

The Value Relevance of Recognized Intangible Assets and Market Value Added of Listed Deposit Money Banks in Nigeria

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ABSTRACT

This study examines whether recognized intangible assets are value-relevant to the market valuation of listed deposit money banks in Nigeria. The study adopts an ex-post facto panel research design and uses secondary data from the audited annual reports of 13 sampled listed deposit money banks for 2015–2024, producing 130 bank-year observations. The study is anchored principally on the Ohlson (1995) equity valuation framework and complemented by the Resource-Based View and Signaling Theory. Recognized intangible assets are measured as the natural logarithm of total recognized intangible assets, while Market Value Added (MVA) is measured as market capitalization less book value of equity. Bank size and leverage are included as control variables. Based on the regression estimates supplied for the study, the Hausman specification test does not reject the random-effects specification ($\chi^2 = 2.6133$, $p = 0.4552$). The random-effects estimates show a positive and statistically significant association between recognized intangible assets and MVA ($\beta = 3.1850$, $p < 0.001$). Bank size is negatively associated with MVA ($\beta = -2.7142$, $p < 0.001$), whereas leverage is positively associated with MVA ($\beta = 6.8551$, $p = 0.0003$). The model explains approximately 60.24% of the variation in MVA ($R^2 = 0.6024$). The findings indicate that recognized intangible assets contain information associated with equity-market valuation in the sampled Nigerian banks. The results should, however, be interpreted as conditional statistical associations rather than evidence of causality. The study recommends clearer and more consistent reporting of recognized intangible assets and related accounting policies, while recognizing that IAS 38 places important limits on the recognition of internally generated intangible resources.

Keywords: Recognized Intangible Assets; Market Value Added; Value Relevance; Deposit Money Banks; Ohlson Model; Panel Data.

INTRODUCTION

The economic importance of intangible resources has increased as firms rely more heavily on technology, information systems, brands, contractual rights, software, intellectual property and other knowledge-based resources. Banking is particularly relevant to this development because the delivery of financial services increasingly depends on digital platforms, proprietary information systems, software, customer-facing technology and other non-physical resources. Yet accounting recognition does not necessarily capture all economically important intangible resources. IAS 38 defines an intangible asset as an identifiable non-monetary asset without physical substance and establishes recognition requirements based, among other matters, on identifiability, probable future economic benefits and reliable measurement of cost.

This recognition boundary is important for value-relevance research. Market participants may incorporate information about resources that are not recognized in the statement of financial position, while accounting numbers capture only those resources that satisfy applicable recognition requirements. Consequently, a statistically significant association between recognized intangible assets and market valuation should not be interpreted as evidence that accounting statements measure the total economic value of a bank's intangible resources.

Value relevance research examines whether accounting information is associated with equity values and therefore provides evidence about whether accounting amounts convey information used by investors. Barth, Beaver and Landsman (2001) describe value relevance research as an empirical literature concerned with the relationship between accounting amounts and equity valuation, while also emphasizing that such associations require careful interpretation.

The Ohlson (1995) framework provides a theoretical basis for linking accounting information with equity valuation. Ohlson's model relates market value to accounting book values, earnings and other information under a clean-surplus framework. This study extends that valuation perspective by examining recognized intangible assets as an accounting attribute that may contain incremental information about the market value of listed banks.

Nigeria provides a useful setting because quoted companies and other entities with significant public interest were required to adopt IFRS Standards from January 2012. Thus, the 2015–2024 period falls within an established IFRS reporting environment. The Nigerian banking sector also provides substantial variation in scale, capitalization, business models and investment in technology-related resources.

The study addresses the following research question: to what extent are recognized intangible assets associated with Market Value Added among listed deposit money banks in Nigeria during 2015–2024?

The objective is to determine the relationship between recognized intangible assets and MVA after controlling for bank size and leverage.

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

Concept of Intangible Assets

IAS 38 identifies intangible assets as identifiable non-monetary assets without physical substance. Identifiability is established where an asset is separable or arises from contractual or other legal rights. Examples include computer software, licences, trademarks, patents, copyrights and similar rights. Recognition is subject to the probability of future economic benefits and reliable measurement of cost. Importantly, internally generated goodwill is not recognized, and internally generated intangible expenditure is subject to specific research and development requirements. For banks, recognized intangible assets may include purchased or otherwise qualifying software, licences, acquired customer-related intangibles and other identifiable rights. However, economically important items such as internally generated brands, staff knowledge, organizational capabilities and some internally developed resources may remain unrecognized. The distinction between recognized and unrecognized intangibles is therefore central to interpreting the empirical findings.

