

Effect of Capital Structure on Financial Performance of Listed Banks in Nigeria

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Authors' contributions:

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

ABSTRACT

Corporate entities all over the world are faced with the problem of determining appropriate finance that will boost the value of the entity and maximize the wealth of shareholders. However, for overall wealth of shareholders to be met and consistent increase in value of Banks to be achievable, capital either debt in form of customers deposit or equity capital raised from investors is inevitable. This study therefore examined the effect of capital structure on the performance of some selected banks in Nigeria. The objectives were to examine the relationship that exists between capital structure and financial performance and to investigate the effect of capital structure on the financial performance of quoted deposit money banks in Nigeria.

To achieve these, a cross sectional time series secondary data covering the period of seven years (2012-2018) was extracted from the audited financial statement of ten (10) banks listed on the floor of stock exchange. The descriptive statistics, Pearson moment correlation and multiple linear regressions were used.

The correlation results showed that capital structure is negatively correlated with financial performance (ROA and ROE). Result from panel regression revealed that debt to equity though significant, impacted negatively on return on assets and return on equity ($\beta = -0.1266, \rho < .01$; $\beta = -5.3571, \rho > .01$), asset tangibility significantly impacted return on asset but insignificantly impacted return on shareholder's equity ($\beta = -0.0235, \rho > .05$; $\beta = -0.3527, \rho > .10$) and also Age have a significant impact on return on asset and insignificant effect on return on equity ($\beta = -0.0141, \rho < .01$; $\beta = -0.1497, \rho > .10$).

This study therefore concluded that capital structure have a negative effect on the financial performance of deposit money banks in Nigeria and recommended that appropriate proportion of capital should be tailored towards viable investment opportunities for maximum return of shareholders wealth and increase in value of the firm. More so, while finance manager is alert to the movement in the stock market, banks should take precautionary measures for mitigating credit risk associated with lending and borrowing

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1. INTRODUCTION

Globally, corporate entities are faced with the problem of determining appropriate finance that will boost the value of the entity and maximize the wealth of shareholders. The expectation of all shareholders are exclusively on how the overall wealth will be maximized and consistency in achieving this objective can only be guaranteed if the going concern of the bank is not threatened by any constraints as survival is determined by the level at which available capital in form of debt or equity or any other means is sourced and merged where necessary in order to fund its operations for maximum returns. The sudden collapse of some banks in the past is traceable to inability of corporate financial managers to secure the best proportion of capital in carrying out daily operations which engender profitability and continuity in banking system. If none of these financial means brings productive results, then there should be consideration for alternative route. However, the problem facing entities in Nigeria lies within financing either to source equity or debt assets. Considering firm's capital structure is imperative not just to boost earnings but also its effect on organization's capability to manage competitive environments. The aim of a firm's capital structure may not be focused on wealth maximization but to safeguard management's interest mostly in firms where control is dictated by directors and shares of the corporation carefully held [9]. As the main function of banks is to accumulate surplus funds and make them available to deficit sectors of the economy, they make profits through lending and borrowing activities hence, the bigger the size of the bank, the higher the expenditure [10]. However, competition in the banking sector has tightened due to technological advancements and major changes in the financial and monetary environment [31]. Therefore, the vacuum of knowing which of the capital to source for and concentrate on, that will really affect Bank performance positively and to maintain its equilibrium is yet to be filled. The questions borne out of quest to determine the level of impact of capital structure on Bank profitability are: What is the direction of causality between capital structure and performance of quoted banks in Nigeria? Is there any positive and significant effect of Debt ratio on performance of quoted banks in Nigeria? Will age of Banks have positive and significant relationship with performance of quoted banks in Nigeria? And is there any significant relationship between asset tangibility and performance of quoted banks in Nigeria?

1.1 Objectives of the Study

The main objective of the study is to examine the effect of capital structure on financial performance of some selected quoted deposit money banks in Nigeria. The study has following specific objectives:

- i. To determine the direction of causality between capital structure and performance of quoted banks in Nigeria.
- ii. To determine the impact of Debt to equity ratio on the performance of quoted banks in Nigeria.
- iii. To evaluate the extent to which age of firm affect the performance of quoted banks in Nigeria.
- iv. To investigate the effect of asset tangibility on the performance of quoted banks in Nigeria.

74 **2. LITERATURE REVIEW**

75 **2.2 Conceptual Issues**

76 Traditionally, banks offer loans to customers in deficient of funds by borrowing from
77 the customers with surplus funds. In other words, banks fulfill the role of financial
78 intermediation between the companies and investors by granting loans and
79 receiving deposits. The intermediary role allows banks to finance their activity with
80 high level of debt and low level of equity. High proportion of deposits in banks'
81 liabilities allows leverage (total liabilities to total assets) of banks to be very high.

82

83 **2.2.1 Capital Structure**

84 Capital structure is the integration of various sources of funds within or outside the firms'
85 terrain in financing its worthwhile investments and projects with positive net present
86 value. It implies how a firm finances its overall operations and sustains its growth by
87 using different sources of funds. Debt can either be a loan form or in the form of
88 sale of bonds, while equity is classified as common stock, preferred
89 stock or retained earnings. Short-term debt such as working capital requirements is
90 also considered to be part of the capital structure.

91 Capital structure denotes means a firm funds its operations using some blend of
92 equity plus debt. [34,24] define it as the technique an establishment applies for
93 financing based on a blend of long-term capital (ordinary and preference shares,
94 debentures, loans, loan stock, etc.) in addition to short-term obligations like
95 overdraft and other payables. Also, [14, 3] opined that capital structure is the
96 mixture of diverse securities utilized by a company in financing its profitable
97 ventures. What is common to the above definition is that capital structure reflects
98 each component of finance from equity to debt that a company uses in financing its
99 operations.

100 Capital structure denotes mixture of suitable components of capital either in form of
101 debt or equity to fund organizational long term investment opportunities for
102 maximum returns

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105 **2.2.2 Determinants of capital structure**

106 Among factors that may be instrumental in affecting the capital structure decision
107 of a firm include the followings:

108

109 **Leverage or Trading on Equity**

110 According to [28], the use of fixed cost in production process also affects the capital
111 structure. The high operating leverage-use of higher proportion of fixed cost in the
112 total costs over a period of time can magnify the variability in future earnings. Both
113 the bankruptcy cost theory and agency cost theory suggest the negative relation
114 between operating leverage and debt level in capital structure. The bankruptcy cost
115 theory contends the higher operating leverage, the greater the chance of business
116 failure and the greater will be the weight of bankruptcy costs on enterprise financing
117 decisions. Similarly, as the probability of bankruptcy increases, the agency
118 problems related to debt become more aggravating. Thus, these theories suggest
119 that as operating leverage increases, the debt level in capital structure of the
120 enterprises should decrease.

