



## **CAPITAL ADEQUACY REGULATION EFFECT ON PROFITABILITY OF COMMERCIAL BANKS LISTED IN NAIROBI SECURITIES EXCHANGE IN KENYA**

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**Abstract:** Commercial banks' working environment is the most highly regulated environment around the globe and this explains why banking regulations continually attract theoretical scrutiny. In Kenya, the Central bank of Kenya sets the rules and the regulations that every bank is supposed to operate by. Such regulations and guidelines are important as they are meant to protect the interest of depositors, creditors and investors as well as promoting integrity in financial markets. Commercial banks in Kenya have faced challenges related to performance that include decline in profits, being placed under receivership while at the same time registering high number of nonperforming loans. This has happened in the wake of revision of guidelines and regulations under CBK Act (Chapter 491, Kenyan law). This study therefore, sought to investigate the effect of capital adequacy regulations on profitability of commercial banks that are listed by Nairobi Securities Exchange. This research applied a descriptive research design. Population of interest were managers at the three levels of management; risk and compliance, credit and finance department in all 11 registered commercial banks which are listed in the NSE. This research used secondary data and primary data. A pretest was done to enhance reliability and validity of the research instrument. Both qualitative and quantitative data was produced by the research. The researcher further used regression analysis to test the relationship between capital adequacy regulation and profitability of commercial banks. The results show that capital adequacy management play an important role in ensuring smooth banking operation in that sufficient capital helped in cushioning risk such as default in loan repayment. The study concludes that revision of CBK's prudential guidelines and regulation fostered a positive performance by commercial banks that are listed at the NSE. It's therefore paramount for banks to continue ensuring that they have sufficient capital in place.

**Keywords:** *Capital Adequacy, Profitability, Regulation*

### **1.1 Introduction**

Recent research done by Pennacchi (2016), show that, business environment in which commercial banks around the world operate in is one of the most regulated and has consequently attracted theoretical scrutiny. Such regulations create an environment of transparency which is necessary in enhancing interaction between the bank and its clients (Doyle, 2015). There is a focus on controlling activities that banking institutions engage in because the global and the national economies are built on such bank's activities (Barth Barth, Caprio, & Levine, 2013). The regulations and guidelines that every bank is supposed to operate within are provided by the Central bank of Kenya (CBK). Banking act besides its protocols and sensible strategies allotted thereunder have been agreed upon by commercial banks through their licensing and regulation board. Every bank's resources are dependent on its asset's growth and more so its liquidity and this is why liquidity level is a major pointer of the bank's stability

and financial soundness. CBK constantly monitors banks' liquidity and risks on their credit portfolio (Richard, 2011).

According to Sherman (2009), in the USA, after the 2008 global financial recession there was heavy focus on regulating activities of financial institutions, and more so on the link between such guidelines and fiscal performance. According to KPMG (2014), before the financial recession, the USA's financial sector had been deregulated, leading to massive financial institutions growth which was not sustainable leading to financial crisis. Consequently, after the financial crisis, the regulations were reintroduced to bring about economic stability resulting to curtailed growth of financial institutions that includes banking institutions (KPMG, 2014).

Barth, Caprio and Levine (2016) note that banking systems is a key component of a financial market and therefore curtailed performance and growth of a banking system spell doom to the entire financial markets. They further highlight that financial growth is facilitated by banking institutions through allocation and mobilization of funds to venture into projects that yield long term financial gain.

Andres and Vallelado (2018) highlights that the capital ratio, quality of asset, level of liquidity, corporate governance and bank size are the main bank-specific features influencing profitability. Other factors that affect profitability include structure of ownership, concentration and regulations which are macroeconomic factors (Andres & Vallelado, 2018). The losses that are absorbed from low asset quality reflect the capability of the banks' solvency indicated by capital ratio. Profitability is then raised by high capital ratio that lowers external funding needs (Kosmidou, 2018). CBK is mandated to foster solvency, liquidity and proper financial systems functioning of commercial banks in Kenya. In this regard therefore, if not properly regulated, capital ratio, asset quality, level of liquidity may hurt the profitability of commercial banks (Andres & Vallelado, 2018). In fact, Edirisuriya and O' Brien (2011) notes that variations in monitoring circumstances in banking/fiscal markets might have an effect on financial success of banks.

