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An Exploratory Study of Asset Liability Management in the Insurance Industry in Nigeria: A Panel Approach

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Abstract: Asset Liability Management's main goal is to manage risk, not eliminate it, in order to reduce net interest income volatility in the short term and safeguard the organization's economic worth over the long term. This study looked at certain best practices in asset-liability management and how they affected the performance of the insurance business between 2011 and 2021 while taking into consideration the particular characteristics of the Nigerian economy. Data on total corporate assets, shareholder's funds, and profit after tax for the time period were taken from the annual reports and digest of the Nigerian Insurers Association (NIA). The results of the data's stationarity test showed that the data are stationary at the 1%, 5%, and 10% levels of significance. The determined probability (F-statistic) value of 0.000922 from the ordinary least squares regression is less than the 0.05 significant value, indicating that the data are significantly significant. According to the calculated linear co-efficient of determination (R2= 0.825737), the shareholder's fund and total assets of the chosen enterprises account for 82.5737 percent of the profit after tax. According to the study's findings, asset-liability management and the financial success of insurance businesses in Nigeria are related.

Keywords: asset liability management; profit after tax; shareholder's fund; total asset of companies

JEL Classification: G12

1. Introduction

Asset liability management (ALM) is a concept that was created as a hedging measure against the risk of financial intermediation. Asset and liability management is the process through which an institution strategically manages its balance sheet to

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account for the risk it faces (Sanjay 2015). In order to minimize detrimental risks, Asset Liability Management (ALM) entails synchronizing the time and amounts of cash inflows and outflows inside an organization. ALM not only encourages risk mitigation, but it also offers a safety net for the company, creating chances that increase net worth. In response to the rising need for capital in the insurance industry, insurers have reviewed the characteristics of their assets and liabilities. Intense competition and rising interest rate volatility have prodded insurers to find a balance between their assets' and liabilities' spreads, profitability, and long-term survival (Kozak, 2011; Obalola, Ime & Abaas, 2014). The market value of the equity of the insurance firm and its overall profitability may be impacted by a mismatch between the asset and liabilities (Darush, 2013).

Asset liability management is the management of the overall dynamics of the balance sheet. It entails quantifying risks and making deliberate decisions about the asset-liability structure in order to maximize interest earnings while taking into account perceived hazards (Akindipe, 2022). Asset Liability Management's main goal is to manage risk, not eliminate it, in order to reduce net interest income volatility in the short term and safeguard the organization's economic worth over the long term. Assets on an insurance company's balance sheet include things like mortgages, accounts receivable, stocks, bonds, investment securities, properties, and equipment, while liabilities include things like reserves for things like policyholder obligations and claims from other creditors. For a nation's financial system to run smoothly, insurance companies' profitability and overall financial success are crucial. How insurance businesses handle the tasks of financial intermediation is a major factor in their profitability. Insurance companies pay expenses on their obligations and generate profits on their assets during the financial intermediation process. As a result, how well insurance businesses have managed their assets and liabilities by appropriately balancing and matching those assets with liabilities while also optimizing profit will determine their financial performance (Jimoh, 2015). The main goal of the ALM process is to maximize interest earnings while maintaining a framework for perceived risks. The decisions made about asset liability management are not focused on risk elimination, but rather on managing them to maximize net interest income. Micro and macro level objectives are part of ALM. At the micro level, it concentrates on concurrently achieving two goals. Through price matching and sound liquidity position matching of maturity periods, it ensures profitability optimization. By properly allocating liabilities at a rate greater than the costs, the matching of prices essentially aims to preserve income generation. Similar to this, assets and liabilities are categorized according to their distinct maturing profiles to ensure liquidity.

Due to the quick changes in technology, consumer preferences, economic conditions, and social pressures, the Nigerian insurance industry operates in an extremely unstable marketing environment (Fagbemi & Olowokudejo, 2011). Deelstra and

Jansesen (2002) assert that ALM has two main objectives. In order to ensure the company's solvency and raise its ability to pay its debts, one of these is to cover liquidity and interest rate risks. The other is to boost the company's profitability Rossano (2016) asserts that in order to preserve its financial stability and fulfill its contractual obligations to clients, an insurance business needs have a thorough understanding of its asset and liability risks. The ALM department must produce studies with recommendations on marketing strategy and asset allocation, calculate the capital requirement for market risks in the relevant ALM frameworks, and ensure proper coordination of assets and liabilities to achieve a financial goal with an accepted level of risk within predefined constraints (Briys & De Varenne, 1997; Gilbert, 2016). A thorough knowledge of an organization's risk/return trade-off would be possible if the notion of ALM were well understood (Shubiri, 2010).

