INTERNAL AND MACROECONOMIC FACTORS AFFECTING THE CAPITAL ADEQUACY RATIO OF COMMERCIAL BANKS IN VIETNAM

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ABSTRACT

Capital adequacy ratio is an important criterion, a measure of the safety and soundness of banks and financial institutions. When the bank's capital is maintained at a safe level, it will ensure the smooth operation of the bank and be able to withstand shocks when the economy is adverse. Determining capital adequacy is the bank's adjustment of capital levels to absorb all unexpected losses arising in the future and ensure the safety of fixed assets. Thus, this study aims to determine how the internal factors in the bank and the macroeconomic factors of the economy affect the capital adequacy ratio (CAR) of the bank. The study used data from 18 commercial banks collected during the period from 2009 to 2019. The article used panel data regression with the GMM method to overcome the defects of the model. The research results showed that the internal factors of the commercial banks, such as return on total assets (ROA), bank size (SIZE), Liquidity ratio (LIQ), negative impact on CAR. Macro-economic factors, including Gross domestic product (GDP) and Consumer price index (CPI), have a statistical significance of 1 percent. Based on the author suggests governance implications for bank managers to maintain the capital adequacy ratio at an appropriate level, comply with the law, be safe for depositors but still ensure the safety of depositors and protect the interests of shareholders.

Keywords: Internal, Macroeconomic, CAR, Commercial, Bank.

INTRODUCTION

In recent years, Vietnam's commercial banking system has paid attention to risk management in addition to profit growth. By the end of 2019, 18 commercial banks applied Circular No. 41/2016/TT-NHNN - Circular stipulating capital adequacy ratio for banks and foreign bank branches. In terms of the orientation of the State Bank, the issuance of Circular No. 41/2016/TT-NHNN, Circular No. 13/2018/TT-NHNN are legal documents built based on management risk management according to Basel II.

Vietnamese commercial banks are building a risk management system that meets the principles and standards of the Basel II Treaty. Commercial banks must meet Basel II standards. The banking system needs to meet all three pillars: Pillar 1 is capital adequacy, pillar 2 is the inspection process by supervisors, and pillar 3. market principle. Pillar 1 focuses on determining the minimum capital adequacy ratio that a bank needs to maintain to cope with possible events during its operation, according to the study of Yonas (2017). According to the recommendations of the Basel Committee, banks need to maintain the minimum capital adequacy ratio at 8%. In Vietnam, the regulation of the minimum capital adequacy ratio is not uniform. Banks applying the capital adequacy ratio calculation according to Circular No. 41/2016/TT-NHNN must maintain the capital adequacy ratio at least 8%.

Commercial banks continued applying the capital adequacy ratio calculation according to Circular No. 22/2019/TT-NHNN must maintain the capital adequacy ratio at least 9%. Through aggregated data on capital adequacy ratio of Vietnamese commercial banks in 2009-2019, there are many commercial banks maintaining capital adequacy ratio at a high level of over 15%, such as An Binh Bank, Sai Gon bank, Kien Long bank, Eximbank, Vietcapital Bank. On the other hand, some commercial banks maintain a capital adequacy ratio a few percentage points higher than the prescribed level, such as Vietcombank, Vietinbank, BIDV, Agribank. Keeping the capital adequacy ratio too high is also not suitable for the bank's operations. When the capital adequacy ratio is too high, the bank has to reserve more capital or invest in assets with a lower level of risk, leading to low capital efficiency and lower profits. Therefore, the author researched the internal and macroeconomic factors affecting the capital adequacy ratio of commercial banks in Vietnam.