121

122 **Growth Opportunities**

123 The higher the growth opportunities, the more the need for funds to finance
124 expansion, and the more likely the firm is to retain earnings than pay them as
125 dividends. Firms tend to use internal funding sources to finance investment projects
126 if it had large growth opportunities and large investment projects. Such a firm

127 chooses to cut, or pay fewer dividends, to reduce its dependence on costly external
128 financing. Firms with slow growth and fewer investment opportunities pay higher
129 dividends to prevent managers from over-investing company cash. As such, a
130 dividend here would play an incentive role, by removing resources from the firm
131 and decreasing the agency costs of free cash flows [33]

132

133 **Dividend Payout**

134 The bankruptcy costs theory pleads for adverse relation between the dividend
135 payout ratio and debt level in capital structure. The low dividend payout ratio means
136 increase in the equity base for debt capital and low probability of going into
137 liquidation. As a result of low probability of bankruptcy, the bankruptcy cost is low.
138 According to the bankruptcy cost theory, the low bankruptcy cost implies the high
139 level of debt in the capital structure. But the pecking order theory shows the positive
140 relation between debt level and dividend payout ratio. According to this theory,
141 management prefers the internal financing to external one. Instead of distributing
142 the high dividend, and meeting the financial need from debt capital, management
143 retains the earnings. Hence, the lower dividend payout ratio means the lower level
144 of debt in capital structure [33]

145

146 **Size of the Firm**

147 Small size business firms' capital structure generally consists of loans from banks
148 and retained profits. While on the other hand, big companies having goodwill, stability
149 and an established profit can easily go for issuance of shares and debentures as
150 well as loans and borrowings from financial institutions [33].

151

152 **Period of Financing**

153 The duration of financing is also another determining factor. When a company
154 wants to raise finance for short period, it goes for loans from banks and other
155 institutions; while for long period it goes for issue of shares and debentures [33]

156

157 **Degree of Control**

158 The degree of control that ordinary shareholders want to have is another factor that
159 will influence its capital structure. Ordinary shareholders have got maximum voting
160 rights in a concern as compared to the preference shareholders and debenture
161 holders. Preference shareholders have reasonably less voting rights while
162 debenture holders have no voting rights. If the ordinary shareholders want to retain
163 control of the company, they will prefer floating of debentures to raise additional
164 capital to floating of ordinary shares [33]

165

166 **Choice of Investors**

167 The Company's policy generally is to have different categories of investors for
168 securities. Therefore, a capital structure should give enough choice to all kinds of
169 investors to invest. Bold and adventurous investors generally go for equity shares
170 and while conscious investors prefer a mix of loans and debentures [33]

171

172 **Capital Market Condition**

173 During economic depression, the company's capital structure generally consists of
174 debentures and loans. While in period of inflation, the company's capital should
175 consist of mainly equity share capital as debt becomes expensive due to high
176 interest rates [33]

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180 **Flexibility of Financial Plan**
 181 The level of flexibility desired in altering the financial plans of a company will
 182 determine how much debt or equity it will hold to allow for contractions as well as
 183 relaxation in financial plans as and when necessary. Debentures and loans can be
 184 refunded back as the time requires. On the other hand equity capital cannot be
 185 refunded at any point which provides rigidity to plans. Therefore, in order to make
 186 the capital structure possible, the company should go for issue of debentures and
 187 other loans [33]

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189 **2.2.3 Chart: Conceptual Model: VARIABLES**

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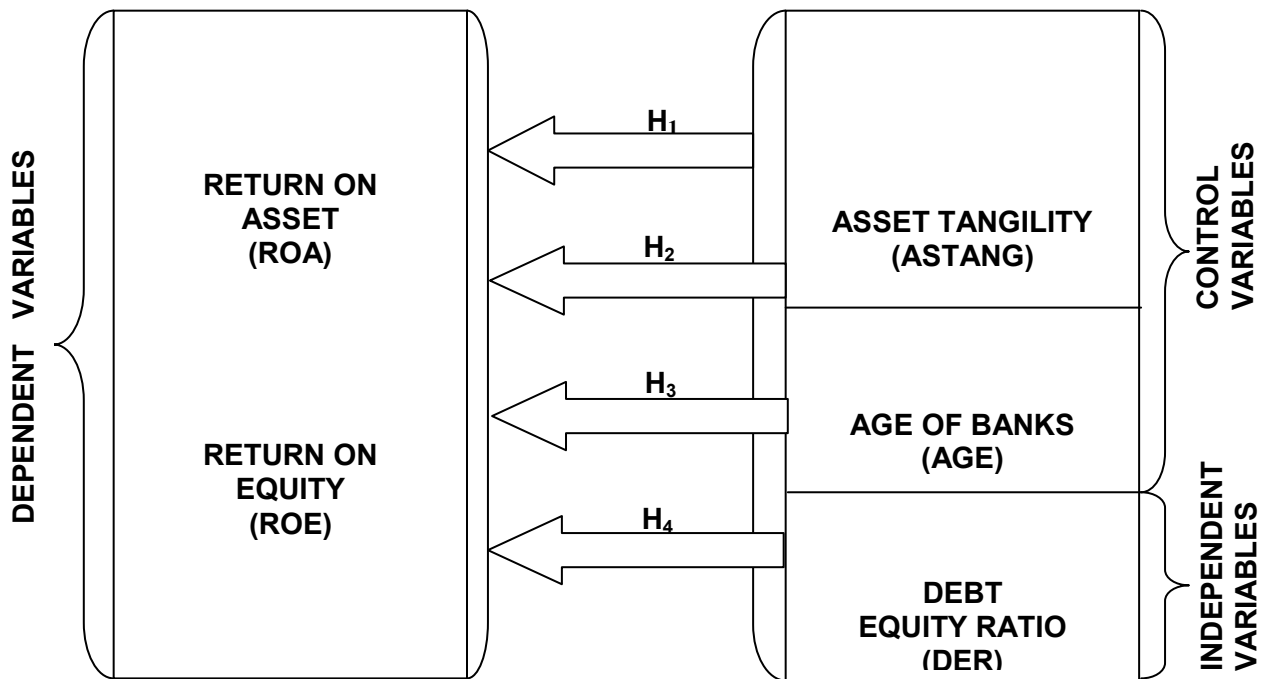
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Source: Author's Conceptualization (2019)

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213 **2.2 Theoretical Review**

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215 In order to place this study on a proper footing, below are various theories of capital
 216 structure examined.