## **1.2 Statement of the problem**

After the financial upheaval that was experienced globally in 2008, many viewed banking regulations as the only way to improve efficiency of banks and banking industry at large (Andres & Vallelado, 2018; Calem & Rob, 2017) although some differ (Barth et al, 2016). Indeed, sometimes commercial banks have less amounts to lend as their performance is affected by the regulations while on the other hand there are many cases of loan defaults caused by fluctuating and unpredictable interest rates (Atieno, 2011). In Kenya, Chase bank and Imperial bank have recently been put under receivership while Dubai Bank has been placed under liquidation. The reasons for above were cited as capital deficiencies (Dubai Bank), fraud (Imperial bank) and unsafe financial condition (Chase bank).

According to CBK annual report (2015), CFC Stanbic bank net profit declined from Ksh.5.478 billion in 2014 to Ksh.4.697 billion in 2015. This indicates a decline of 14.3% in profit for the bank. Similarly, in end of financial year 2015, National Bank registered a loss of KSh.1.2 billion. At the end of fiscal year ending December 2014, National Bank had registered a profit of KSh.1.3 billion. The decline is almost 192.3%. Further, in the first 6 months of 2018, National Bank made a total loss of Ksh. 282 million. At the same time, KCB, Co-operative Bank and Equity bank impressive performance during the same period (CBK, annual report, 2018). From the above its clear fact that commercial banks registered conflicting performance levels makes it important to conduct an empirical research to establish the association between regulation of Kenyan banks and their performance

Research have been carried both internationally and locally to investigate effects of capital adequacy regulations on banks profitability. Aiyar, Calomiris, and Wieladek (2016), in their studies on bank guidelines and regulations, capital adequacy and supply of credit in United Kingdom, found that banks that have an oversupply of capital have a tendency to have a greater growth in their credit portfolio. This research attempted to address this deficit by measuring effects of capital adequacy regulation on banks profitability. The study therefore sought to answer the research question, what effects does capital adequacy guidelines have on financial results of the listed banks?

### **1.3 Objectives of the Study**

The objective of the research was to examine the effect of capital adequacy regulation on profitability of banks that are listed in NSE.

## **2.0 Literature Review**

### **2.1 Theoretical Literature Review**

This presents the theoretical approach of the study. The researcher reviewed various existing literature sources from journals, articles and books amongst others. Balanced portfolio theory is the main anchor theory for the study. Studies done on how banks perform, use the portfolio theory approach as its role is very important (Nzongang & Atemnkeng, 2006). The world recognizes perceptual object which is an out-there factor which is used to see sensory data after it is persevered. The motives, intentions and sentiments that people have were used as attributions, the behavior of people is manifested by the core processes indicated above. It is an individual bank's management decisions that make up the commercial banks' portfolio diversification and portfolio composition desired (Hantke-Domas, 2003; Nzongang & Atemnkeng, 2006).

When one wants to recover a service, they evaluate the process through disconfirmation paradigm (Engelmann, 2011). The service providers provide recovery efforts on establishing the expectations of the customers. A customer raises his/her concerns to the company once they are not satisfied with the product they purchased where they expect the company to provide fairness and justice to them. The performance of the company is used to evaluate how they give justice or fairness to their customers (Oliver, 1997). It is anticipated that a company will provide services to its customers so that they can improve their profitability through referrals from existing clients (Engelmann, 2011). There is variance of profitability from one customer to another which makes it easier for perceived profitability to be used as it is not as operationalized as the objective performance. Better expectations on profitability of a product lead to a positive affirmation.