The success of an insurance firm is crucial to its day-to-day operations and has a big impact on the economy as a whole. This suggests that there is a chance of increasing total profitability if insurers can efficiently manage their assets and liabilities (Sayeed & Hoque, 2010). Internal and external variables can both hinder insurance profitability. The company's ALM culture is covered by internal variables, while the external factors include the economic and legal context in which insurance businesses must operate. The security attained through ALM additionally creates chances for increasing net worth. The fundamental difficulties in asset and liability management stem from the fact that the primary asset of credit held by insurance firms is not always liquid, particularly when the nation's economy is severely depressed. Due to fierce rivalry among businesses that have both assets and liabilities, as well as ongoing policy changes in Nigeria's insurance sector. This study looked at several best practices for managing assets and liabilities and how they affected the performance of the insurance industry while taking into account the particular characteristics of the Nigerian economy. Prior studies focused mostly on Nigeria's insurance industry's performance, claims ratio, and risk management. Given the significance of comprehending how the relationship between assets and liabilities positions affects performance and the inherent complexity in the structure and nature of assets and liabilities, this study will add to our understanding of how asset liability management affects the performance of the insurance industry in Nigeria.

2. Review of Literatures

2.1. Conceptual Framework

2.1.1. Assets and Liabilities Management (ALM)

As part of an investment strategy in financial accounting, ALM is the activity of controlling financial risks brought on by discrepancies between assets and liabilities. Asset allocation and management, equities, interest rate, and credit risk management are all included. An ALM strategy frequently matches assets passively with liabilities (completely hedged) and fully manages surpluses. Njogo (2014) ALM is the process through which a company manages its balance sheet to account for various risks, including interest rate and liquidity risk. Asset and liability management is used to access and minimize some of these risks by making the right decisions. It is used to identify and control risk encountered by organizations while managing risks. They added that finance, capital planning, profit planning, and growth projection are also included in the scope of asset liability management functions. Harold described asset-liability management (ALM) as a proactive process involving the joint and concurrent management of assets and liabilities to measure, monitor, and control the effects of fluctuating interest rates on income, asset values, liquidity, and regulatory capital in the John Bricks & Associates report from 2014.

2.1.2. Financial Performance

Anjili (2014) Financial performance is a metric used to assess how well a company can utilise resources from its main line of business and create income. The phrase is also used to compare similar businesses within the same industry or to analyze entire industries or sectors in aggregate. It serves as a general indicator of a firm's overall financial health over a certain period of time. Farah Naz (2016) describes financial performance as the scope at which a business's financial health throughout time is assessed. In other words, it is a financial strategy used to manage a company's current and non-current assets, financing, equity, revenues, and expenses in order to increase sales, profitability, and the value of the company for its shareholders. Eshna Verma (2019) Financial performance is characterized as the extent to which financial goals are being or have been achieved and as a crucial component of risk management in the financial sector. It is the process of calculating the monetary value of the outcomes of a firm's policies and operations. It is used to assess a company's overall financial health over a specific time period and can be aggregated to compare similar companies within the same industry.

Didin, Jusni & Mochamad (2018) considers financial performance to be the accomplishment of a company's financial performance for a specific time period, including the collection and allocation of money, as measured by capital sufficiency, liquidity, solvency, efficiency, leverage, and profitability. They continued by

explaining that financial statements, which include a balance sheet, income statement, cash flow statement, and statement of changes in capital, are used to gauge a company's success in making profits, particularly for businesses in the financial sector like banking.