LITERATURE REVIEW

Capital Adequacy Ratio (CAR)

The capital adequacy ratio is the basis for measuring the bank's capital adequacy. The capital adequacy ratio reflects the soundness, *"health"* of a bank to ensure that banks can withstand the losses from operating losses by Tasan (2015). The capital adequacy ratio shows the bank's intrinsic strength to withstand losses in times of crisis by Chowdhury et al. (2019). The higher the capital adequacy ratio, the greater the internal power of the bank, ensuring the smooth operation of the bank, thereby protecting the interests of shareholders, investors and depositors. Marsida (2016) studied the Basel Committee's regulation on capital calculation as the international standard in calculating banks' capital adequacy ratios (Mishu et al., 2019). The Basel Committee recommends that banks maintain a minimum capital adequacy ratio to control the stability and performance of the financial system by Pornkul & Powell (2015) and Zayed et al. (2019). The minimum capital adequacy ratio recommended by Basel is not less than 8%.

Rate of Return on Total Assets (ROA)

Return on assets (ROA), an indicator of how profitable a company is relative to its total assets. ROA gives a manager, investor, or analyst an idea of how efficient a company's management is at using its assets to generate earnings. ROA, in basic terms, tells you what profits were generated from invested capital (assets). ROA for public companies can vary substantially and highly depend on the industry by Zayed et al. (2020). This factor is why when using ROA as a comparative measure, it is best to compare it against a company's previous ROA numbers or a similar company's ROA. From there, the hypothesis is:

H_1 *The rate of return on total assets (ROA) negatively impacts the capital adequacy ratio of commercial banks in Vietnam.*

Bank Size (SIZE)

Karim (2016) studied the size of the bank determined by the total assets of the bank. The author takes the logarithm of the total assets to bring the value of the total assets close to the size of the other explanatory variables by Zayed et al. (2020). Previous studies have shown that large-sized banks have reduced risk control and low safety because they invest in high-risk assets, according to Kultan (2016) and Mishu et al. (2020). So, the hypothesis is:

H_2 Bank size (SIZE) negatively impacts the capital adequacy ratio of commercial banks in Vietnam.

Liquidity Ratio (LIQ)

Liquidity is measured in securities to total assets by Bosdone (2017) and Zayed et al. (2018). Thus, a bank with more liquid assets does not need to borrow and holds a higher level of equity by Islam et al. (2019). Thereby, it shows a positive relationship between liquidity and capital adequacy ratio Khurram (2017) & Hasan & Zayed (2018). So, the hypothesis is:

H_3 Liquidity ratio (LIQ) negatively impacts the capital adequacy ratio of commercial banks in Vietnam.

Gross Domestic Product (GDP)

Studies show that economic growth negatively affects the capital adequacy ratio. Sathuva (2018) showed that banks tend to reduce their capital adequacy ratio to take advantage of growth opportunities in a solid economic cycle. On the other hand, banks tend to increase the capital adequacy ratio during the economic downturn to reduce risks by Zayed et al. (2019). So, the hypothesis is:

H_4 Gross domestic product (GDP) positively impacts the capital adequacy ratio of commercial banks in Vietnam.

Consumer Price Index (CPI)

The consumer price index increased; the State Bank had to tighten monetary policy to reduce money in circulation by Hasan et al. (2019). However, the demand for loans of businesses and individuals was still huge can satisfy a small number of customers with signed contracts or efficient projects, with the acceptable level of risk. On the other hand, due to high deposit rates and high lending rates, this has worsened the bank's investment environment, and moral hazards will arise by Zayed et al. (2019). Thus, high inflation has weakened or even disrupted the capital market, significantly affecting the operation of commercial banks by Trecas (2017). Moreover, the volatility of prices, including the cost of capital, has undermined the confidence of investors and the public, making it difficult for customers to make decisions as well as financial institutions – Credit. Therefore, from the perspective of commercial banks, it is necessary to have measures to control inflation. So, the hypothesis is:

H_5 The consumer price index (CPI) positively impacts the capital adequacy ratio of commercial banks in Vietnam.