Different people's explanation of different scenarios is used in observing, analyzing and explaining their behavior and this assertion is well elaborated by this theory. The attributions of internal (personal) and external (situational) in people's behavior are used in categorizing group explanations of human behaviors which explain the behavior that people have in different ways (Leippold, Trojani & Vanini, 2011). The ability, personality, mood, efforts, attitudes, or disposition of a person which is termed as characteristics are used to define a person's behavior called an internal attribution. The cause of a given behavior either the task, other people, luck or the environment can be used in making of an external attribution. Behavior and the person engaging in it give every different result as per the two attributes (Yilmaz and Christofori, 2009).

This concept is applicable in this research because it presupposes the role of management in determining the profitability trajectory of the bank; it's all about management decisions. Therefore, banks need to put in place measures to cushion themselves against effects of capital deficiencies. The balance portfolio model requires identifying best holding levels of every asset in capital management portfolio. In this regard, adoption of the prudential guideline may influence profitability of the commercial bank as it shields the banks from risks related to adequacy of capital among other management risks.

## **2.2 Empirical Literature Review**

Adequate capital is when the quantity of equity is enough to handle challenges that the bank may go through, in its life time (Kosmidou, 2009). Banks' capital structure is therefore crucial because it takes a very vital part in decreasing the number of financial institutions going into insolvency (Kamau, 2009). While it is generally agreed that legal capital requirements are necessary, the threshold for capital holding is still a contentious issue. While on one hand, regulators seek to increase capital holding threshold in a bid to ensure that cases of insolvent banks reduce, in contrast bankers resist as they believe such a move would only curtail their growth and decrease their competitive advantage (Koch, 2015).

Beckmann (2017) further noted that companies with high capital ratio tend to be risk-averse, ignoring potential, but risky investment openings and consequently generate lower returns for their lower risk investors. However, while capital is expensive, in terms of projected earnings, banks with high capital holding, have a lesser chance of getting into bankruptcy and have a lesser need to be funded externally especially in developing economies where external borrowing is not easy (Gavila et al, 2009).

In their case study on effects of adequacy of capital on Bank of England's lending, Bridges, Gregory & Spaltro (2014) concluded that growth in capital conditions was found to slow its growth of loan portfolio. They further noted that a financial institution's response to capital adequacy change differed depending on business cycle, bank size and whether it either increased or decreased its capital requirement. The above findings were collaborated by Aiyar, Calomiris, and Wieladek, (2016), who did research on bank regulations, adequacy of capital and supply of credit supply in the United Kingdom which suggested that high capital requirement lowered bank's optimal loan growth

In his study of 46 banks, from four countries of Middle East, between 2004 and 2014, Alkadamani (2015) who was investigating capital adequacy and behavior of financial institutions reported existence of solid association between regulations and adequacy of capital, concluding that banks which were closer to the least regulatory capital adequacy improved their capital adequacy through capital increase while reducing risk taking activities. In yet another research on capital adequacy and productivity of banks in Nigeria, Olalekan, (2013) discovered that financial adequacy was positively correlated to success since it promotes depositors confidence.

Other authors have supported presence of a strong association between adequacy of capital and the profitability of the bank (Sangmi & Nazir, 2010). In their research on bank's financial performance in India, Sangmi & Nazir, (2010) reported that capital adequacy directly affected banks profitability in India. Additionally, Nzioki (2015) who investigated effect of capital adequacy on profitability and ultimately the commercial bank in Kenya performance, discovered that adequacy of capital impacts performance of Kenyan banks positively further signifying that, the greater the capital adequacy of a bank the lower the bankruptcy chances.

### 3.0 Research Design and Methodology

Longitudinal research design was opted for since the study collected data over a period of 5 years. Mugenda and Mugenda (2008) highlights that longitudinal studies employ continuous or repeated measures to follow particular individuals over prolonged periods of time—often years or decades. This study was done in Nairobi, in the head office of the 11 listed commercial banks. The research focused on regulation on capital adequacy and its effect on profitability of commercial banks.

The population of interest was managers at the three levels of management from risk and compliance, credit and finance departments of the 11 listed Kenyan banks. In this study, since the population is small sampling was not done. The study was carried out through census.