2.1.3. ALM and Financial Performance

The effective management of all assets is essential for the financial stability of banks. It is crucial that banks have sound defenses against the financial threats they confront. Liquidity, profitability, and solvency of banks can be ensured by proper asset liability management, and banks can manage and mitigate risks like credit risk, liquidity risk, interest rate risk, currency risk, etc. An indication of the stability of a financial system is the financial performance of banks. The economy of any country depends heavily on the soundness of its financial system. Asset Liability Management is one of the aspects that may impact a bank's performance (ALM). ALM is a key microeconomic factor that affects how well DMBs perform. A complete ALM policy framework targets the net interest margin (NIM) ratio and Net Economic Value (NEV), subject to balance sheet limits, with an emphasis on bank profitability and long-term viability. An ALM analysis' main goal is to give a head start on potential financial issues caused by the impact of shifting interest rates on the current balance sheet and income performance. Such issues arise in a rising rate environment when the cost of liabilities rises more quickly than the returns on assets. In a situation when interest rates are falling, asset yields may also drop more quickly than liabilities expenses. Preventive action should be taken if this issue is shown to exist for either rising or dropping rates. The correct application of relevant analytical techniques is required to reach this goal. The ongoing ALM process entails developing, putting into practice, reviewing, and amending strategies pertaining to its assets and liabilities while keeping in mind the entity's risk tolerances and constraints. Researchers have conducted several research investigations that are relevant to this study.

2.2. Empirical Review

Adegbie & Dada (2018) studied the management of risk assets, liquidity, and sustainable performance in Nigerian deposit money banks. They used survey research as well as ex-post factor analysis. While secondary data were utilized to examine the managers' activities, primary data were used to gather respondents' perspectives. The results demonstrated that risk asset management, liquidity management, and sustainable performance are all closely related in Nigerian deposit money banks. They also found that non-compliance with the CBN's specified cash balance requirement has a significant negative impact on the profitability of Nigerian deposit money banks, non-performing loans have a significant negative impact on the assets of deposit money banks in Nigeria, low cash deposits have a significant

negative impact on deposit money banks in Nigeria's capital, and inadequate liquidity management has a significant negative impact on dividend payments. The study came to the conclusion that the banking industry's ability to sustain performance depends on good risk asset management and liquidity management. According to the study, in order to ensure financial stability and sustainability, banks should implement effective and high-quality risk asset and liquidity management. The regulatory body should also enforce compliance with monetary policies.

A comparative study of ALM framework in Nigeria Banking industry was carried out by Isaac and Akinwunmi (2018) It considered the distinctive characteristics of the Nigerian economy while examining key best practices in asset-liability management and their impact on bank performance. The liability management theory and portfolio theory served as the study's foundation. The use of secondary data sources was investigated while presenting the situation's facts. The Central Bank of Nigeria Bulletin, bank financial reports, data on shareholders' funds, total assets (independent variables), and profit after tax (dependent variable) of listed deposit money banks in Nigeria were used to evaluate the data using the Ordinary Least Square Linear Regression model. The outcome demonstrates a favorable relationship between profitability and shareholders' funds as well as a substantial relationship between profitability and total assets. The study demonstrates a strong correlation between asset-liability management and bank performance (measured in terms of profitability). The study found that effective asset-liability management has a major impact on profitability and recommended, among other things, that banks use excess resource optimization, which underscores the need to maximize assets on hand to fulfill liabilities that are becoming more complex.

Folajimi, Asaolu and Enyi (2018) investigated how assets and liabilities management can help the Nigerian banking industry resolve its problems. The analysis showed that there is inadequate asset and liability management, weak investment strategies, banks that expand their assets faster than their liabilities, banks that used depositor money to buy assets, and banks that disregarded the monetary policies of the Central Bank of Nigeria. In order to manage assets and liabilities in the sector effectively, the study advised, among other things, that the industry, regulators, and supervisory agents establish a good and sound investment policy.

Anchori (2018) In his dissertation, the author looked at how ALM affected the non-interest revenue structure of DMBs in Nigeria from 2011 to 2015. Findings demonstrated that banks' asset liability management has an effect on how much noninterest income contributes to their overall performance. The greatest source of non-interest revenue, according to analyses of non-interest income, is foreign exchange fees, followed by fees related to lending. Additionally, the Central Bank of Nigeria's decision to lower Commission on Turnover from 5 mille to 1 mille (now replaced by account maintenance) did not at this time reduce non-interest revenue.

He came to the conclusion that the size of the bank had no beneficial effect on non-interest income. His findings have serious ramifications, including the possibility that huge Deposit Money institutions are missing out on opportunities to create non-interest income. Therefore, in order to increase their non-interest income, major DMBs should not underuse their assets.

