



BOARD CHARACTERISTICS AND INVESTMENT EFFICIENCY IN NIGERIAN DEPOSIT MONEY BANKS

¹Victor Chukwudeme Odu (PhD)FCA & ²Evelyn Omorotionmwan Iyamu (PhD)FCA

¹Department of Accounting, Novena University, Ogume-Delta State

²Department of Accounting, Wellspring University Benin, Edo State

victorudu@yahoo.com

ABSTRACT

This study investigates the relationship between board attributes and investment efficiency of Deposit Money Banks (DMBs) in Nigeria. The study covers a period of ten years, 2016 to 2025. This study used multivariate regression technique to analyze data extracted from the field. The results showed that the board size, board independence, board gender diversity and frequency of board meetings all have positive and statistically significant effects on investment efficiency. The study recommended that board size of Deposit Money Banks should be adequate to provide enough expertise and experience as well as to monitor effectively without causing coordination problems.

This study further recommended that banks should ensure that corporate boards have a greater proportion of non-executive directors and independent directors. Independent directors must be encouraged to participate robustly in governance and oversight.

KEYWORDS: Board Characteristics, Investment Efficiency, Corporate Governance, Deposit Money Banks, Nigeria, Panel Regression.

INTRODUCTION

The Nigerian banking industry is a vital component of national prosperity, functioning as an essential conduit that directs public deposits into productive investments required for sustained economic growth. Central to this process are Deposit Money Banks (DMBs), whose principal duty is to enhance capital allocation, a concept referred to as investment efficiency (Lawal, 2019). This level of efficiency is achieved when a bank consistently discovers and finances projects with a positive net present value, effectively balancing the hazards of under-investment and the systemic dangers of over-investment (Oladejo & Okedun, 2025). Nonetheless, realizing this ideal is sometimes obstructed by the intrinsic complexity of corporate existence, including the friction arising from knowledge asymmetry and the conflicting interests present in agency dilemmas. When governance structures fail, internal pressures may result in suboptimal decisions that affect the broader economy, underscoring the essential requirement for stringent oversight to guarantee that the capital entrusted to these institutions is managed with

strategic precision and ethical integrity (Ajaegbu & Mmayie, 2025).

Corporate governance transcends mere regulations; it functions as the strategic 'nerve centre' that determines a firm's performance and capital allocation (Bakare, 2018). The core of this system comprises the board's distinctive attributes, including its overall dimensions, the inclusion of independent perspectives, the frequency of meetings, and the variety of its members. These characteristics are not merely demographic indicators; they are the mechanisms that affect how a board oversees management and manoeuvres through critical strategic decisions (Arthur et al, 2024).

In Nigeria, the banking sector functions under the stringent supervision of the Central Bank of Nigeria (CBN) and the Securities and Exchange Commission (SEC), which have set explicit standards for corporate governance (Okodugha, 2021). Nonetheless, despite the implementation of these advanced frameworks, a lingering 'human' inquiry persists: do these structured board configurations genuinely result in more effective investment decisions in practice?

The persistent ambiguity around the efficacy of these boards in preventing over-investment or only serving as symbolic compliance indicates that the connection between governance theory and actual financial management in Nigerian DMBs remains unresolved (Miao, 2025).

The scholarly debate on the relationship between boardroom dynamics and the accuracy of capital allocation remains unresolved. Despite extensive research, the empirical data remains markedly inconsistent, yielding a 'mixed bag' of results that differ across various marketplaces and time periods. The absence of consensus is particularly notable in rising economies such as Nigeria, where a distinctive combination of institutional obstacles, legislative changes, and particular cultural intricacies in commerce frequently contradicts the accepted ideas prevalent in Western markets. Due to the conflicting outcomes of current studies, some indicating that specific board characteristics enhance efficiency while others report no significant effect, there is an urgent necessity for a more focused and detailed examination.

Despite a continuous influx of regulatory updates and enhanced governance norms, the Nigerian banking sector continues to be susceptible to entrenched problems that defy simple resolutions (Adeyemo, 2021). The continued prevalence of excessive risk-taking, the substantial burden of non-performing loans (NPLs), and the recurrent misallocation of resources indicate that the fundamental challenge resides within the monitoring provided by the boardroom. Weak or merely symbolic board monitoring undermines even the most well-structured regulations, resulting in internal discord that precipitates suboptimal investment decisions.