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218 **2.2.1 Pecking Order Theory**

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The pecking order theory is suggested by Myers and Majluf [18]. They stated that when a firm issues new equity, it shall send a signal to investors that share prices are overvalued because it makes managers issue new equity. Then, investors will sell their shares and eventually makes the stock price drop. Thus, firms prefer to use debt rather than equity if they need external financing.

The Pecking order Theory is applicable in the case of banks. Compared to the issuing new equity, increasing deposits are still much easier because it is a function of banks. Moreover, issuing new equity can send a negative signal to the existing investors that the shares are overvalued, and even their voting rights may be diluted. Thus, the investors will value the issuing of new equity less than using deposits.

230

231

232 **2.2.2 Trade-off Theory**

233 The second proposition by Modigliani and Miller [17] introduces the trade-off
234 theory. This theory of capital structure gives an assumption that the management of
235 a company will always choose how much debt and equity to use in financing the
236 operations of the entity and that this is obtained by balancing off the cost and
237 benefits associated with each source of finance. According to the theory, firms
238 should select an optimum capital structure that balances the benefits and risks of
239 both debt and equity.

240 Trade-off Theory of Capital Structure suggests that when the banks have more
241 deposits, they can use that amount to lend more to make the profit because lending
242 is the most important operation of banks. Thus, it may increase the profitability.
243 However, if the over accumulations of deposits are compared to the loan amount
244 (credit constraints), the banks can face some difficulties because of the liquidity risk:
245 the deposits will mature, and it cost the banks more to repay the deposits to
246 customers. Thus, in general, there is a trade-off of using deposits.

247

248 **2.2.3 Agency Cost Theory**

249 Jensen and Meckling [13] stated that managers and shareholders sometimes don't
250 share the same interests. This idea would cause the principal- agent problems.
251 Debt financing is used as a method to reduce the conflict between them which
252 decreases the agency cost. When a firm starts borrowing from banks, managers
253 have to comply with the debt discipline which can increase the transparency and
254 sustainability which somehow align their goals with the shareholders. Thus,
255 shareholders can use debt as a method to control managerial behavior (Boodhoo,
256 2009)

257 When a firm starts to use borrowings, they have to comply with lender's regulation.
258 Thus, they have to increase their transparency to meet the requirements which may
259 reduce the principal-agent problem. However, this mechanism is more complicated
260 for banks. The bank must maintain its good reputation for safety to attract more
261 customers. Thus, they need to improve their management first. When banks have
262 more deposits (increasing leverage) which mean they have more customers, their
263 exceeded funding will be bigger; they need to improve their corporate governance
264 to maintain its operation. These improvements can lead to a decrease of moral
265 hazard to improve its profitability.

266

267 **2.3 Empirical Evidences**

268 Past studies on capital structure and performance of firms that provides an insight
269 on which further work can be built upon are examined.

270 For instance, Siddik, Kabiraj et al. [30] concluded the data of 22 banks over a
271 period of 2005-2014 and observed capital structure have negative effect on return on
272 equity, for data analysis used the least square technique.

273 Zafar, Zeeshan et al. [36] examined that capital structure strongly effect on
274 profitability of banking industry. The data collected from 25 listed banks of Karachi
275 stock exchange and measuring the relationship used the regression technique.

276 Meero [16] suggested that financial leverage have indirectly impact on ROA and
277 direct link with equity to asset ratio. For the result used the 16 gulf countries data over
278 the period of 2005 to 2014. They analyze the positive interaction between
279 performance and size of Islamic banks and Commercial banks

280 Rajha and Alslehat [23] used the multiple regression model and sample size of two
281 Islamic banks (Jordan Islamic bank and International Arab bank) over the period
282 of 1998-2012. The result analyses show that capital structure has a positive

283 influence on banks profitability and have no effect on bank's profitability (Liquidity
284 assets of total assets).

285 Choong, Thim et al. [8] carried out an empirical study on the performance of Islamic
286 banks in Malaysia. Data collected form 11 local Islamic banks in Malaysia for this
287 study and a regression model comprising of dependent variable (ROA or ROE) and
288 numerous independent variables was used to analyze performance of Islamic
289 commercial banks. The empirical results indicated that credit risk is the most
290 significant meaning in performance of local Islamic Commercial Banking in
291 Malaysian.

292 Al-Farisi and Hendrawan [4] the researcher investigates the effect of capital
293 structure on profit efficiency of Islamic bank and commercial bank. Data collected
294 from 102 conventional and Islamic banks and use the unit root test for analysis.
295 Result based on two stages. First stage suggested Islamic banks in Indonesia
296 have top 20% highest performance score and concluded that capital ratio of banks
297 negatively influence on the performance.

298 Shoaib [24] discovered the agency cost hypothesis of financial institution in
299 Pakistan and uses panel data of 22 banks over the period 2002-2009 .The result
300 show that size of bank positively influence on financial performance of banking sector
301 and similar to other researcher.

302 Pratomo and Ismail [25] concluded that capital structure has impact on profit
303 efficiency of the Islamic banks in Malaysia. They have positive relationship between
304 leverage and profitability. They argue that agency cost will be low if the debt capital
305 is high. Bank size has inversely relationship with profitability of banks.

306 Muritala [21] examined capital structure optimum level through a firm can enhance
307 its financial performance. The Pesaran and Shine unit root analysis showed that
308 the five years annual data were non-stationary at five per cent significance level.
309 Further findings revealed that there exist a negative association between capital
310 structure and firms' operational performance while the panel data result revealed a
311 positive relationship between asset tangibility, size, asset turnover, age of firm and
312 the performance of firm. Finally, a significant but negative relationship was seen
313 between asset tangibility and the performance of the firm (ROA).

314 Amenawo [5] examined a relationship between Capital Structure and the
315 Performance of Quoted Companies in Nigeria The result showed that Capital mix
316 has a significant relationship with the earnings per share of quoted firms in Nigeria.
317 Debt equity ratio has a significant positive impact on the return on assets of quoted
318 companies in Nigeria and debt asset ratio has a significant inverse relationship with
319 the return on assets of quoted companies in Nigeria. Also debt equity ratio has a
320 significant inverse impact on the return on equity of quoted companies in Nigeria
321 and debt asset ratio has a significant positive impact on return on equity of quoted
322 companies in Nigeria and concluded that Quoted companies in Nigeria should
323 invest their profits when there are good investment opportunities and pay cash
324 dividend as soon as enough income is generated.

