15.95%) responses were from Ondo State, with 52 (14.81%) from Ekiti. Conversely, 90 respondents (25.64%) held the position of tax officer, while 88 (25.07%) held the post of senior tax officer. 75 respondents held the post of principal tax officer, accounting for 21.37% of the population. 98 (27.92%) respondents held the post of director. Again, there were 67 ICAN members and 76 ACCA members. 73 were ANAN members, while 63 were CITN members. 72 respondents did not specify. In contrast, 68 respondents (19.37%) had less than 5 years of experience; 65 (18.52%) of respondents had between 6 to 10 years of working experience, while 91 (25.93%) had between 11 to 15 years of working experience. 50 respondents had worked 16 to 20 years, accounting for 14.25% of the total population. 77 (21.94%) of respondents had more than 21 years in service. In terms of training, 95 (27.07%) did not attend any training, while 91 respondents attended less than 2 training; 72 respondents attended 3 to 4 training courses, while 93 respondents attended more than 5 training courses.

Table 2: Demographic Statistics

State of Origin		Freq.	Percent	Cum.
Lagos:	1	60	17.09	17.09
Oyo:	2	65	18.52	35.61
Ogun:	3	62	17.66	53.28
Osun:	4	56	15.95	69.23
Ondo:	5	56	15.95	85.19
Ekiti:	6	52	14.81	100
Designation:				
Tax Officer:	1	90	25.64	25.64
Senior Tax Officer:	2	88	25.07	50.71
Principal Tax Officer:	3	75	21.37	72.08
Director:	4	98	27.92	100

Professional Qualifications

ICAN:	1	67	19.09	19.09
ACCA:	2	76	21.65	40.74
ANAN:	3	73	20.8	61.54
CITN:	4	63	17.95	79.49
Others:	5	72	20.51	100

No. of years in service

0-5 years:	1	68	19.37	19.37
6-10 years:	2	65	18.52	37.89
11-15 years:	3	91	25.93	63.82
16-20 years:	4	50	14.25	78.06
21 years and above:	5	77	21.94	100

Number of Training Attended

0 training attended:	1	95	27.07	27.07
1-2 training attended:	2	91	25.93	52.99
3-4 training attended:	3	72	20.51	73.5
5 training and above attended:	4	93	26.5	100

Source: Authors' Computation (2024)

Descriptive information

The average VTC had a standard deviation of 0.8165 or 2.8357. This distribution's lowest and greatest values ranged from 0 to 5. This suggests that respondents generally agreed on how the tax compliance strategies that were examined affected tax revenue generation. With a kurtosis of 6.9769 and a negative skewness of - 1.5729, the distribution suggested that most of the data would be dispersed to the left of the mean. TES has an average of 2.8794 and a standard deviation of 0.8506. The distribution was negatively skewed (-1.5129) despite the slight fluctuation. 6.3805 was the kurtosis. The TRG had a standard deviation of 0.7888 and an average of 2.8596. The distribution's greatest value was five, while its smallest value was zero. With a kurtosis of 8.0604, the distribution is negatively skewed (-1.789).

Table 3: Descriptive Statistics

Variable	Obs.	Mean	Std. Dev	Min	Max	Skewness	Kurtosis
VTC	351	2.8357	0.8165	0	5	-1.5729	6.9769
TES	351	2.8794	0.8506	0	5	-1.5129	6.3805
TRG	351	2.8596	0.7888	0	5	-1.7890	8.0604

Source: Authors' Computation (2024)

Model regression assumptions' verification and diagnostics

A precise description is necessary for the linear regression model to prevent bias and specification errors. The study employed the Ramsey reset test to ascertain whether the models had been mis-specified. The null hypothesis states that every variable in the models has been included. The alternative possibility is that the models did not account for all relevant factors. If the test result has a p-value of less than 0.05, the null hypothesis is accepted; if not, it is rejected. The test results show that the null hypothesis is not accepted (F-statistic = 47.98, p-value = 0.0000). To evaluate the level of multicollinearity among independent variables, the study employed the variance inflation factor test. Even with the greatest VIF value of 1.42 for the VTC and TES variable, it is still much below the criteria of 10. This shows that there is not a significant amount of multicollinearity among the independent variables in the model. Heteroskedasticity in error terms was assessed using the Breusch-Pagan/Cook-Weisberg test. Consequently, the residual shows homoskedasticity if the test statistics are not significant and heteroskedasticity if they are. The P-value of 0.0081 and chi-value of 7.01 were obtained from the heteroskedasticity test conducted by Breusch-Pagan/Cook-Weisberg. This implies that the data contained heteroskedasticity.