A study on the determinant of financial performance of quoted Banks in Nigeria was carried out by Osuka and Osadume in 2015. As a case study, a few Deposit Money Banks that were listed on the Nigerian Stock Exchange between 2001 and 2010 were used. Regression analysis was employed in the study, which established that staff motivation, capital adequacy, and asset quality are crucial success elements in the financial performance of banks. According to the studied banks' annual reports and accounts, their asset quality had significantly increased and improved. Because the F-statistics for the chosen banks were significantly higher than their corresponding tabular values at the 5% level of significance, it may be concluded that asset quality had a major impact on the financial performances of mentioned banks.

2.3. Theoretical Framework

Two theoretical pillars serve as the basis for this work. These are the portfolio theory and the liability management theory.

2.3.1. Liability Management Theory

Redington, (1952) and Haynes & Kirton, (1952) are well-known supporters of the philosophy of liability management. They examined the assets and liabilities of a life insurance fund as well as the financial structure of a life office in general. Their specific issue was how to allocate the assets in a way that made them as susceptible to external factors (usually the effects of changes in the market rate of interest) that affect both as possible as the liabilities. Redington (1952) adopts the word „immunisation to specify the investment of the assets in such a way that the business is immune to general change in the rate of interest". Haynes & Kirton (1952) used the „insulation" in a similar way. It is amazing how essential findings were shared by both authors. In their key findings, both writers concurred. According to this approach, reserve funds may be borrowed on the money market as needed. According to the notion, a bank can maintain reserves by accumulating more liabilities against itself from other sources. These sources include issuing time deposits, borrowing from other commercial banks, borrowing from the central bank, raising capital through the sale of shares, and reinvested earnings. This theory acknowledges that a bank's asset structures have a significant role to play in supplying it with the liquidity it requires. The strategy is seen as being more aggressive than the other approaches since it increases the chances of generating money to carry out appealing investments.

2.3.2. Portfolio Theory

The optimal holding of each asset in a wealth holder's portfolio is a function of policy decisions determined by a number of factors, such as the vector of rates of return on all assets held in the portfolio, a vector of risks associated with the ownership of each financial asset, and the size of the portfolio, according to the Portfolio Balance Model of Asset Diversification. It suggests that bank management decisions are what led to portfolio diversification and the desired portfolio composition of commercial banks. Additionally, the potential to achieve maximum profits is based on the management-determined feasible set of assets and liabilities as well as the unit expenses incurred by the bank for creating each asset component (Nzongang & Atemnkeng, 2016). Asset-liability management, though not a new planning tool, has developed from the straightforward notion of maturity matching of assets and liabilities of diverse time horizons into a framework that encompasses complex ideas.

3. Methodology

The methods used in this investigation is described in this section. The majority of the data for this study came from secondary sources. Information from the Nigeria Success Digest for the years 2011 to 2021 was used to examine the impact of the Asset-Liability Management Framework on the performance of (41) non-life insurance businesses in Nigeria. Information was gathered on Shareholders' Funds, Total Assets, and Profit after Tax of Nigerian listed insurance businesses. The Ordinary Least Square Linear Regression model was used to test the data. In order to understand the nature and influence of the independent and dependent variables, as well as to determine both the amount and direction of impact, it was necessary to rely on the signs and significance of the regression coefficients. Eviews 12 will be used to acquire the results of the regression. Consequently, the model is shown below in a functional form:

$$PAT = F (SHF, TA) \quad (1)$$

Where

PAT = Profit after Tax (dependent variable)

SHF = Shareholders' Fund (independent variable)

TA = Total asset of the companies

In a linear function, it is represented as follows:

$$PAT = \beta_0 + \beta_1 SHF + \beta_2 TA + \mu \quad (2)$$

Where β_0= constant term, β_1= regression co-efficient of SHF and β_1= regression co-efficient of total asset while μ_t = error term.