Primary and secondary data was used in this study. CBK, Capital Markets Authorities, Kenya Bankers Associations, financial reports of the respective commercial banks and other resources were the main sources of secondary data since they are the publications where financial institution's financial records have been documented. To collect the secondary statistics, the scholar has prepared a secondary data collection schedule. To collect primary data, the scholar made use of a self-administered inquiry form. The inquiry form comprised of 5 sections, with section A, collecting general information, while section B to D collected data on the independent variable while section E collected information on the dependent variable. The questionnaire mainly contained Likert-type questions, 5 points. A pilot research was carried out in Family Bank Ltd since it was not listed in NSE. This was envisioned to enhance the reliability of the research instrument. To measure the validity of the study instrument, the scholar looked for an expert's opinions in the area of study particularly the scholar's academic instructors.

To collect data for the study, a study authorization from National Commission for Science, Technology And Innovation (NACOSTI) and introduction letter from the University were obtained. The scholar then distributed the data collection tools to the respondent through drop and pick later method. For the secondary data, the scholar obtained the financial reports of the listed commercial banks for duration between 2014 and 2018 and then records the necessary parameters on the data collection schedule.

Quantitative information obtained was examined methodically by use of the Statistical Packages for Social Scientists (SPSS Version 23) then descriptive statistics was used in analyzing the output. Panel information was used in the research. This is mostly preferred as it reduces biasness and it also contains both cross-sectional dimensions and time series (Baltagi, 2005). Data on eleven (11) commercial banks listed for five (5) years duration, from Year 2014 to Year 2018 was collected. The researcher further used regression analysis to find the association between the predictor (capital adequacy) variables and the dependent variable (profitability in commercial banks). The researcher deems regression method to be useful for its ability to test the nature of influence of independent variables on a dependent variable. Regression is able to estimate the coefficients of the linear equation, involving one or more independent variables, which best predicted the value of the dependent variable.

The regression equation was as follows:

$$Y_{it} = \beta_0 + \beta_1 X_{it} + \varepsilon$$

The econometric model derived from the equation above for the purposes of this study was as follows;

$$Y_{it} = \beta_0 + \beta_1 \text{Cap\_Adq}_{it} + \varepsilon_{it}$$

Where;

$Y_{it}$  = Profitability (ROA, ROCE and ROE)

$\beta_0$  = Constant (level of profitability when there is no bank regulations)

$\beta_1$  = Coefficient of determination

Cap\_Adq = Capital Adequacy Regulation

$\varepsilon_{it}$  = Error

$i$  = Bank code (1....11)

$t$  = Time (2014—2018)

Different methods was used in determining the value of both independent variables and dependent variable as shown below.

$Y_{it}$  = Profitability (measured as ROA, ROCE and ROE)

Calculated as;

$$ROA = \frac{\text{Net Income}}{\text{Average Assets}}$$

$$ROCE = \frac{\text{Earnings Before Interest and Tax}}{\text{Capital Employed}}$$

$$ROE = \frac{\text{Net Income}}{\text{Shareholders Equity}}$$

Cap\_Adq = Capital Adequacy Regulation (measured as Total Equity to Total Assets) calculated as:

$$\text{Capital adequacy regulation} = \frac{\text{Tier 1 capital} + \text{Tier 2 capital}}{\text{Risk weighted Assets}}$$

## 4.0 Results and Findings

### 4.1 Descriptive statistics

Respondents were asked to indicate whether capital adequacy regulation impacts banks profitability bank.

**Table 1: Extent to which capital adequacy regulation affected Banks Profitability**

|                        | Frequency | Percentage |
|------------------------|-----------|------------|
| To a very great extent | 24        | 30.4       |
| To a great extent      | 39        | 49.4       |
| To a moderate extent   | 16        | 20.3       |
| Total                  | 79        | 100.0      |

From the research finding most (49.4%) of the participants was of the opinion that credit risk management regulation affects bank profitability to a great extent While 24(30.4%) of the participants indicated to a great extent. In addition, 24(20.3%) indicated that capital adequacy regulation affected banks profitability to a moderate level. This therefore implies that capital adequacy regulation affects bank profitability to a great extent in the sampled banks.

Participants in this study were required to indicate their agreement level with statements assessing effect of capital adequacy regulation on profitability of commercial banks.