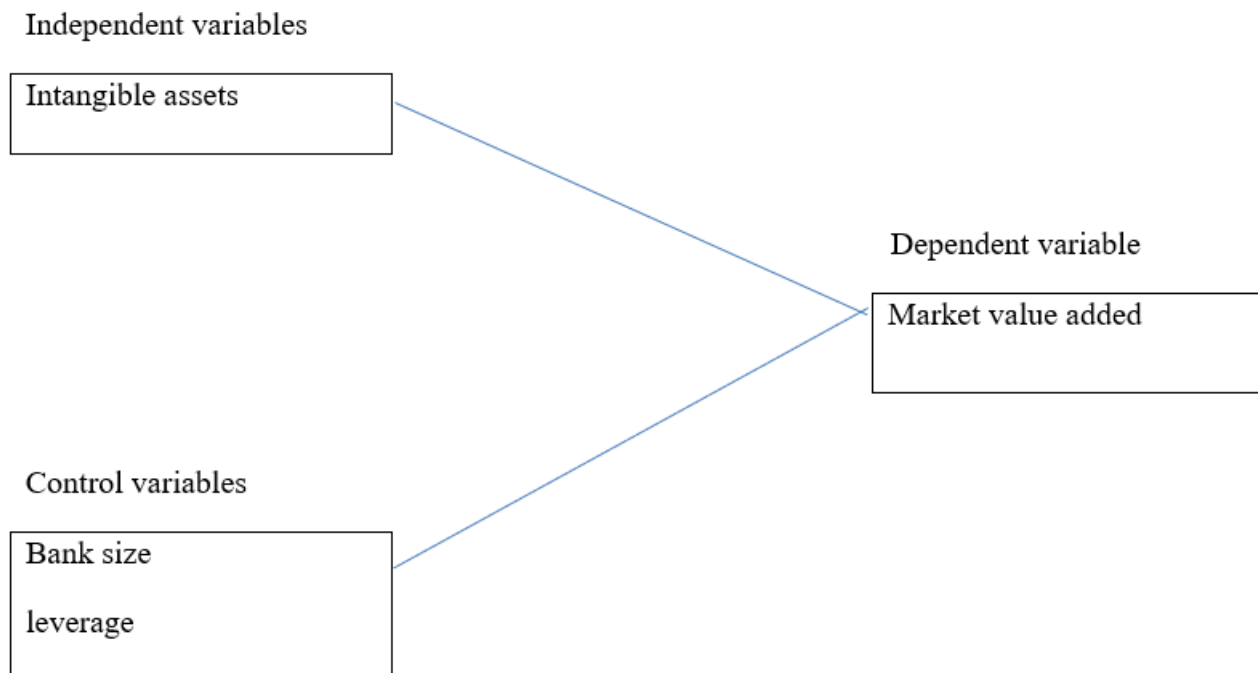
Value Relevance

Value relevance refers to the empirical association between accounting information and market-based measures of equity value. The literature does not imply that an accounting variable causes market value; rather, it investigates whether the variable contains information reflected in observed market prices or values. Barth et al. (2001) emphasize the importance of appropriate valuation models and careful econometric interpretation in such studies. For the present study, recognized intangible assets are considered potentially value-relevant if variations in their reported amounts are systematically associated with MVA after controlling for selected bank characteristics.

Conceptual Research Framework

This study is anchored on the Ohlson (1995) valuation model, which emphasizes the relevance of accounting information such as earnings, book value, and other value-relevant factors in explaining firm value. recognized intangible assets serves as the independent variable because of its potential to provide investors with forward- looking information and enhance the credibility of financial reports. The dependent variables,

market value which is commonly used by investors and analysts in assessing firm performance. The inclusion of firm size and leverage as control variables is premised on the notion that larger banks may have greater capacity for recognition and that leverage can influence recognition practices and firm valuation. The framework suggests that intangible assets recognition influences the selected value measure directly. However, firm size and leverage may either strengthen or weaken the effect of recognition on these performance indicators.