A research model for the internal and macroeconomic factors affecting the capital adequacy ratio of commercial banks in Vietnam following:

$$CARit = \alpha + \beta 1ROAit + \beta 2SIZEit + \beta 3LIQit + \beta 4GDPt + \beta 5CPIt + \varepsilon it$$

CAR is the dependent variable, and others are independent variables.

Table 1 showed five hypotheses for factors impacting the capital adequacy ratio of commercial banks in Vietnam. First, gross domestic product (GDP) positively impacts.

Table 1
RESEARCH HYPOTHESIS FOR FACTORS IMPACTING THE CAPITAL ADEQUACY RATIO OF COMMERCIAL BANKS IN VIETNAM

Hypothesis	Content	Expectation
H1	The rate of return on total assets (ROA) negatively impacts the capital adequacy ratio of commercial banks in Vietnam	-
H2	Bank size (SIZE) negatively impacts the capital adequacy ratio of commercial banks in Vietnam	-
H3	The liquidity ratio (LIQ) negatively impacts the capital adequacy ratio of commercial banks in Vietnam	-
H4	Gross domestic product (GDP) positively impacts the capital adequacy ratio of commercial banks in Vietnam	+
H5	The consumer price index (CPI) negatively impacts the capital adequacy ratio of commercial banks in Vietnam	-

Source: Author suggestion

METHODS OF RESEARCH

In this article, the author applied the Generalized Method of Moments (GMM) to estimate data. And this method is to overcome endogeneity, variable variance, and autocorrelation. This method was proposed and developed. In this study, the author uses the two-step GMM method.

$$CARit = \alpha + \beta 1ROAit + \beta 2SIZEit + \beta 3LIQit + \beta 4GDPt + \beta 5CPIt + \varepsilon it$$

In which: Dependent variable: CAR is capital adequacy ratio;

Explanatory variable: ROA: return on total assets; SIZE: bank size; LIQ: liquidity; Gross domestic product (GDP); and Consumer price index (CPI); ε i, t: overall error.

The author uses descriptive statistics to describe the essential data collected from 18 Vietnamese commercial banks from 2009 to 2019. Descriptive statistics show the use of data. Graphs continued depicting the data. To understand the phenomena and make the right decisions, the basic methods of data description through descriptive statistics tables such as mean, maximum, minimum, standard deviation.

The economy affected the capital adequacy of Vietnamese commercial banks. Quantitative research methods are used in data collection, descriptive statistics, model testing, estimating variables, and assessing the impact of internal and macro-economic factors. Specifically, the research model and data analysis method used the cross-table data in the study. Based on the overview of previous studies and the practice in Vietnamese commercial banks, the author proposes a research model and research variables suitable for conditions in Vietnam.

The correlation coefficient indicates whether the evaluated and tested variables correlated with each other through Pearson's coefficient (r). The correlation coefficient (r) is a statistical indicator that measures the correlation between two variables. The correlation coefficient has a value from -1 to 1.

OLS and GMM is a regression model published by Lars Peter Hansen in 1982 in *"Large Sample Properties of Generalized Methods of Moments Estimators"*. It is to see the degree of

influence of factors on capital adequacy. The article used the Generalized Momentum estimation method - GMM to perform regression of research data.

GMM is a combination of popular estimation methods such as OLS. Therefore, GMM is a superior method in solving the endogenous problem of the research model (as pointed out in the research gap section), ensuring the research results are reliable by Bariff & Michael (2018).

Finally, to ensure that the accuracy of the built regression equation is appropriate, the author also carried out a series of tests for hypothesis violation in multiple linear regression. The hypothesis violations tested in this section include linear relationship regular distribution of residuals. Besides, the residuals' independence, also known as autocorrelation (using Durbin - Watson statistics), multicollinearity, variance inflation factor (VIF), measures multicollinearity in a set of multiple regression variables. Mathematically, the VIF for a regression model variable is equal to the ratio of the overall model variance to the variance of a model that includes only that single independent variable.