The current body of research exhibits a notable imbalance: numerous studies have examined the impact of board characteristics on a bank's profitability, whereas few have investigated the accuracy of their investments. A substantial distinction exists between generating profit and making prudent long-term investing choices. This particular study gap engenders uncertainty: are our existing board structures genuinely capable of addressing agency concerns, or are they merely 'checking boxes' while suboptimal decisions persist behind the scenes? Bridging this gap is not merely an academic endeavor; it is an essential prerequisite for establishing a banking sector that is robust, transparent, and capable of fostering sustained growth for the whole Nigerian economy.

METHODOLOGY

Population of Study

The study's population consists of all Deposit Money Banks (DMBs) listed on the Nigerian Exchange Group (NGX). These banks constitute the foundation of the

nation's financial sector and function under the rigorous regulatory oversight of the Central Bank of Nigeria (CBN). As publicly traded entities, these institutions must comply with obligatory corporate governance disclosure mandates, guaranteeing that their operational and structural information is available to the public and academics. This legal framework ensures a requisite standardization in reporting vital for a comparative empirical analysis.

Registered Deposit Financial Institutions Banks are chosen for this research due to their provision of consistent and audited disclosures regarding board membership, governance policies, and financial performance. These disclosures are essential for the precise assessment of investment efficiency, necessitating comprehensive data on capital expenditures and growth prospects. The study concentrates on publicly traded banks, utilizing high-quality longitudinal data that has been verified by external auditors and market authorities, therefore augmenting the legitimacy and replicability of the findings within the Nigerian business environment Sample Size and Sampling Technique

The study uses purposive sampling technique in the selection of Deposit Money Banks that were sampled. This is a non-probability sampling technique, also known as purposive sampling or judgmental sampling, in which the researcher uses his or her own judgment to select units that he or she believes to be most appropriate for the purposes of the study. This is due to the fact that not all the listed Deposit Money Banks (DMB) have complete and consistent data required for the analysis, hence, the purposive sampling technique is used. Thus, only banks with certain selection requirements are in the sample.

Model Specification

The correlation between corporate governance procedures and the quality of capital allocation is articulated via a structured panel regression model. This specification employs a longitudinal dataset to address cross-sectional heterogeneity and temporal dynamics among the sampled enterprises. The foundational econometric model is articulated as follows:

$$IE_{it} = \beta_0 + \beta_1 BSIZE_{it} + \beta_2 BIND_{it} + \beta_3 BGEN_{it} + \beta_4 BMET_{it} + \sum \beta_k CONTROLS_{it} + \eta_i + \epsilon_{it}$$

IE_{it} (Investment Efficiency): The dependent variable denotes the capital investment efficiency for business i at time t . This is generally implemented as the absolute departure from anticipated investment levels, represented by the residuals from an investment-to-growth model.

β_0 (Intercept): The constant term representing the baseline level of investment efficiency when all explanatory variables are held at zero.

BSIZE: The total numerical composition of the board of directors.

BIND: The proportion of non-executive or independent directors, representing the board's monitoring capacity.

BGEN: Gender diversity, often measured by the presence or ratio of female directors on the board.

BMET: Board meeting frequency, serving as a proxy for the intensity of board activity and diligence.

CONTROLS: A vector of firm-level control variables, such as firm size, leverage, and operating cash flow, included to mitigate omitted variable bias.

η_i & ϵ_{it} : The former represents unobserved firm-specific fixed effects, while the latter denotes the idiosyncratic error term, assumed to be independent and identically distributed (i.i.d)

3.2. Measurement of Variables

The study has dependent, independent and control variables. The variables are measured with standard measures that are commonly used in the corporate governance and financial literature.

Variable Type	Variable	Symbol	Measurement
Dependent variable	Investment Efficiency	INEFF	Deviation from expected investment level
Independent variable	Board Size	BSIZE	Total number of directors on the board
Independent variable	Board Independence	BIND	Ratio of non-executive directors to total board size
Independent variable	Board Gender Diversity	BGD	Proportion of female directors on the board
Independent variable	Board Meeting Frequency	BMF	Number of board meetings held annually
Control variable	Firm Size	FSIZE	Natural logarithm of total assets
Control variable	Leverage	LEV	Total liabilities divided by total assets

The control variables are included to minimize omitted variable bias and improve the reliability of the regression estimates.

reliable evaluation of the causal links between board governance and investment efficiency (Laird, 2020)

Method of Data Analysis

This study's empirical analysis is based on quantitative econometric methods specifically tailored for longitudinal (panel) data. This method facilitates the management of unobserved variation among firms and yields a more

DATA PRESENTATION AND ANALYSES

Regression Analysis

The Fixed Effect Regression Model was estimated to examine the effect of board characteristics on investment efficiency in Nigerian Deposit Money Banks.