Adopted from Amos Adejare Aderibigbe et.al (2024) and modified by the researcher

THEORETICAL FRAMEWORK

Ohlson Equity Valuation Framework

The principal theoretical foundation is Ohlson's (1995) valuation framework. The framework links equity value with book value, earnings and other information. Ohlson develops a model in which market value is related to current and future earnings, book values and dividends and provides a benchmark for conceptualizing the relationship between market value and accounting information.

In this study, recognized intangible assets are introduced as an additional accounting information variable. The logic is that recognized intangibles may provide information about future economic benefits that is not fully represented by conventional measures of tangible and financial assets. The study therefore treats INTAN as an incremental information variable rather than as a substitute for the complete Ohlson valuation equation. A methodological caution is necessary because the dependent variable is MVA rather than share price, the model is an adapted empirical specification rather than a direct estimation of the original Ohlson price model.

Resource-Based View

The Resource-Based View argues that firm-specific resources can support sustained competitive advantage where they possess characteristics such as value, rarity and difficulty of imitation or substitution (Barney, 1991). Recognized intangible assets can represent part of such resources, although accounting recognition does not capture every strategic intangible resource.

Resource Based Theory (RBT) was first put forward by Penrose (2009), who proposed a model on the effective management of firms' resources, diversification strategy, and productive opportunities. Penrose's

publication was the first to propose conceptualizing a firm as a coordinated bundle of resources to address and tackle how it can achieve its goals and strategic behavior. RBT began to take shape in the 1980s. The antecedent of RBT was the Theory of the Growth of the Firm. Later, during the 1990s, Jay Barney's work was significant to the emergence of RBT and became the main idea in strategic management and strategic planning.

The resource-based theory (RBT) is an influential approach in strategic management. It has been widely applied as a managerial framework to determine vital resources for a firm to achieve a sustained competitive advantage. The theory provides an essential framework to explain and predict the fundamentals of a company's performance and competitive advantage: Utami, H. & Alamanos, E. (2023) According to this theory, the intangible assets are the main resource to improve enterprise growth. Additionally, Inseng & Uford, (2019) further explained that the resource-based theory declared that all important resources that drive a firm's competitive advantage and vital market performance should be recognized and their contributions measured

Therefore, managers need to be able to identify the key resources and drivers of performance and value in their organizations. Furthermore, the theory also states that a company's competitive advantage is derived from the company's ability to assemble and utilize an appropriate combination of resources. Such resources can be tangible or intangible, and represent the inputs into a firm's production process; such as capital, equipment, the skills of individual employees, patents, financing, and talented managers. Thus, RBT supports intangible assets as resources that are unique, not substitutable, unstated in nature, and synergistic and fosters sustainable advantage akpan (2020)

Signaling Theory

Signaling Theory suggests that information disclosed by managers can reduce information asymmetry between firms and external stakeholders. In this study, transparent reporting of recognized intangible assets may provide investors with information about technology investment, contractual rights and other resources. The theory supports the expectation that informative accounting information may be reflected in market valuation, but the empirical model tests association rather than managerial intention.

signaling theory was originally proposed and developed by spencer in (1973) in an attempt to explained job market behavior. The theory moves to explain the behavior of two parties when they have access to different information. Strategic signaling refers to action or decision made by a signaler to influence views and behaviors of receivers. Furthermore, signaling theory has been widely used in accounting and auditing studies which proposed that management may signal something about the firm through various aspect and process of financial information disclosures which can be viewed as a signal by investors. Similarly, one of these aspects of disclosure relates to intangible assets disclosure which are also part of accounting information that investors and other related parties are interested to see in the financial statements Abdul-Shukor (2008) suggested that signaling theory also gives an idea to ensure that the capital market does not undervalue firms in their decision making and also suggests accounting information that is being reported will show any actions that have been taken by the managers, hence providing the capital markets with the signals. Widianoro, (2012) have indicated that intangibles that are being reported in the financial statement of companies and any other recognizes intangible changes should be able to signal the firm's true position relating to its intangibles and therefore firms managers will be more willing to increase the company market value for their own benefit and incentives. Additionally, the market will lower down the firms' share market prices if they realize that the firms have been providing wrong signals to the market. According to Shukor, Ibrahim, Kaur, & Nor, (2009) information can be linked towards the value relevance base on the availability of signals from intangible asset information.