**Table 2: Relationship between Capital Adequacy Regulation and Banks Profitability**

| Statements                                                                                                                                                     | N  | Min  | Max  | Mean | Std Dev |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|----|------|------|------|---------|
| The bank employs capital structure policy to achieve the optimal capital mix                                                                                   | 79 | 3.00 | 5.00 | 4.27 | 0.69    |
| Bank capital directive helps sustain levels of capital that reduces bank failure's risk.                                                                       | 79 | 3.00 | 5.00 | 4.19 | 0.70    |
| Financial institutions keeps sufficient capital adequacy since during economic catastrophes Financial institutions tends to escalate their risk-taking actions | 79 | 3.00 | 5.00 | 4.13 | 0.67    |
| Capital adequacy relates well to success of banks as it boosts the confidence of the public, depositors and regulatory authority                               | 79 | 3.00 | 5.00 | 4.09 | 0.80    |
| Changes in capital adequacy consequently results to change in both lending processes and capital levels and this affect the profitability of the bank          | 79 | 3.00 | 5.00 | 4.06 | 0.79    |
| Capital plays an important function in ensuring quality running of banks operations and in realization of investment thus making high profit                   | 79 | 3.00 | 5.00 | 4.24 | 0.70    |

Results presented on Table 2 show that majority of the respondents in this research agreed that their banks employs capital structure policy to achieve the optimal capital mix ( $M=4.27$ ,  $SD=0.69$ ) and that capital plays a function in ensuring quality running of banks operations and in realization of investment thus making high profit ( $M= 4.24$ ,  $SD=0.70$ ) this means that sufficient capital helped by cushioning banks on risk such as default in loan repayment. Further, the results indicate that bank

capital directive helps sustain levels of capital that reduces bank failure's risk ( $M=4.19$ ,  $SD=0.70$ ) and that financial institutions keeps sufficient capital adequacy since during economic catastrophes, financial institutions tends to escalate their risk-taking actions ( $M=4.13$ ,  $SD=0.67$ ). These results confirm research findings by Koch (2015) that banks which were closer to the least regulatory capital adequacy improved their capital adequacy through capital increase while reducing risk taking activities.

Further the study reveled that capital adequacy relates well to success of banks as it boosts the confidence of the public, depositors and regulatory authority ( $M= 4.09$   $SD=0.80$ ) and that changes in capital adequacy consequently results to change in both lending processes and capital levels and this affect the profitability of the bank ( $M= 4.06$   $SD=0.79$ ). These results support research findings by Bridges, Gregory and Spaltro (2014) who concluded that growth in capital conditions was found to slow its growth of loan portfolio.

## 4.2 Inferential Statistics

In this study, a multiple regression analysis was conducted to test the influence of predictor variables on the dependent variable. The research used statistical package for social sciences (SPSS V 23.0) to code; enter and compute the measurements of the multiple regressions. The results are presented in the Table 3 below.

**Table 3: Capital Adequacy Regulation and Profitability of Commercial Banks**

| Model Summary               |                |                   |                            |        |       |
|-----------------------------|----------------|-------------------|----------------------------|--------|-------|
| R                           | R Square       | Adjusted R Square | Std. Error of the Estimate |        |       |
| .325a                       | 0.106          | 0.0948            | 0.976                      |        |       |
| ANOVA                       |                |                   |                            |        |       |
| Sum of Squares              | Sum of Squares | d.f               | Mean Square                | F      | Sig.  |
| Regression                  | 16.110         | 1                 | 16.110                     | 16.916 | .000b |
| Residual                    | 301.890        | 77                | 0.952                      |        |       |
| Total                       | 318            | 78                |                            |        |       |
| Coefficients                |                |                   |                            |        |       |
|                             | Unstandardized |                   | Standardized               | t      | Sig.  |
|                             | Coefficients   |                   | Coefficients               |        |       |
|                             | B              | Std. Error        | Beta                       |        |       |
| (Constant)                  | 8.115          | 4.027             |                            | 2.015  |       |
| Capital adequacy regulation | 0.225          | 0.055             | 0.134                      | 4.113  | 0.000 |

Source: Research data, (2020)

The coefficient of determination (R-Square) shows the overall variations caused by capital adequacy regulation on profitability of commercial banks that are listed at the NSE. Table 3 shows that the R-square for the model was 0.106. This implies that, capital adequacy regulation account for 10.6% of the variation in profitability of commercial banks that are listed at the NSE. Additionally, the coefficient suggests that other factors not studied account for 89.4% of the variation in profitability of commercial banks that are listed at the NSE.