325 Taani [32] examined the impact of the capital structure on the performance of Jordanian
326 banks. For this study, the annual financial statements of 12 commercial banks listed on the
327 Amman Stock Exchange have been used, covering a period of 5 years from 2007-2011.
328 Multiple regressions on performance indicators, such as net profit, return on investment,
329 ROE and net interest margin and total debt to total funds and total debt to total capital
330 that have been applied to the capital structure variables applied multiple regression
331 models to estimate the relationship between capital structure and bank performance. The
332 results show that the bank's performance must be associated significantly and positively
333 with TD; while TD is insignificant to determine the ROE in Jordan's banking sector.

334 Goyal [11] studied the impact of the capital structure on the profitability of public sector banks
335 in India listed on the National Stock Exchange between 2008 and 2012. Regression

336 analysis was used to establish relationships between ROE, ROA and EPS with capital
337 structure. The results reveal a positive relationship of STDTA with the profitability measured by
338 ROE, ROA and EPS.

339 Ishaya and Abduljeele [12] investigated capital structure and the profitability of listed
340 companies in Nigeria using the agency cost theory. About 70 selected companies
341 were chosen from the Nigerian stock exchange from 2000 to 2009 using the
342 random effects, fixed effects and Hausman chi-square techniques. The result
343 showed that debt capital was negatively related to profitability, but equity showed a
344 direct relationship with profitability.

345 Umar et al. [36] examined the impact of the capital structure on the financial
346 performance of the companies in Pakistan of the top 100 consecutive companies on the
347 Karachi Stock Exchange for a period of 4 years from 2006 to 2009. The exponential least
348 squares regression is exponentially used to demonstrate the relationship. The results
349 show that the three variables of the capital structure, STDTA, LTDTA and TDTA, have a
350 negative impact on earnings before interest and taxes (EBIT), ROA, EPS and net profit margin,
351 while the earnings index of price shows a negative relationship with STDTA and the positive
352 relationship is with LTDTA where the relationship is negligible with TDTA. The results also
353 indicate that ROE has a negligible impact on STDTA and TDTA, but there is a positive
354 relationship with LTDTA.

355 Pouraghajan & Malekian [26] investigate the impact of the capital structure on the
356 financial performance of companies listed on the Tehran Stock Exchange. To this end, they
357 studied a sample of 400 companies in the form of 12 industrial groups over the years from
358 2006 to 2010. In this study, the ROA and ROE variables used to measure the financial
359 performance of companies. The results suggest that there is a significant negative
360 relationship between the debt ratio and the financial performance of the companies,
361 and a significant positive relationship between the asset turnovers, the size of the company,
362 the asset tangibility ratio and growth opportunities with financial performance. In
363 addition, research results show that reducing the debt management rate can increase
364 the company's profitability and, consequently, the amount of the company's financial
365 performance measures and can also increase shareholders' wealth.

366 Abbadi and Abu-Rub [1] established a model for measuring the effect of capital structure on
367 bank efficiency in Palestinian financial institutions measured by ROE, ROA, total deposit to
368 assets, total loans to total assets and loans to deposits used to measure the structure of
369 capital. The document found that leverage has a negative effect on bank profits, an increase in
370 each ROA and total deposit in assets increases the efficiency of the bank. The document also
371 tested the effect of the aforementioned variables on the value of the banking market as
372 measured by the Tobin Q. The document found that leverage has a negative effect on
373 the market value of the bank, a positive and strong relationship between market value and
374 ROA and bank deposits in total deposits.

375 To Maina and Ishmail [19] capital structure (long-term debt, short-term debt and
376 total debt) has no significant effect on performance (Tobin's Q) of listed firms in
377 Kenya, while controlling for capital structure determinants such as firm size, asset
378 tangibility, opportunity growth and sales growth.

379 Ahmad, Abdullah, and Roslan [2] examined the effect of capital structure on the
380 firm performance of public listed companies in Malaysia covering two major sectors
381 (Consumers and industrials sector). Fifty-eight (58) firms are used as the sample
382 covering year 2005 through 2010, having 358 observations. Their result indicates
383 that there is significant relationship capital structure variables (Short-term debt and
384 Total debt) and performance measure (return on assets, ROA).

385 Mohammadzadeh [20] in his study on the effects of capital structure on profitability
386 of entities listed at the Tehran Stock Exchange found that firms' performance which
387 was measured by (EPS & ROA) was negatively related to capital structure.

388 Mustafa and Osama [22] in their study on the impact of capital structure on the

389 Jordanian firms' performance in the Amman stock market employed the ordinary
390 least squares (OLS) technique in examining about 76 firms for the periods of 2001 to
391 2006. The findings revealed the presence of negative statistical relationship
392 between capital structure and firm performance.

393 Lawal [15] examined the effects of Capital Structure on Firm's Performance
394 Empirical Study of Manufacturing Companies in Nigeria. Descriptive and regression
395 research technique was employed. From his findings, he observed that capital
396 structure measures (total debt and debt to equity ratio) are negatively related to firm
397 performance.

398 Puwanenthiren [27] investigated capital structure and financial performance of
399 some selected companies in Colombo Stock Exchange covering 2005-2009
400 periods. He found out that the relationship between the capital structure and
401 financial performance is negative.

402 Nassar [23] looked into the impact of capital structure on financial performance of
403 the firms from Borsa Istanbul and employed a multivariate regression analysis
404 intesting the relationship between capital structure and firm performance (EPS, ROA
405 and ROE) and found out that there is a negative significant relationship between
406 capital structure and firm performance.