The fundamental tenet of the linear regression model that residuals are independent of one another is called into question by autocorrelation. This leads to inefficient estimators and inaccurate statistical conclusions. The autocorrelation test was conducted using the Durbin-Watson d-statistic, with test statistic values ranging from 0 to 4. Two denotes no autocorrelation; positive autocorrelation is shown by values less than two, while negative autocorrelation is shown by values greater than two. The model's autocorrelation is demonstrated by the Durbin-Watson d-statistic test results of 1.7394. Once more, the normal distribution of the residuals is assumed by the typical linear regression model. Accurate coefficient estimates, hypothesis testing, and confidence interval creation are made possible by this assumption. The Shapiro-Wilk W test for normal data was employed in the study to ascertain whether the residuals were normal. The p-value must be more than 0.05 for the residuals to have a normal distribution. The test results show that the residual (p-value = 0.0000; Z-statistic =9.673) is not normally distributed. After that, the variables were transformed to have a normal distribution.

Table 4: Regression Assumptions' Verification and Diagnostics

Particulars	t-statistic	P-value
Ramsey reset test	47.98	0.000
Breusch-Pagan/Cook-Weisberg test	7.01	0.008
Durbin-Watson d-statistic test	1.7394	
Shapiro-Wilk W test	9.673	0.000
VIF		
VTC	1.42	
TES	1.42	

Source: Authors' Computation (2024)

Model estimation, prediction and analysis
The study used robust regression because of the presence of autocorrelation, heteroskedasticity, and non-normality. To find out if all model coefficients deviate considerably from zero, the F-test was used. If a model's p-value is less than 0.05, the F-test statistic is deemed appropriate and effective. The f-statistics are 115.72, and the p-value is 0.0000, as indicated in Table 5. This demonstrates the statistical efficiency of the model. However, Table 5 displays the expected parameters of the model along with their statistical significance. A positive coefficient means that the dependent variable's mean increases by the independent variable's coefficient when the dependent variable's value increases by one unit. A negative coefficient indicates that the dependent variable tends to decrease by the same amount when the independent variable increases by one unit. Based on the t-value, two-tailed p-values assess the hypothesis that every coefficient deviates from zero. The independent factors have a substantial impact on the dependent variable if the p-value is less than 0.05 with 95% confidence.

The VTC in this case has a coefficient of 0.3818 and a p-value of 0.0000. This suggests that for every unit increase in VTC, Tax Revenue Generation (TRG) increases by 0.3818 units. The p-value is below the conventional 0.05 significance level. This suggests that there is statistical significance in the correlations between TRG and VTC. VTC has a t-value of 7.71 and a confidence interval that stretches from 0.2845 to 0.4792. This suggests that the genuine VTC coefficient, at a 95% confidence level, is between 0.2845 and 0.4792. Furthermore, the p-value and TES coefficient are 0.0000 and 0.2256. This implies that, if all other variables stay the same, for every unit increase in TES, TRG increases by 0.3230 units. The p-value is less than the traditional 0.05 criterion of significance. This implies that there is a statistically significant relationship between TES and TRG. For TES, the confidence range spans from 0.2295 to 0.4164, and the t-value is 6.80. This indicates that the true coefficient for TES is between 0.2295 and 0.4164 at a 95% confidence level. Overall, the study reveals that both voluntary tax compliance and tax enforcement strategies significantly impact tax revenue generation, with voluntary compliance having a slightly stronger effect.

Table 5: Robust Regression Analysis

TRG	Coef.	Std. Err	t	P>t	[95% Conf.	Interval]
VTC	0.3818	0.0495	7.71	0.0000	0.2845	0.4792
TES	0.3230	0.0475	6.8	0.0000	0.2295	0.4164
_cons	0.8428	0.1366	6.17	0.0000	0.5741	1.1114
F(2, 348)	115.72					
p-value	0.0000					

Source: Authors' Computation (2024)

Discussion of findings

Tax revenue generation plays a vital role in economic management and development across both developed and developing nations. It provides funding for public services, infrastructure projects, and social programs, contributing to sustainable development and ensuring economic stability. This study aims to investigate the effect of tax compliance strategies on tax revenue generation in Nigeria, assessing the effectiveness of different approaches in closing the tax gap and boosting government revenue. The empirical analysis revealed that both voluntary tax compliance and tax enforcement strategies significantly contribute to increasing tax revenue generation in Nigeria. This means that when taxpayers willingly comply with tax obligations, likely due to a clear understanding of tax laws, perceived fairness in the tax system, or effective communication from tax authorities, tax revenue tends to rise. Additionally, robust tax enforcement strategies, such as audits, penalties for non-compliance, and legal actions, also play a crucial role in ensuring that individuals and businesses meet their tax responsibilities, thereby boosting the overall tax revenue. In essence, the findings suggest that a dual approach encouraging voluntary compliance through education and transparency, alongside strong enforcement measures, is effective in enhancing tax revenue collection in Nigeria. These results underscore the importance of creating a tax environment where compliance is not only encouraged but also enforced to ensure that the government can generate the necessary funds to support public services and infrastructure. In line with the findings of this study, the alternative hypotheses were accepted, while the null hypotheses were rejected. Furthermore, the findings align with the results of previous studies such as Jack et al. (2024) demonstrated the importance of a balanced approach combining voluntary compliance and enforcement strategies to enhance tax revenue in Rivers State, Nigeria, further exploration is needed to confirm that voluntary compliance influences revenue generation in another state in Nigeria. Additionally, Bird and Zolt (2022), Feld and Frey (2023), and Kleven et al. (2023) highlighted the positive impact of voluntary tax compliance strategies, such as tax incentives, education programs, and behavioral nudges, on compliance rates. Nkurunziza and Mugisha (2023) demonstrated the effectiveness of tax enforcement strategies, such as audits, penalties, and taxpayer services, on tax revenue in Rwanda.