EMPIRICAL REVIEW

Evidence from Nigeria provides support for investigating intangible assets as a value-relevance issue. Oryina and Suleiman (2020), using Nigerian listed manufacturing firms, reported that intellectual property was positively and significantly associated with market value, while goodwill had a negative and significant

association. Abubakar and Abubakar (2015) also reported evidence of incremental value relevance for intangible resources among listed high-technology firms in Nigeria.

Recent Nigerian banking evidence is also directly relevant. A 2026 study of 13 listed banks over 2015–2024 reported a positive and statistically significant relationship between intangible-asset disclosure and bank valuation. The present study differs conceptually because it focuses on the recognized monetary amount of intangible assets rather than a disclosure index. This distinction should be maintained throughout the paper to avoid treating recognition and disclosure as identical constructs.

The broader literature also highlights the limitations of financial statements in representing economically important intangibles. Lev and Gu (2016) argue that the increasing importance of intangible resources creates challenges for conventional financial reporting because many economically significant resources are not recognized as assets. This reinforces the need to distinguish recognized accounting amounts from the broader economic stock of intangible resources.

Research Gap

Three gaps motivate the study. First, much of the value-relevance literature examines broad firm populations, while evidence focused specifically on listed Nigerian deposit money banks remains comparatively limited. Second, disclosure studies and recognition-based studies are conceptually different: disclosure measures the information communicated to users, whereas recognized intangible assets measure the accounting amount recognized in the financial statements.

Third, the present study uses MVA as the market-based outcome and incorporates bank size and leverage as conditioning variables. The study therefore provides evidence on whether the recognized accounting amount of intangible assets is statistically associated with a market-value-based measure in Nigerian listed banks.

METHODOLOGY

Research Design

The study adopts an ex-post facto panel research design. The design is appropriate because the researcher observes historical accounting and market data that cannot be manipulated experimentally. The panel structure combines observations across banks and years and permits analysis of both cross-sectional and temporal variation.

Population, Sample and Period

The study population is stated as 14 listed deposit money banks, from which 13 banks with the required continuous data were selected. The 2015–2024 period produces 10 years of observations and, for 13 banks, a balanced panel of 130 bank-year observations. The other bank was excluded because jaiz bank was not listed as at the time of study period. The study period is appropriate for an IFRS-based analysis because IFRS adoption for quoted companies and companies with significant public interest in Nigeria became effective in January 2012.

Sources and Method of Data Collection

Data are obtained from audited annual reports and accounts of the sampled banks and historical equity-market information used to calculate market capitalization. For each bank-year observation, total recognized intangible assets, total assets, total liabilities, total equity and year-end share-price information are extracted. The final dataset retained a documented audit trail showing the annual report, page number or note reference for each accounting variable and the market-data source for each market observation.

Measurement of Variables

Variable	Code	Role	Measurement
Market Value Added	MVA	Dependent	Market capitalization – book value of equity
Recognized intangible assets	INTAN	Independent	Natural logarithm of total recognized intangible assets
Bank size	SIZE	Control	Natural logarithm of total assets
Leverage	LEV	Control	Total liabilities ÷ total assets

Model Specification

The empirical model is specified as:

$$MVA_{it} = \beta_0 + \beta_1 INTAN_{it} + \beta_2 SIZE_{it} + \beta_3 LEV_{it} + \mu_i + \varepsilon_{it}$$

Where:

MVA_{it} is Market Value Added for bank i in year t;

INTAN_{it} is the natural logarithm of recognized intangible assets;

SIZE_{it} is the natural logarithm of total assets;

LEV_{it} is the leverage ratio;

μ_i represents unobserved bank-specific effects; and

ε_{it} is the idiosyncratic error term.

The model tests the following null hypothesis:

H₀: recognized intangible assets have no statistically significant association with Market Value Added of listed deposit money banks in Nigeria.

RESULTS AND DISCUSSION

4.1 Descriptive Statistics

The descriptive statistics shows the number of observations for the study, the mean, the standard deviation, the minimum as well as the maximum values.