3.4. Results and Discussions

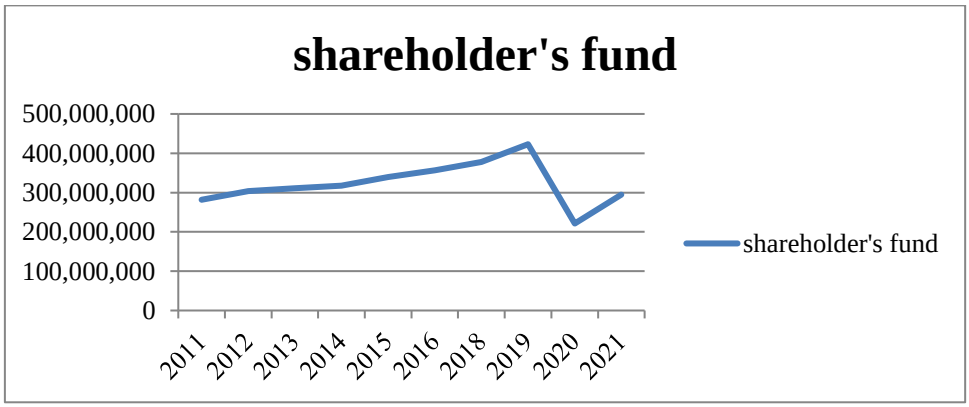

Figure 4.1. Secondary Information of Shareholder's Fund from 2011-2021

From 2011 to 2021, the trend analysis of the shareholder's fund is shown in the graph above. From 2011 to 2018, the trend has been upward and sharp, with a sharp upward movement in 2019 and a sharp downward movement in 2020 due to the covid 19 pandemic, followed by an upward sharp movement in 2021. The difference between the two can be explained as a result of changes in the profit figure.

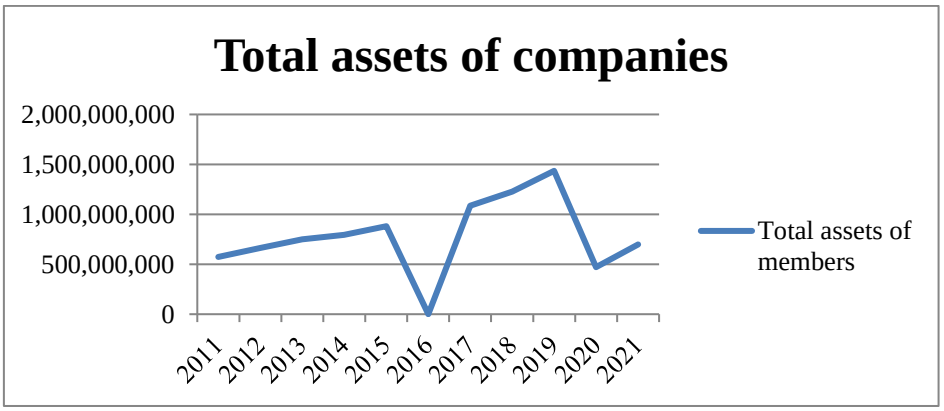

Figure 4.2. Secondary information of total assets of members from 2011-2021

From 2011 to 2021 the trend analysis of the total assets of members is shown in the graph above. From 2011 it has been a consistent upward movement up to 2019, with a sharp downward movement in 2020 as a result of the covid 19 pandemic, followed by a sharp upward movement in 2021.

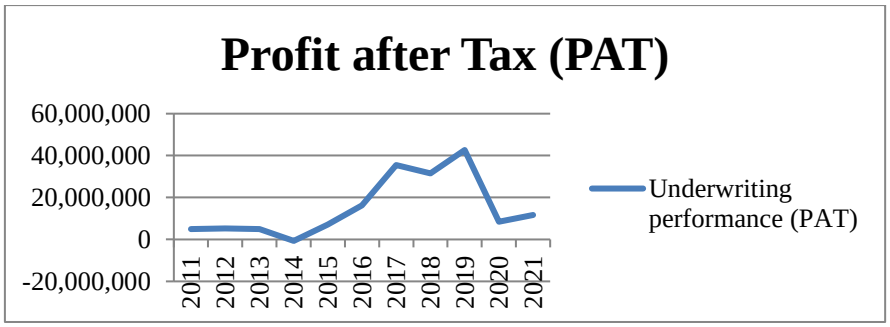

Figure 4.3. Secondary Information of Profit After Tax (PAT) from 2011-2021

From 2011 to 2021, the trend analysis of the underwriting performance is shown in the graph above. There was a consistent movement in 2011 and 2012, a downward movement in 2013 followed by a sharp downward movement in 2014. In 2015 a sharp upward movement occurred up till 2017 with a downward movement, in 2018 to 2019 there was an upward movement followed by a very sharp downward movement in 2020 as a result of the covid 19 pandemic but grate by an upward movement 2021.