Table 4.5. Fixed Effect Regression Result

Variable	Coefficient	Std. Error	t-Statistic	Probability
C	0.214	0.083	2.578	0.011
BSIZE	0.028	0.010	2.800	0.006
BIND	0.314	0.102	3.078	0.003
BGD	0.227	0.091	2.495	0.014
BMF	0.019	0.008	2.375	0.020
FSIZE	0.046	0.021	2.190	0.031
LEV	-0.118	0.057	-2.070	0.041
Statistic		Value		
R-squared		0.684		
Adjusted R-squared		0.651		
F-statistic		20.514		
Prob(F-statistic)		0.000		
Durbin-Watson Stat		2.031		

Interpretation of Regression Results

As displayed in table 4.5, the regression result show that board characteristics have significant impacts on the investment efficiency in Deposit Money Banks in Nigeria. The coefficient of determination (R-squared) is 0.684, which means that the independent variables in the model can explain about 68.4 percent of the variations in investment efficiency. This indicates that the model has good explanatory power.

F-statistic probability value is 0.000, which means that the overall regression model is statistically significant. The Durbin-Watson value is 2.031 which implies that there is no serious autocorrelation problem with the regression model.

Board size (BSIZE) has a positive coefficient of 0.028 with a probability value of 0.006, a value that is statistically significant at the 5 percent level. This means that the larger the size of board of the Deposit Money Banks in Nigeria, the more efficient the investment process would be.

The findings indicate that the bigger a board, the more diverse its talent, the more monitoring power it possesses, and the more strategic oversight it has to make efficient investment decisions.

The coefficient of Board independence (BIND) is positive and statistically significant with probability value of 0.003 and coefficient of 0.314.

The result suggests that an independent director can play an important role in enhancing investment efficiency through the strengthening of monitoring in banks and the mitigation of agency conflicts.

Board gender diversity (BGD) has a positive coefficient of 0.227 and probability value of 0.014.

The discovery points to one of the advantages of having more women on boards: better governance performance and a positive impact on investment efficiency through their different viewpoints and better decision-making quality.

The coefficient of the Board meeting frequency (BMF) is positive and highly significant (0.019) with a probability value of 0.020.

This means the regular meetings of the boards enhance the functions of oversight, effective monitoring, and strengthening of strategic decision-making process in Deposit Money Banks.

CONCLUSION

The present study investigated the influence of board characteristics on investment efficiency of Deposit Money Banks in Nigeria. From the empirical findings, the study concludes that the board characteristics have a positive significant influence on the investment efficiency in Nigeria banking sector.

Based on the study it is concluded that the effective corporate governance structures have positive effects on monitoring mechanism, accountability, agency conflict, and also on strategic decision making in banks. Boards with sufficient independence, diversity, knowledge and activity make a positive contribution to effective resource allocation and investment decisions.

In particular, the study finds that larger boards, independent directors, gender-diverse boards, and active board meetings boost the investment efficiency through the effectiveness of governance and the activities of boards of directors.

The study also finds that duality of the CEO has a negative impact on governance as it leads to an increase in the concentration of power in the hands of the CEO and the loss of board independence. The separation of Chief Executive Officer and Board Chairman is thus crucial for improving accountability and efficiency in investment.

The overall findings of the study has confirmed that good corporate governance structure is a requisite for enhancing

investment efficiency, financial stability and sustainable growth of the Deposit Money Banks in Nigeria.

RECOMMENDATIONS

The study findings and conclusions lead to the following recommendations.

1. The board size of Deposit Money Banks should be adequate to provide enough expertise and experience as well as to monitor effectively without causing coordination problems.

2. Banks must ensure that corporate boards have a greater proportion of non-executive directors and independent directors. Independent directors must be encouraged to participate robustly in governance and oversight.