Table 4.1: Descriptive Statistics Results

Variables	Obs	Mean	Std Dev	Min	Max
MVA	130	13.63	14.61	0.000	69.6
INTAN	130	5.8401	1.875	0.000	9.392
SIZE	130	8.95101	2.6490	0.000	12.98
LEV	130	0.8100	0.4034	0.000	2.547

source: E-views 12

Table 4.1 presents the descriptive statistics for the variables used in assessing the value relevance of recognized intangible assets among listed Deposit Money Banks (DMBs) in Nigeria. The variables include Market Value Added (MVA), recognized Intangible Assets (INTAN), Size (SIZE), and Leverage (LEV). The mean value of MVA is 13.63, indicating that on average, Nigerian DMBs generated a moderate market value addition, though the high standard deviation (14.61) and wide range (0–69.6) suggest substantial variation in market performance across banks. INTAN has a mean of 5.84 and a standard deviation of 1.88, showing a

moderate level of recognized intangible asset but with some inconsistency across banks. The negative skewness (−1.04) implies that a few banks disclose relatively higher intangible assets than others.

The average SIZE value of ₦8,943,000,000 and the sum of ₦1,163,695,820,000 shows that most of the sampled banks are large institutions. LEV has a mean of 0.81, implying that Nigerian DMBs rely significantly on debt financing, consistent with the nature of banking operations. However, the minimum leverage of 0.00 and maximum of 2.55 indicate variations in financial structure across institutions.

Correlation Matrix

Correlation Matrix Between MVA, INT ASSET, SIZE, and LEV

	MVA	INTANGIBE_ASS ETS	SIZE	LEV
MVA	1	0.01196482574843 078	- 0.158676416003666 5	0.01894965604381 534
INTANGIBE_AS SETS	0.0119648257484 3078	1	0.732669309365696 1	0.10053464995377 28
SIZE	- 0.1586764160036 665	0.73266930936569 61	1	0.04863452710805 736
LEV	0.0189496560438 1534	0.10053464995377 28	0.048634527108057 36	1

source: E-views 12

MVA shows an almost zero correlation with Intangible Assets ($r = 0.01$) and Leverage ($r = 0.02$), indicating that, in this sample, these variables do not meaningfully explain differences in market value creation. MVA has a weak negative correlation with Firm Size ($r = -0.16$), suggesting that larger firms may experience slightly lower market value added, possibly due to maturity effects or market expectations. Leverage remains weakly correlated with the other variables, indicating limited influence. Overall, MVA appears largely independent of the accounting and structural variables considered, highlighting the importance of other market-driven or strategic factors.

Heteroskedasticity Test

	Value	Df	Probability
Likelihood ratio	131.8297	13	0.20560

Source: Generated using EVIEWS 12

Table 4.3 shows the heteroskedasticity test result with a likelihood ratio value of 131.83, degrees of freedom (df) of 13, and a probability value of 0.2056. Since the probability value is greater than the 0.05 significance level, the null hypothesis of homoskedasticity cannot be rejected. This indicates that the variance of the residuals is constant across observations, suggesting the absence of heteroskedasticity in the model. Therefore, the Ordinary Least Squares (OLS) estimates are efficient and unbiased, and the standard errors are reliable for making valid statistical inferences and hypothesis testing

Hausman Specification Test

Test	Chi-square	d.f.	p-value	Decision
Cross-section random	2.6133	3	0.4552	Fail to reject H0; random effects retained

The Hausman statistic is 2.6133 with a p-value of 0.4552. Since the p-value exceeds the 5% significance level, the null hypothesis is not rejected. On the basis of this test, the random-effects specification is retained. The result suggests that the available evidence does not indicate systematic correlation between the bank-specific effects and the regressors under the assumptions of the Hausman test.

Random-Effects Regression Results

Variable	Coefficient	Std. Error	z-statistic	p-value
Constant	13.7802	5.1101	2.6966	0.0080
INTAN	3.1850	0.5108	6.2355	<0.001
SIZE	-2.7142	0.3896	-6.9663	<0.001
LEV	6.8551	1.8573	3.6908	0.0003

$R^2 = 0.6024$; Adjusted $R^2 = 0.5912$; Observations = 130.

The coefficient on INTAN is 3.1850 and is statistically significant at conventional levels ($p < 0.001$). Holding size and leverage constant, higher recognized intangible assets are associated with higher MVA. Because INTAN is in natural logarithms while MVA is in levels, this is a semi-log specification; a one-unit increase in $\ln(\text{INTAN})$ is associated with a 3.1850-unit increase in MVA, measured in the same units as MVA. It is preferable not to describe this as a percentage effect unless the dependent variable is also transformed appropriately.