Result of the OLS regression

Dependent Variable: PAT
Method: Least Squares
Date: 06/09/22 Time: 18:31
Sample: 2011 2021
Included observations: 11

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-35194050	10859975	-3.240712	0.0119
SHF	0.007398	0.021786	0.339582	0.7429
TA	0.053836	0.008812	6.109644	0.0003

R-squared	0.825737	Mean dependent var	19503276
Adjusted R-squared	0.782172	S.D. dependent var	15901065
S.E. of regression	7421359.	Akaike info criterion	34.70462
Sum squared resid	4.41E+14	Schwarz criterion	34.81314
Log likelihood	-187.8754	Hannan-Quinn criter.	34.63622
F-statistic	18.95385	Durbin-Watson stat	1.367550
Prob(F-statistic)	0.000922		

Source: Computation from Eviews 12

The long run linear regression equation is given by PAT. = (-35194050) - 0.007398SHF – 0.053836TA which shows that a unit increase in shareholder's fund will bring about 0.007398 times increase in profit after tax (PAT). The result also

showed that a unit change in total asset will bring about 0.053836 times increase in profit after tax (PAT). The constant C with coefficient shows that in the absence of shareholder's fund and total asset, profit after tax (PAT) will have value -35194050. The computed multiple co-efficient of determination (R^2= 0.825737) shows that (82.5737%) of the total variation in profit after tax (PAT) is accounted for by the independent variables which are shareholder's fund (SHF) and total asset (TA), while the remaining (17.4263%) of the total variation is accountable to the influence of other factors which are not included in the multiple regression function. The value of the Durbin Watson (DW) is (1.367550) at 5% level of significance shows that there is no evidence of autocorrelation in the model. The P value of constant coefficient is statistically significant at 0.0119, the P value of shareholder's fund (SHF) coefficient is not statistically significant at 0.7429 and the P value of total asset (TA) coefficient is statistically significant at 0.0003.

4. Hypothesis

H_0: Asset Liability Management does not significantly affect the financial success of Nigerian insurance businesses. The study demonstrates the existence of a clear relationship between profitability (PAT), shareholder funds, and overall corporate assets. According to the findings, the null hypothesis, according to which Asset Liability Management does not significantly affect the profitability of insurance companies in Nigeria, is disproved, proving that there is a significant connection between profitability and shareholders' funds as well as total assets of the companies.

5. Summary of Findings

In general, the study examined the impact of asset liability management on the crucial metrics used to assess the profitability of insurance businesses. The outcome demonstrated a substantial link between these variables and the Profit after Tax.

6. Conclusion

The following conclusions were reached as a result of the findings: AssetLiability Management and profitability have a "decent and favorable" link, according to the regression's findings, which were supported by the correlation coefficients of 0. Thus, profitability is significantly influenced by asset liability management. The level of profitability of the insurance industry is significantly influenced by the Asset-Liability Management function's configuration. Additionally, it has been noted from some of the reviewed academic sources and research findings for this study that insurance companies with strong capital bases are better able to deal with

the challenges of the international financial market and the competitive insurance services business environments. The new Asset-Liability Management Framework gave Nigerian insurance businesses a boost in terms of size, competency, and financial strength, enabling them to compete more abrasively on the international market. This study suggests that there is a link between asset-liability management and the profitability of insurance companies in Nigeria based on the statistical evidence. Profit after tax therefore responds to the AssetLiability Management Framework of the Nigerian insurance businesses.

7. Recommendation

The report makes the following recommendations for insurance businesses, which outlines the necessity to maximize assets on hand to satisfy liabilities that are becoming more and more complex. The total assets of insurance firms and shareholder funds should be reviewed on a regular basis. The regulatory bodies must build up the proper equipment or tools to address the industry's challenges with liquidity and asset quality. In this approach, the Nigerian insurance business can regain lost credibility. It is crucial to conduct frequent inspections and periodic reviews of insurance businesses' financial statements.

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