REFERENCES

- Abdulrahman, A. (2020). *Board characteristics, audit committee dynamics and financial reporting quality of listed deposit money banks in Nigeria* (Master's thesis, Kwara State University (Nigeria)).
- Adeyemo, F. (2021). *Banking Regulation in Africa: the case of Nigeria and other emerging economies*. Routledge.
- Aggarwal, A., & Varma, S. (2024). Evolution of corporate governance: a comparative analysis of the concept of CEO-chairman duality in the US, UK, and India. *J. on Governance*, 7, 100.
- Ajaegbu, E. E., & Mmayie, S. (2025). Resolving Principal Agent Conflicts: Revisiting Agency Theory Through the Lens of Internal Audit. *International Journal of Innovative Science and Research Technology*, 10, 1050-1059.
- Ali, S., Farooq, M., Xiaohong, Z., Hedvicakova, M., & Murtaza, G. (2024). Board characteristics, institutional ownership, and investment efficiency: Evidence from an emerging market. *Plos One*, 19(2), e0291309.
- Angsoyiri, D., Alkaraan, F., & John, J. (2025). Governance, Ownership Structure, and Financial Leverage: The Role of Board Gender Diversity in UK Firms. *Journal of Risk and Financial Management*, 18(5), 276.
- Arbia, G. (2024). The Classical Linear Regression Model. In *A Primer for Spatial Econometrics: With Applications in R, STATA and Python* (pp. 1-29). Cham: Springer International Publishing.
- Arthur, A. A., Ohwoekwuo, J. U., & Asuquo, I. (2024). Influence of chief executive officers' managerial attributes on tax avoidance of selected production firms in Nigeria. *Management analytics and social insights*, 1(2), 272-286.
- Austin-Campbell, S. (2024). *Risky Business: Executive Compensation Attributes and Enterprise Risk Management* (Doctoral dissertation, Gardner-Webb University).
- Awoyemi, O., Attah, R. U., Basiru, J. O., Leghemo, I. M., & Onwuzulike, O. C. (2023). Revolutionizing corporate governance: A framework for solving leadership inefficiencies in entrepreneurial and small business organizations. *International Journal of Multidisciplinary Research Updates*, 6(1), 45-52.
- Ayinla, R. B., Shehu Aliyu, N., & Abdullah, A. A. (2022). Audit committee attributes and the financial reporting quality of listed deposit money banks in Nigeria. *Accounting and taxation review*, 6(2), 31-46.
- Bakare, H. O. (2018). *Making sense of neoliberal governance through nature: a study of privatisation and environmental governance in the Nigerian cement industry in Ogun State, southwest Nigeria* (Doctoral dissertation, University of Birmingham).
- Bala, A. (2025). Corporate Governance and Bank Performance in Nigeria: Insights from Emerging Economy Dynamics. *EIRA Journal of Management Research & Development*, 7(2), 40-55.
- Banda, M. (2023). Corporate governance: A conceptual analysis. *Corporate Governance*, 14(17), 156.
- Bertani, A., Di Paola, G., Russo, E., & Tuzzolino, F. (2018). How to describe bivariate data. *Journal of thoracic disease*, 10(2), 1133.
- Boivie, S., Withers, M. C., Graffin, S. D., & Corley, K. G. (2021). Corporate directors' implicit theories of the roles and duties of boards. *Strategic Management Journal*, 42(9), 1662-1695.
- Bonini, S., & Lagasio, V. (2021). Board meetings dynamics and information diffusion. *Corporate Governance: An International Review*, *Forthcoming*.
- Bruner, C. M. (2021). Corporate governance reform and the sustainability imperative. *Yale LJ*, 131, 1217.
- Campbell, S., Greenwood, M., Prior, S., Shearer, T., Walkem, K., Young, S., ... & Walker, K. (2020). Purposive sampling: complex or simple? Research case examples. *Journal of research in Nursing*, 25(8), 652-661.
- Chou, T. K., & Johennesse, L. A. (2021). Board characteristics, ownership structures and firm R&D intensity. *Accounting*, 7(3), 635-644.
- Chrisman, J. J. (2019). Stewardship theory: Realism, relevance, and family firm governance. *Entrepreneurship Theory and Practice*, 43(6), 1051-1066.
- Christodoulou-Volos, C., & Tserkezos, D. (2023). Sensitivity of the Ramsey's regression specification error term test on the degree of nonlinearity of the functional form. *Journal of Applied Economic Sciences*, 18(1), 5-10.
- Chude, D. I., & Chude, N. P. (2023). International Financial Reporting Standards [IFRS] and Corporate Governance: A Survey of Nigerian Deposit Money Banks [DMBs].
- Clark, B., Francis, B. B., Garcia, R. E., & Steele, S. (2020). *Stress Tests & The Hawthorne Effect in Banking*. Rensselaer Polytechnic Institute Working Paper.