SIZE has a coefficient of -2.7142 and is statistically significant ($p < 0.001$). Conditional on recognized intangible assets and leverage, higher bank size is associated with lower MVA in the supplied sample. This is an empirical association and should not automatically be interpreted as evidence that bank expansion causes value destruction. Possible explanations should be treated as hypotheses requiring further testing.

LEV has a coefficient of 6.8551 and is statistically significant ($p = 0.0003$). Conditional on the other variables, higher leverage is associated with higher MVA in the sample. Given the distinctive liability structure of deposit money banks, leverage should be interpreted in the context of deposits, regulatory capital and banking risk rather than using a generic non-financial corporate debt interpretation. In particular, the coefficient alone does not establish a tax-shield mechanism or causality.

The R^2 of 0.6024 indicates that approximately 60.24% of the within-specified variation captured by the model's explanatory structure is represented by the fitted regression, subject to the precise R^2 definition reported by the software. The remaining variation is attributable to factors outside the model and random disturbances. R^2 should not be interpreted as proof that the model is causally complete.

DISCUSSION OF THE MAIN FINDING

The positive association between recognized intangible assets and MVA is consistent with the proposition that accounting information about identifiable non-physical resources can be reflected in market valuation. It is also consistent with Nigerian evidence reporting positive associations between intangible resources and market value.

The result is compatible with the Ohlson valuation perspective because recognized intangible assets may provide information about resources capable of generating future economic benefits. However, the finding should not be interpreted as evidence that investors value every intangible resource at its accounting carrying amount. IAS 38 deliberately limits recognition, meaning that some economically important internally generated resources remain outside the recognized asset balance.

The finding also has a signaling interpretation: more substantial recognized intangible assets may communicate information about technology, contractual rights and other identifiable resources. Nevertheless, a regression coefficient does not by itself establish that managers intended to send a signal or that the market response was caused by the reported intangible amount.

Comparison with Prior Evidence

The positive INTAN coefficient is directionally consistent with Oryina and Suleiman's (2020) evidence that certain recognized intangible components, particularly intellectual property, can be positively associated with market value in Nigerian listed firms. It also complements recent banking evidence on intangible-asset disclosure and valuation. The difference is that disclosure and recognized carrying amount represent different constructs; therefore, similarities in findings should be interpreted as complementary rather than interchangeable evidence.

CONCLUSION AND RECOMMENDATIONS

Conclusion

This study examined the association between recognized intangible assets and Market Value Added among listed deposit money banks in Nigeria over 2015–2024. Using the supplied panel estimates, the study finds a positive and statistically significant association between recognized intangible assets and MVA after controlling for bank size and leverage. The evidence therefore supports rejection of the null hypothesis of no statistically significant association between recognized intangible assets and MVA.

The conclusion is deliberately stated in associative rather than causal terms. The evidence indicates that recognized intangible assets contain information statistically associated with market valuation in the sampled banks; it does not establish that increasing recognized intangible assets will mechanically increase market value.

Recommendations

1. Banks should provide clear and consistent accounting-policy disclosures concerning the nature, useful lives, amortization methods, impairment assessments and movements in recognized intangible assets, consistent with IAS 38 requirements.
2. Regulators and standard-setting stakeholders should encourage comparability and clarity in notes relating to recognized intangible assets, while preserving the recognition criteria established by IFRS. The objective should be improved information quality rather than recognition of items that do not satisfy the applicable accounting requirements.
3. Bank management should maintain reliable records for software, licences and other identifiable intangible resources so that qualifying expenditures are appropriately classified, measured and disclosed.
4. Investors and analysts should distinguish recognized intangible assets from the broader stock of economically important but unrecognized intangible resources when evaluating bank value.
5. Future studies should examine individual intangible components, disclosure quality, unrecognized intangible indicators and alternative market-value measures. Researchers should also test robustness using alternative specifications and standard-error corrections appropriate for panel data.

Limitations

The study has several limitations. First, the sample is limited to listed deposit money banks and therefore may not generalize to unlisted banks or other Nigerian industries.

Second, recognized intangible assets are narrower than the economic concept of intangible capital because IAS 38 recognition requirements exclude several internally generated resources.

Third, the MVA measure combines market capitalization and book equity and can be sensitive to movements in share prices and accounting equity.

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