407 On the ground of the empirical studies reviewed above, it is therefore hypothesized that:

408 H0₁ There is no causal relationship between capital structure and bank
409 performance.

410 H0₂ Debt to equity ratio does not have significant and positive effect on
411 banking performance in Nigeria.

412 H0₃ Firm's age has no significant impact on performance of banks in
413 Nigeria.

414 H0₄ Firm's size has no significant effect on performance of banks in
415 Nigeria.

416 H0₅ Assets tangibility does not have significant impact on bank
417 performance in Nigeria.

418

419 **3. METHODOLOGY**

420 The study adopted ex-post facto design. This design is also called causal
421 comparative Research design. When translated literally, ex-post facto means, from
422 what has been done before. It can be described as a historical research design. Ex-
423 post facto design was employed because it is appropriate for the purpose of
424 achieving the objectives of the research since the study also investigates the causal
425 relationships among the relevant variables and the data input were mainly from
426 secondary data. Another justification for adopting this method is because it involves
427 the collection and evaluation of data related to post events that are used to described
428 causes, effects and trends that may explain present or future events. The data for
429 the study were obtained from the annual reports and accounts of the sampled banks
430 from Nigeria Stock exchange fact book. The sample size of the study was selected
431 based on Nigerian stock Exchange classification of the listed companies into
432 financial stratum of homogeneous companies of similar characteristics, which the
433 banking industry forms a strata. This sector comprises of ten (10) listed companies
434 (Access Bank Plc, Stanbic IBTC Plc, First Bank Plc, Union Bank Plc, Fidelity Bank
435 Plc, Guaranty Trust Bank Pc, Sterling Bank Plc, United Bank for Africa Plc, Wema
436 Bank Plc and Zenith Bank Plc) selected for this study over a period of seven years
437 (2012-2018)

438

439

440

441 **3.1 Model Specification**

442 This study uses annual audited reports and accounts of the sampled banks obtained
 443 from Nigerian stock exchange fact book covering the period of 2012 to 2018. In the
 444 literature reviewed, there have been several models in the area of capital structure
 445 and bank financial performance. Panel regression model and granger causality
 446 model to test the hypotheses earlier stated is specified thus:

447 **Model I**

448 $BFP_{it} = f(CS_{it}) \dots \dots \dots (3.1)$

449 $BFP_{it} = f(DETERA_{it}, AGE_{it}, ASTANG_{it}) \dots \dots \dots (3.2)$

450 *Where:*

451 *BFP = Bank Financial Performance (ROA and ROE)*

452 *CS =Capital structure*

453 *DETERA =Debt to equity ratio*

454 *AGE =Age of the Banks*

455 *ASTANG =Assets tangibility*

456 Equation 3.2 can be restated in econometric form as:

457 $ROE_{it} = \beta_0 + \beta_1 DETERA_{it} + \beta_2 AGE_{it} + \beta_3 ASTANG_{it} + \varepsilon_{it} \dots \dots \dots (3.3)$

458 $ROA_{it} = \beta_0 + \beta_1 DETERA_{it} + \beta_2 AGE_{it} + \beta_3 ASTANG_{it} + \varepsilon_{it} \dots \dots \dots (3.4)$

459 *Where*

460 *ROE is Return on equity of selected quoted banks*

461 *ROA is Return on assets of selected quoted banks*

462 *DETERA is Debt to equity ratio of selected quoted bank*

463 *ASTANG is the Asset tangibility of selected quoted banks*

464 *it is the firm i in time t*

465 *β is the constant coefficient*

466 *$\beta_1 - \beta_3$ are regression coefficients for measuring independent variables*

467 *ε =error term*

468

469 **Model II**

470 In other to achieve the first objective of the study, the study employs the granger
 471 causality test so as to see the direction of causality between capital structure and
 472 financial performance of banks. The model takes the form as specified below:

473 $ROA_{it} = \beta_0 + \sum_{i=1}^k \beta_1 DETERA_{it-1} + \sum_{i=1}^k \beta_2 ASTANG_{it-1} + \sum_{i=1}^k \beta_3 AGE_{it-1} +$
 474 $\sum_{i=1}^k \varphi_1 ROA_{it-1} + \varepsilon_{1t} \dots \dots \dots 3.5$

475 $DETERA_{it} = \alpha_0 + \sum_{i=1}^k \alpha_1 ASTANG_{it-1} + \sum_{i=1}^k \alpha_2 AGE_{it-1} + \sum_{i=1}^k \alpha_3 ROA_{it-1} +$
 476 $\sum_{i=1}^k \partial_1 DETERA_{it-1} + \varepsilon_{2t} \dots \dots \dots 3.6$

477 $ASTANG_{it} = \theta_0 + \sum_{i=1}^k \theta_1 AGE_{it-1} + \sum_{i=1}^k \theta_2 ROA_{it-1} + \sum_{i=1}^k \theta_3 DETERA_{it-1} +$
 478 $\sum_{i=1}^k \delta_1 ASTANG_{it-1} + \varepsilon_{3t} \dots \dots \dots 3.7$

479 $AGE_{it} = \omega_0 + \sum_{i=1}^k \omega_1 ROA_{it-1} + \sum_{i=1}^k \omega_2 DETERA_{it-1} + \sum_{i=1}^k \omega_3 ASTANG_{it-1} +$
 480 $\sum_{i=1}^k \varphi_1 AGE_{it-1} + \varepsilon_{4t} \dots \dots \dots 3.8$

481 $ROE_{it} = \beta_0 + \sum_{i=1}^k \beta_1 DETERA_{it-1} + \sum_{i=1}^k \beta_2 ASTANG_{it-1} + \sum_{i=1}^k \beta_3 AGE_{it-1} +$
 482 $\sum_{i=1}^k \varphi_1 ROE_{it-1} + \varepsilon_{5t} \dots \dots \dots 3.9$

483 $DETERA_{it} = \alpha_0 + \sum_{i=1}^k \alpha_1 ASTANG_{it-1} + \sum_{i=1}^k \alpha_2 AGE_{it-1} + \sum_{i=1}^k \alpha_3 ROE_{it-1} +$
 484 $\sum_{i=1}^k \partial_1 DETERA_{it-1} + \varepsilon_t \dots \dots \dots 3.10$

485 $ASTANG_{it} = \theta_0 + \sum_{i=1}^k \theta_1 AGE_{it-1} + \sum_{i=1}^k \theta_2 ROE_{it-1} + \sum_{i=1}^k \theta_3 DETERA_{it-1} +$
 486 $\sum_{i=1}^k \delta_1 ASTANG_{it-1} + \varepsilon_{6t} \dots \dots \dots 3.11$

487 $AGE_{it} = \omega_0 + \sum_{i=1}^k \omega_1 ROE_{it-1} + \sum_{i=1}^k \omega_2 DETERA_{it-1} + \sum_{i=1}^k \omega_3 ASTANG_{it-1} +$
 488 $\sum_{i=1}^k \varphi_1 AGE_{it-1} + \varepsilon_{7t} \dots \dots \dots 3.12$

489 *Where;*

490 It is assumed that the error terms are uncorrelated. Equation 3.5 to 3.8 is
 491 used to determine the causality between ROA and other independent variables
 492 used for the capital structure while equation 3.9 to 3.12 is used for the causality
 493 between ROE and other variables. The null hypothesis is that ROA does not
 494 granger cause other variables and vice versa. So also, ROE does not granger
 495 cause the independent variables and vice versa. The F-statistics is compared. If the
 496 F-statistics is significant for any of the coefficient then the null hypothesis is rejected.
 497
 498 **Table 3.1 Summary of variables used in the study and their Definition**