The ANOVA was generated to help evaluate whether the model was statistically significant in explaining the link between the study variable (capital adequacy regulation) and profitability of commercial banks that are listed at the NSE.

From the ANOVA statics, the study established the regression model had a significance level of 0.00 which is an indication that the data was ideal for making a conclusion on the population parameters as the value of significance (p-value) was less than 5%. The calculated value was greater than the critical value ( $16.916 > 3.98$ ) an indication that capital adequacy regulation has a significant effects on profitability of commercial banks that are listed at the NSE. The significance value was less than 0.05 indicating that the model was significant. In addition, the study used the coefficient table to determine the study model.

As per the SPSS generated output presented in Table 3, the equation ( $Y_{it} = \beta_0 + \beta_1 \text{Cap\_Adq}_{it} + \varepsilon_{it}$ ) becomes:

$Y$  (profitability of commercial banks that are listed at the NSE) = Constant (8.115) + Capital Adequacy Regulation (0.225) + Error (0.976)

The findings show that holding the (capital adequacy regulation) constant at zero, performance of profitability of commercial banks that are listed at the NSE would be at 8.115. Additionally, a unit change in capital adequacy regulation, while holding other factors constant at zero, would positively change the profitability of commercial banks that are listed at the NSE by a factor of 0.225. These findings affirm the findings by Sangmi and Nazir, (2010) that capital adequacy directly affects banks profitability. The results also shows that, the relationship between profitability of commercial banks listed at the NSE and capital adequacy regulation was significant as shown by p value of  $0.000 < 0.05$ .

### Hypothesis Testing

The study hypothesized that capital adequacy regulations have no significant impact on NSE listed commercial banks' profitability. The study findings indicated that there was a positive significant relationship between capital adequacy regulations and NSE listed commercial banks' profitability ( $\beta=0.225$  and  $t=2.015$ ) which has a (p-value  $<0.000$ ). Further, the linear regression analysis coefficients shows that the model  $Y = \beta_0 + \beta_1 \text{Cap\_Adq}_{it}$ , is significantly fit. The general form of the equation was to predict NSE listed commercial banks' profitability from  $\text{Cap\_Adq}_{it}$  = Capital adequacy regulations; becomes=  $0.225\beta_1 \text{Cap\_Adq}_{it}$ . This indicates that NSE listed commercial banks' profitability =  $0.225 \times$  Capital adequacy regulations. The model NSE listed commercial banks' profitability =  $\beta$  (Capital adequacy regulations) holds as suggested by these test. This confirms that there is a positive linear relationship between capital adequacy regulations and profitability of commercial banks listed at NSE. Therefore, a unit increase in capital adequacy regulations index led to an increase in profitability of commercial banks listed at NSE index by 0.225. Since the p-value was less than 0.05 as shown in Table 3, the null hypothesis was rejected and alternative hypothesis accepted then concluded that capital adequacy regulations improves profitability of commercial banks listed at NSE.

### 5.0 Recommendations

Given that compliance on capital regulation was found to have a positive relationship with banks profitability, its therefore paramount for banks to continue ensuring that they have sufficient capital in place. This will help in making banks operations smooth and at the same time limit exposure to operational related risks.

## 6.0 Conclusion

This study draws that capital adequacy plays a significant role in how banks performs. Thus the study concludes that capital adequacy management practices had a positive significant impact on banks profitability, capital plays an important role in ensuring smooth banking operation and in realization of investment thus making high profit and that sufficient capital helped by cushioning banks on risk such as default in loan repayment.

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