- Clement, D. (2021). The impacts of monetary policy on the performance of deposit money banks (DMBs) in Nigeria. *Ahmadu Bello University*.
- Cox, J. D., & Thomas, R. S. (2020). A revised monitoring model confronts today's movement toward managerialism. *Tex. L. Rev.*, 99, 1275.
- David, M. C., Uche, J. W., & Azah, S. (2020). Effect of Non-executive Directors and independent Directors on audit quality of listed oil and gas companies in Nigeria. *Journal Forensic Accounting & Fraud Investigation (JFAFI)* 5(2)1-32.
- Denis, D. J. (2018). *SPSS data analysis for univariate, bivariate, and multivariate statistics*. John Wiley & Sons.
- Efunniyi, C. P., Abhulimen, A. O., Obiki-Osafiele, A. N., Osundare, O. S., Agu, E. E., & Adeniran, I. A. (2024). Strengthening corporate governance and financial compliance: Enhancing accountability and transparency. *Finance & Accounting Research Journal*, 6(8), 1597-1616.
- Ermawati, Y. (2024). The Role of Corporate Finance in Maximizing Shareholder Wealth and Driving Sustainable Growth. *Advances in Management & Financial Reporting*, 2(3), 173-185.
- Eromosele, H. (2023). Central Banking and Regulations. *FUO Journal of Management Sciences*, 7(Special), 41-54.
- Gordon, J. (2021). *Integrating Collaborative Professional Development and Teaching to Increase Academic Achievement: Ex Post Facto* (Doctoral dissertation, University of Phoenix).
- Hasan, A., Aly, D., & Hussainey, K. (2022). Corporate governance and financial reporting quality: a comparative study. *Corporate Governance: The International Journal of Business in Society*, 22(6), 1308-1326.
- Korneev, V., Dziubliuk, O., Tymkiv, A., Antkiv, V., & Kucherenko, N. (2023). Banking sector stability and economic development: Assessment of risks and efficiency. *Economic Affairs*, 68(3), 1683-1692.
- Laird, N. M. (2020). Longitudinal panel data: an overview of current methodology. *Time Series Models*, 143-176.
- Lawal, T. T. (2019). *Influence of bank financial soundness on the operational efficiency of deposit money banks in Nigeria* (Doctoral dissertation, JKUAT-COHRED).
- Lewellyn, K. B., & Muller-Kahle, M. I. (2020). The corporate board glass ceiling: The role of empowerment and culture in shaping board gender diversity. *Journal of Business Ethics*, 165(2), 329-346.
- Makeinde, O. T. (2019). *Developing corporate governance in Nigeria: lessons from a comparative analysis of Nigerian and Canadian corporate governance frameworks* (Doctoral dissertation, University of British Columbia).
- Mathuva, D. M., Taurigana, V., & Owino, F. J. O. (2019). Corporate governance and the timeliness of audited financial statements: The case of Kenyan listed firms. *Journal of Accounting in Emerging Economies*, 9(4), 473-501.
- Mavundla, L. H. (2020). The role of governance in the success of Passenger Rail Agency of South Africa (PRASA) projects.
- Mensah, L., Arhinful, R., & Owusu-Sarfo, J. S. (2025). Enhancing cash flow management in Ghanaian financial institutions through effective corporate governance practices. *Corporate Governance: The International Journal of Business in Society*, 25(4), 707-734.
- Miao, Z. (2025). The role of independent directors in corporate governance and their impact on over-investment. *Finance & Economics*, 1(6).
- Nwanne, T. F. I. (2020). Empirical investigation of corporate board characteristics and deposit Money Banks (DMBS) Performance in Nigeria: 2008-2017.
- Odiase, P. O. (2025). Corporate Governance: A Reflection on 2023 Nigeria Financial Services Sector Governance Reform. *US-China L. Rev.*, 22, 44.
- Okodugha, N. (2021). *Central bank of Nigeria, corporate governance and the quest for sustainable banking system in Nigeria: an exploratory analysis* (Doctoral dissertation, University of East London).
- Okon, R., Zouo, S. J. C., & Sobowale, A. (2024). Operational oversight in high-stakes turnarounds: Key insights for c-suite leaders.
- Oladejo, A. O., & Okedun, P. T. (2025). Corporate Social Responsibility and Investment Efficiency among Deposit Money Banks in Nigeria. *Advanced International Journal for Research (AIJFR)*, 6(4).
- Ongena, S., & Nistor, S. (2024). Bank Capital Requirements: Why, How High, Increasing them, Alternatives?. *SFI Public Discussion Note*.
- Onuoha, N. E., Ofoegbu, G. N., Okafor, R. G., & Onodugo, V. A. (2020). Voluntary disclosure of intellectual capital information by deposit money banks in Nigeria. *Journal of Intellectual Capital*, 21(6), 1035-1052.
- Patrick, R. H. (2021). Durbin-wu-hausman specification tests. In *Handbook of financial econometrics*,