S/N	VARIABLES		DEFINITION
	Dependent Variables		
1	Return on Assets	ROA	$\frac{\text{Net income}}{\text{Total Assets}}$
2	Return on Equity	ROE	$\frac{\text{Net income}}{\text{Shareholders' equity}}$
	Independent Variables		
3	Debt to Equity	DETERA	$\frac{\text{Total Liabilities}}{\text{Shareholders' Equity}}$
	Control Variable		
4	Asset Tangibility	ASTANG	$\frac{\text{Total Fixed Tangible Assets}}{\text{Total Assets}}$
5	Age of the Banks	AGE	Log of No. of years since the company is incorporated

499 **Source: Designed by the Author (2019)**

500

501 **Justification for Using the Above Ratios**

- 502 i ROE ROE helps investors to gauge how their investments
 503 are generating income.
 504 ii ROA ROA helps investors measure how management is
 505 using its assets or resources to generate more income
 506 iii DETERA It assesses the extent to which a firm is using
 507 borrowed funds.
 508 iv ASTANG Creditors believed that firms with higher tangible
 509 assets can use debt more easily and can fulfill their
 510 obligations with ease.
 511 v AGE Variation in gearing level might be explained by the
 512 increase in the age of firms which could compel
 513 managers to focus a significant part of their attention
 514 on the intrinsic characteristics of their firms and its
 515 financing decisions[7].

516 **3.7 A priori Expectation**

517 The a priori expectations of the coefficients are indicated to be positive,
 518 which implies that capital structure is supposed to have a positive effect on
 519 performance of banks in Nigeria. It is stated as: $\alpha_0 < 0$; $\alpha_1 - \alpha_4 > 0$.

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4. DATA ANALYSIS, RESULTS AND DISCUSSION

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4.1 Preliminary Data Analysis

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Correlation Analysis

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This section looks at the correlation among capital structure indicators/proxies such as Debt to equity ratio, short term debt to total asset, long term debt to total asset and size of the firm. The rule of thumb for correlation between two variables ranges between 0 and 0.3. It implies a weak relationship exists between the variables.

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Also, when the correlation ranges between 0.4 and 0.9, it can be said that a strong relationship between the variables exists.

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In the table 4.1, Return on Assets (ROA) is positively correlated with Return on Equity (ROE) but negatively correlated with Asset Tangibility (ASTANG), Age of the banks (AGE) and Debt to equity ratio (DR) at 0.10, 0.52 and 0.36 respectively.

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Also, Return on Equity (ROE) has a negative correlation with Asset tangibility, Age of the Bank (AGE) and Debt to equity ratio (DETERA) at 0.03, 0.15 and 0.41 respectively. For Asset tangibility (ASTANG), there exists also a negative relationship between Age of the bank (AGE) and Debt to equity ratio (DETERA) at 0.07 and 0.05. Finally, there is a negative correlation between Age of the Banks (AGE) and Debt to equity ratio (DETERA) at 0.008. Hence, the results revealed that the correlation among the variables is generally weak.

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Table 4.1
Correlation matrix

	ROA	ROE	ASTANG	AGE	DETERA
ROA	1				
ROE	0.487964	1			
ASTANG	-0.10966	-0.03647	1		
AGE	-0.524094	-0.15182	-0.07264	1	
DETERA	-0.36548	-0.41326	-0.0555	-0.00854	1

Source: From E-Views 9

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Unit Root Test

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Since time series data are prone to spurious regression and a way out of this is to test for stationarity of all variables using the Augmented Dickey Fuller Unit Root Test.

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Table 4.2 pictures the results of the various unit root tests carried out for the purpose of identifying the features of the variables under investigation. The unit root tests carried out include Levin, Lin and Chu t, Im, Pesaran and shin (IPS), Augmented Dickey-Fuller (ADF) and Phillips-Peron Fisher chi-square accompanied by their various probability values in brackets.

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The unit root test was run, allowing E-views to select the appropriate lag length for the test based on the Schwarz information criteria (SIC). Also these tests were carried out with constant but no trend. The hypothesis tested was the presence of unit root in the variables.

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From the results obtained in Table 4.2 and following the majority of these results, it can be concluded that all variables employed in this study are stationary at

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563 all levels as shown in the unit root test column. None of the variable was integrated
 564 at first difference and second difference. Hence, the significance of the test nullifies
 565 the earlier hypotheses stated.

Table 4.2 Summary of unit root tests

	Levin, Lin & Chu t	Im, Pesaran and Shin W-stat	ADF- Fisher Chi- square	PP- Fisher Chi- square
ROE	-223.548*** (0.000)	-40.5250*** (0.000)	48.9606** (0.000)	66.0165*** (0.000)
ROA	-97.2621*** (0.000)	-18.7780*** (0.000)	50.9152*** (0.000)	95.7254*** (0.000)
AGE	-30.6539*** (0.000)	-210.269*** (0.000)	122.510*** (0.000)	122.811*** (0.000)
DETERA	-16.2826*** (0.000)	-3.04965*** (0.001)	39.2045*** (0.0063)	41.0791** (0.0036)
ASTANG	-3.39713*** (0.000)	-0.73452** (0.023)	27.8591 (0.1128)	36.7517** (0.012)

***, **, * implies the level of significant from 1%, 5% to 10% respectively

566 **Source: Results from E-views 9**

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568 **4.2 Hypotheses testing**

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570 **Granger Causality Test**

571 The result from the table 4.3 shows a one way causation between asset tangibility
 572 and debt to equity ratio. This indicates that causality runs from asset tangibility to
 573 debt to equity ratio (F -statistics =3.23793; ρ =0.0486) and not from debt to equity
 574 ratio to asset tangibility showing that the null hypothesis that asset tangibility does
 575 not granger cause debt to equity ratio was rejected while the null hypothesis that
 576 debt to equity ratio does not granger cause asset tangibility was accepted.

577 However, the findings also revealed that there exists no causal relationship between
 578 return on equity and return on asset, debt to equity ratio and return on asset, age
 579 and return on asset, debt to equity ratio and return on equity, asset tangibility and
 580 return on equity, age and return on equity, age and debt to equity ratio, age and
 581 asset tangibility.