The findings align with the tax benefit theory, which asserts that taxpayers are more inclined to comply when they perceive a clear connection between the taxes paid and the benefits received (Nkurunziza & Mugisha, 2023). The observed increase in tax revenue from voluntary compliance may result from enhanced transparency, perceived fairness, and effective communication by tax authorities, as emphasized by Vieira et al. (2023). Concurrently, robust enforcement strategies, such as audits and penalties, underscore the importance of ensuring accountability, reinforcing the notion that those who benefit from public services must contribute their equitable share (Adeola & Olalekan, 2023). From a policy perspective, these findings highlight the importance of adopting a balanced approach that integrates taxpayer education and transparency to build trust and encourage voluntary compliance while also implementing stringent enforcement measures to deter non-compliance (Jack et al., 2024). This dual strategy can foster a sustainable tax system, enabling governments to reliably generate revenue for public services, infrastructure, and social programs, thereby promoting economic stability and development (Oladele et al., 2021).

Conclusion and Recommendations

This study investigates the effect of various tax compliance strategies on tax revenue generation in Nigeria. It specifically examines how both voluntary tax compliance and tax enforcement measures contribute to closing the tax gap and enhancing government revenue. The empirical analysis reveals that both strategies, voluntary compliance and enforcement, positively and significantly affect tax revenue generation. Voluntary compliance is associated with taxpayers' willingness to meet tax obligations due to factors like understanding tax laws, perceiving the tax system as fair, and effective communication from tax authorities. On the other hand, tax enforcement strategies, including audits, penalties, and legal actions, play a critical role in ensuring compliance, further boosting tax revenue. This study concluded that a combined approach of encouraging voluntary tax compliance and implementing strong enforcement strategies effectively increases tax revenue generation in Nigeria. Voluntary compliance, driven by education, transparency, and a fair tax system, significantly enhances revenue. Simultaneously, rigorous enforcement measures ensure that non-compliance is minimized, thereby maximizing the tax collected. Together, these strategies create a robust tax environment that supports government efforts to generate the necessary funds for public services and infrastructure.

Based on the outcomes of this study, this study recommends that the government should invest in comprehensive taxpayer education programs that clearly explain tax laws, the importance of compliance, and the benefits of paying taxes. This will help improve voluntary compliance by fostering a better understanding of tax obligations among citizens. Secondly, tax authorities should continue to enforce compliance through audits, penalties, and legal actions against defaulters. Strengthening these mechanisms will ensure that tax evasion is minimized and that all eligible taxpayers contribute to government revenue. Lastly, the government should ensure that tax policies are transparent and that taxpayers perceive the system as fair. This can be achieved by implementing policies that reduce corruption and improve the efficiency of tax administration.

This study makes several important contributions to the understanding of tax revenue generation in Nigeria, particularly in the context of tax compliance strategies. First, it provides empirical evidence that both voluntary tax compliance and tax enforcement strategies are crucial drivers of tax revenue generation. By highlighting the effectiveness of voluntary compliance, the study emphasizes the importance of taxpayer education, transparent communication, and the perceived fairness of the tax system in encouraging individuals and businesses to meet their tax obligations. Second, the research underscores the significant role of robust tax enforcement mechanisms, including audits, penalties, and legal actions, in ensuring compliance and boosting revenue generation. This dual approach encouraging voluntary compliance while enforcing accountability emerges as a highly effective strategy for closing the tax gap and improving overall tax revenue collection in Nigeria. Lastly, the study offers valuable insights into the application of these strategies in a developing country context, providing a model for other nations facing similar challenges in tax collection. The findings contribute to the growing body of literature on tax compliance strategies, offering practical policy recommendations for enhancing tax revenue generation and supporting economic development.

While this study provides valuable insights into the relationship between tax compliance strategies and tax revenue generation in Nigeria, several limitations must be acknowledged. First, the study primarily focuses on Nigeria, which may limit the generalizability of the findings to other countries with different economic conditions or tax systems. Additionally, the study does not examine the long-term effects of tax compliance strategies on revenue generation, leaving open the question of whether these effects are sustained over time. Lastly, the complexity of measuring and quantifying all factors influencing tax compliance, such as socio-economic, political, and cultural variables, might limit the comprehensiveness of the analysis.

Future research could address these limitations by conducting comparative studies across different countries to explore the applicability of the findings in various contexts. Additionally, a longitudinal approach that tracks the impact of tax compliance strategies over an extended period would provide valuable insights into the long-term effectiveness of these measures. Future studies could also focus on the role of technology in enhancing tax compliance, particularly in automating processes and reducing human errors. Finally, examining the interplay of socio-economic factors, political climate, and cultural

attitudes towards taxation could provide a more holistic understanding of tax compliance behaviors and inform more targeted policy interventions.

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