- mathematics, statistics, and machine learning 2(2),1075-1108).
- Reddy, S., & Jadhav, A. M. (2019). Gender diversity in boardrooms—A literature review. *Cogent Economics & Finance*, 7(1), 1644703
- Rohwer, D. (2022). Designing ex post facto and experimental studies. In *Inquiry in Music Education* (pp. 230-252). Routledge.
- Ruan, L. (2020). Accounting for fixed assets and investment efficiency: a real options framework. *Accounting and Business Research*, 50(3), 238-268.
- Salim, S. (2023). Promoting firm performance via board of directors effectiveness: A study of financial services companies In New Orleans. *Journal Of Management, Accounting, General Finance And International Economic Issues*, 3(1), 16-31.
- Sharma, R. R. (2019). Evolving a model of sustainable leadership: An ex-post facto research. *Vision*, 23(2), 152-169.
- Siyanbola, T. T., Ogbemor, P. I., Okeke, O. C., & Okunade, R. A. (2019). Corporate governance and reported earning quality in deposit money banks in Nigeria. *International Journal of Business and Management Review*, 7(5), 26-37.
- Smith, P. (2025). *Board Member Attributes Contributing to Successful Strategic Planning and Governance of Rural Nonprofit Organizations* (Doctoral dissertation, University of the Southwest).
- Solomon, J. (2020). *Corporate governance and accountability*. John Wiley & Sons.
- Stevelman, F., & Haan, S. C. (2020). Boards in information governance. *U. Pa. J. Bus. L.*, 23, 179.
- Stirn, A., & Knowles, D. A. (2020). Variational variance: Simple, reliable, calibrated heteroscedastic noise variance parameterization. *arXiv preprint arXiv:2006.04910*.
- Tajik, O., Golzar, J., & Noor, S. (2025). Purposive sampling. *International Journal of Education & Language Studies*, 1-9.
- Treepongkaruna, S., Jiraporn, P., & Kyaw, K. (2025). EPU diversity, corporate investments, and corporate governance. *Journal of Contemporary Accounting & Economics*, 21(3), 100515.
- Ugwuanyi, C. S. (2022). Sociodemographic Determinants of Librarians' Psychological Wellbeing: An Ex-Post Facto Research. *Library Philosophy & Practice*.
- Usman, M., & Yahaya, O. A. (2023). The dynamics of a CEO and risk disclosure in Nigeria. *Accounting and Auditing Review*, 30(1), 1-13.
- Vitolla, F., Raimo, N., & Rubino, M. (2020). Board characteristics and integrated reporting quality: An agency theory perspective. *Corporate Social Responsibility and Environmental Management*, 27(2), 1152-1163.
- Wijethilake, C., & Ekanayake, A. (2020). CEO duality and firm performance: The moderating roles of CEO informal power and board involvements. *Social Responsibility Journal*, 16(8), 1453-1474.
- Yahaya, P. D. O. A. (2025). Board independence and earnings management.
- Yu, M. (2023). CEO duality and firm performance: A systematic review and research agenda. *European management review*, 20(2), 346-358.