**Table 4.3
 Granger Causality Tests**

Null Hypothesis:	Obs	F-Statistic	Prob.
ROE does not Granger Cause ROA	50	0.53357	0.5902
ROA does not Granger Cause ROE		1.59083	0.2150
DR does not Granger Cause ROA	50	0.22296	0.8010
ROA does not Granger Cause DR		0.94976	0.3945
ASTANG does not Granger Cause ROA	50	0.24566	0.7832
ROA does not Granger Cause ASTANG		0.20208	0.8178
AGE does not Granger Cause ROA	50	1.09960	0.3418
ROA does not Granger Cause AGE		0.28415	0.7540

DR does not Granger Cause ROE	50	0.35427	0.7036
ROE does not Granger Cause DR		0.54334	0.5846
ASTANG does not Granger Cause ROE	50	0.03123	0.9693
ROE does not Granger Cause ASTANG		0.34190	0.7122
AGE does not Granger Cause ROE	50	3.11123	0.0543
ROE does not Granger Cause AGE		0.25064	0.7794
ASTANG does not Granger Cause DETERA	50	3.23793	0.0486
DETERA does not Granger Cause ASTANG		0.16068	0.8520
AGE does not Granger Cause DETERA	50	2.63952	0.0824
DETERA does not Granger Cause AGE		0.10738	0.8984
AGE does not Granger Cause ASTANG	50	0.24846	0.7811
ASTANG does not Granger Cause AGE		0.01618	0.9840

582 **Source: Results from E-views 9**

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Panel Regression Results

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Capital structure and financial performance (ROE) of listed banks in Nigeria

586

The outcome from the regression results in table 4.4 shows that Debt to equity ratio (DETERA) is a significant variable that determines the financial performance (ROE) of banks in Nigeria. However, it has a negative impact on Banks financial performance. Possible reasons for non-conformity of this result to a priori expectation might be that the selected deposit money banks in Nigeria takes more of short term deposits than long term deposits from customers which takes longer time before maturity as deposits made by customers are being used for investments to generate profits. Banks who take delight in sourcing for short term loan in form of deposits to finance its operations are mostly vulnerable to financial instability. The panel regression also revealed that all the explanatory variables accounted for about 17% in the variation of return on Equity.

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Table 4.4

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Regression results

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Dependent variable: ROE

Variables	Coefficient	Std. Error	t-Statistic	Prob.
C	5.284	1.283	4.118	0.000***
DETERA	-5.357	1.447	-3.703	0.000***
ASTANG	-0.353	0.548	-0.643	0.522
LOG(AGE)	-0.149	0.093	-1.597	0.115
R-squared		0.205		
Adjusted R-square		0.169		
F-statistic		5.674		
Prob.(F-statistic)		0.001**		
Durbin-Watson stat		1.012		

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***, **, * implies the level of significant from 1%, 5% to 10% respectively

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Source: Author's Data Analysis, 2019

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Capital structure and financial performance (ROA) of listed banks in Nigeria

Looking at the regression results in Table 4.5, all the capital structure variables (Debt to equity ratio, asset tangibility and age) are negatively significant to return on asset of Banks in Nigeria. Though debt to equity ratio was significant, it could not increase the return on assets of banks as expected, hence there is approximately 13 % (0.1266×100) decline in the returns accrued to the Bank over the years. This result negates the position of the a priori expectation as they are negatively related to Bank performance.

In the same vein, asset tangibility was negatively significant to financial performance of Banks in Nigeria. This implies that if banks were to rely on tangibility of its asset for survival, the performance over the years will still not be encouraging as expected as the amount of losses incurred from irrecoverable debts overwhelms the available tangible assets that would have serve as collateral securities in times of financial distresses. Age on the other hand also impacted returns on bank assets negatively. The adjusted R-squared of 0.47 indicates that 47% in the variation of return on asset is explained by debt to equity ratio, asset tangibility and age. On a whole, the results does not conform with the a priori expectation and it is also supported by the work of [30]; [18]; [16];[12], [15]; [22]; [35]; [20]; [1]; [2]; [27]. It is therefore established that capital structure has a negative influence on Bank performance and brings no improvement to the wealth of shareholders.

Table 4.5
Regression results
Dependent variable: ROA

Variables	Coefficient	Std. Error	t-Statistic	Prob.
C	0.182	0.029	6.347	0.000***
DETERA	-0.127	0.032	-3.911	0.000***
ASTANG	-0.023	0.012	-1.92	0.059**
LOG(AGE)	-0.014	0.002	-6.746	0.000***
R-squared		0.497		
Adjusted R-square		0.474		
F-statistic		21.758		
Prob.(F-statistic)		0.000***		
Durbin-Watson stat		1.525		

***, **, * implies the level of significant from 1%, 5% to 10% respectively

Source: Author's Data Analysis, 2019

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4. CONCLUSION

- On the premise of the findings of the study, the study concluded as follows:
- i. Debt to equity as key capital structure component was significant but impacted negatively on the returns on asset and return on equity of deposit money banks in Nigeria.
 - ii. There is no direction of causality between debt to equity ratio, age of banks, asset tangibility and return on asset of banks
 - iii. There is a one way causality running from asset tangibility to debt-equity
 - iv. Firm age, has negative impact on the return on equity and return of asset of the bank but only significant with the return on asset of the bank

640 v. Asset tangibility have negative impact on the return on equity and return
641 of asset of the bank but only significant with the return on asset of the
642 bank.

643

644 5. RECOMMENDATION

645 The research work considered the peculiarities of financial institutions (Banking
646 industries) because financial sector is very imperative to any nation generally and
647 Nigeria in particular. The study specifically shifted attention to banking sector as
648 most attention was focused on manufacturing companies in Nigeria and relying on
649 the findings of this study, the following recommendations are made:

- 650 i. Alertness of finance managers as to movement in the stock market.
- 651 ii. The appropriate capital mix should be tailored towards viable investment
652 opportunities for maximum return of shareholders wealth and value of the
653 company.
- 654 iii. Nigeria banks should take precautionary measures for mitigating credit risk
655 associated with lending and borrowing

656 COMPETING INTEREST

657 Authors have declared that no competing interests exist

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659 REFERENCES

- 660 1. Abbadi S, .Abu-Rub N. The Effect of Capital Structure on the Performance of
661 Palestinian Financial Institutions. *British Journal of Economics Finance and
662 Management Sciences*, 3(2), 92 - 101.
- 663 2. Ahmad Z., Hasan NM, Roslan, S. The effect of capital structure on the firm
664 performance of public listed companies in Malaysia *International Review of
665 Business Research Papers*. 8(5).
- 666 3. Akinyomi OJ. Effect of capital structure on firm performance: Evidence from
667 Nigeria manufacturing industry. *International Journal of Innovative Research
668 and Studies*, 2(9), 468-480.
- 669 4. Al-Farisi AS, Hendrawan R. Effect of capital structure on banks performance:
670 a profit efficiency approach Islamic and conventional banks case in Indonesia
- 671 5. Amenawo. Effect of corporate Financing, Corporate governance, ownership
672 structure and macroeconomic factors on financial performance of listed
673 Deposits money banks in Nigeria. *Business & Economics Research Journal*,
674 2(2), 139–152
- 675 6. Boodhoo, R. Capital structure and ownership structure: A review of literature.
- 676 7. Chadha S and Sharma AK. Determinants of capital structure: An empirical
677 evaluation from india. *Journal of Advances in Management Research* 12(1). 5-14
678 <https://doi.org/10.1108/JAMR-08-2014-005>
- 679 8. Choong TV. *et al.* Performance of Islamic commercial banks in Malaysia: An
680 empirical study." *Journal of Islamic Economics, Banking and Finance* 8 (2): 67-
681 79.
- 682 9. Dimitris M, Psillaki M. Capital Structure, Equity Ownership and Firm
683 Performance. Department of Finance, University of Nice-Sophia Antipolis,
684 Einstein 06560 France.
- 685 10. Ebenezer BA. Capital Structure and Bank Performance - Evidence From Sub-
686 Sahara Africa". *European Journal of Accounting Auditing and Finance
687 Research* Vol.3, No.3, pp.1-20, March 2015.
- 688 11. Goyal. Impact of Capital Structure on Performance of Listed Public Sector
689 Banks in India. *International Journal of Business and Management Invention*,
690 Volume 2, Issue 10 October. 2013, PP.35-43.

- 691 12. Ishaya IC, Abduljeleel BO. Capital Structure and Profitability of Nigerian
692 Quoted Firms: The Agency Cost Theory Perspective. *American*
693 *International Journal of Social Science*, 3(1), 139-142.
- 694 13. Jensen M. Agency costs of free cash flow, corporate finance and
695 takeovers, *American Economic Review*, 76:323-9.
- 696 14. Lambe L Corporate capital structure and firm's market value in Nigeria.
697 *Research Journal on Finance*. 5: 16-31.
- 698 15. Lawal BA, Edwin, TK., Monica, WK. Adisa, MK. Effects of capital structure
699 on firms performance: Empirical study of manufacturing companies in
700 Nigeria. *Journal of Finance and Investment analysis*, 3(4), 39-57.
- 701 16. Meero. The Relationship between Capital Structure and Performance in Gulf
702 Countries Banks: A Comparative Study between Islamic Banks and
703 Conventional Banks. *International Journal of Economics and Finance*; Vol. 7,
704 No. 12; 2015.
- 705 17. Modigliani, F. and Miller, M. H. *The Cost of Capital, Corporate Finance and*
706 *the Theory of Investment*. *American Economic Review*, 48, 261-97.
- 707 18. Myers SC. Majulf NS. Corporate financing and investment decisions when
708 firms have information that investors do not have. *Journal of Finance* 12: 187-
709 221.
- 710 19. Maina, L., Ishmail M. Capital Structure and Financial Performance in Kenya:
711 Evidence from Firms Listed at the Nairobi Securities Exchange. *International*
712 *Journal of Social Sciences and Entrepreneurship*. 1(11) 1-14.
- 713 20. Mohammadzadeh SH, Elham G, Taghizadeh KV, Akbari KM. Capital
714 Structure and Firm Performance: Evidence from Tehran Stock Exchange.
715 *International Proceedings of Economics Development & Research* 43: 225.
- 716 21. Muritala TA. An empirical analysis of capital structure on firm's performance
717 in Nigeria. *International Journal of Advance Management and Economics*,
718 1(5), 116-124.
- 719 22. Mustafa MS, Osama S. Capital Structure and Corporate Performance:
720 Empirical Study on the Public Jordanian Shareholdings Firms Listed in the
721 Amma Stock Market. *Journal of European Scientific*, 8, (22).
- 722 23. Nassar S. The impact of capital structure on Financial Performance of the
723 firms: evidence from Borsa Istanbul. *Journal of Business and Financial*
724 *Affairs*, 5(173), 2167- 0234
- 725 24. Nirajini A, Priya KB. Impact of capital structure on the financial performance
726 of listed trading companies in Sri Lanka. *Int J Sci Res Publ*, 3: 2250- 3153.
- 727 25. Pratomo WA , Ismail AG . "Islamic bank performance and capital structure
- 728 26. Pouraghajan A, Malekian, E. The Relationship between Capital Structure and Firm
729 Performance Evaluation Measures: Evidence from the Tehran Stock Exchange.
730 *International Journal of Business and Commerce*, 1(9), 166-181.
- 731 27. Puwanenthiren P. Capital Structure and financial performance: evidence
732 from listed business companies in Colombo Stock Exchange Sri Lanka.
733 *Journal of Arts, Science & Commerce*
- 734 28. Rajha KS, Alslehat ZAF. The Effect of capital structure on the performance of
735 Islamic banks. *Interdisciplinary Journal of Contemporary Research in*
736 *Business* 5 (9): 144
- 737 29. Shoaib A. Measuring performance through capital structure: Evidence from
738 banking sector of Pakistan.
- 739 30. Siddik MNA, Kabiraj S, Joghee S .Impacts of Capital Structure on
740 Performance of Banks in a Developing Economy: Evidence from Bangladesh.
741 *International Journal of Financial Studies* 5: 1-18.

- 742 31. Spathis C, Kosmidou K , Doumpos M. Assessing Profitability Factors in the Greek
743 Banking System. *International Transactions in Operational Research*, Vol. 9,
744 No. 5, 517-530
- 745 32. Tanni .Impact of Working Capital Management Policy and Financial
746 Leverage on *Financial International Journal of Management Sciences and*
747 *Business Research 1*
- 748 33. Titman S, Wessels R .The determinants of capital structure. *Journal of*
749 *Finance*
- 750 34. Tsai L, Tserng H, Ho SP, Sung C, Chou Y .Developing an analytical model
751 for the optimal capital structure of the building company. *Journal of Marine*
752 *Science and Technology*, 18: 385-394.
- 753 35. Umar, et al. Impact of Capital Structure on Firms' Financial Performance: Evidence
754 from Pakistan *Research Journal of Finance and Accounting*, 3(9), 1-12.
- 755 36. Zafar MR, et al. Impact of Capital Structure on Banking Profitability.
756 *International Journal of Scientific and Research Publications* 6 (3): 186-193.