RESEARCH RESULTS

Descriptive statistics for factors impacting the capital adequacy ratio of 18 commercial banks in Vietnam from 2009 to 2019, the author had results following:

Table 2
DESCRIPTIVE STATISTICS FOR FACTORS IMPACTING THE CAPITAL ADEQUACY RATIO OF COMMERCIAL BANKS IN VIETNAM

	N	Minimum	Maximum	Mean	Std. Deviation
CAR	198	0.104	0.178	0.13594	0.015559
ROA	198	0.001	0.077	0.01098	0.010043
SIZE	198	6.862	9.173	7.96834	0.502831
LIQ	198	0.046	0.533	0.19291	0.091409
GDP	198	5.030	7.080	6.20182	0.694706
CPI	198	0.630	18.580	6.15455	4.738169

Source: Data processed by Eviews 10.0

Table 2 showed 198 observed variables from 18 commercial banks for the period 2009-2019. The above result is excellent because the standard deviation in each year does not change much.

Table 3
CORRELATIONS FOR FACTORS IMPACTING THE CAPITAL ADEQUACY RATIO OF COMMERCIAL BANKS IN VIETNAM

		CAR	ROA	SIZE	LIQ	GDP	CPI
CAR	Pearson Correlation	1	-0.353**	-0.551**	-0.230**	0.168*	-0.353**
	Sig. (2-tailed)		0.000	0.000	0.001	0.018	0.000
	N	198	198	198	198	198	198
ROA	Pearson Correlation	-0.353**	1	0.012	-0.105	-0.051	0.093
	Sig. (2-tailed)	0.000		0.863	0.141	0.477	0.190
	N	198	198	198	198	198	198
SIZE	Pearson Correlation	-0.551**	0.012	1	-0.203**	0.279**	-0.233**
	Sig. (2-tailed)	0.000	0.863		0.004	0.000	0.001
	N	198	198	198	198	198	198
LIQ	Pearson Correlation	-0.230**	-0.105	-0.203**	1	-0.290**	0.387**
	Sig. (2-tailed)	0.001	0.141	0.004		0.000	0.000
	N	198	198	198	198	198	198
GDP	Pearson Correlation	0.168*	-0.051	0.279**	-0.290**	1	-0.432**
	Sig. (2-tailed)	0.018	0.477	0.000	0.000		0.000
	N	198	198	198	198	198	198
CPI	Pearson Correlation	-0.353**	0.093	-0.233**	0.387**	-0.432**	1
	Sig. (2-tailed)	0.000	0.190	0.001	0.000	0.000	

	N	198	198	198	198	198	198
**. Correlation is significant at the 0.01 level (2-tailed).							
*. Correlation is significant at the 0.05 level (2-tailed).							

Source: Data processed by Eviews 10.0

Table 3 showed that matrix analysis of correlation coefficients between variables shows no high correlation between variables. The highest correlation value is 0.551<0.8. The VIF exaggeration coefficient test results for the VIF values of the explanatory variables are all less than 10, showing that the correlation between the explanatory variables is relatively weak. The model does not have multicollinearity.

Besides, Table 3 showed 198 observed variables from 18 commercial banks for the period 2009-2019. The above results showed that CAR with Roa, Size, Liq, Gdp, and Cpi with a significance level of 1%. Table 3 shows that the Pearson correlation coefficient (Pearson correlation coefficient, denoted r) is a test statistic that measures the systematic relationship between dependent variables and independent variables. The correlation coefficient will be r = 0: Two variables have no linear correlation; r=1; r=-1: Two variables have an absolute linear relationship. r<0: Negative correlation coefficient. The value of variable x increases, the value of variable y decreases, and vice versa. The value of variable y increases, the value of variable x decreases. r>0: Positive correlation coefficient. The value of variable x increases, the value of variable y increases, and vice versa, the value of variable y increases, and variable x also increases. The above results showed that Car correlated with Roa, Size, Size, Gdp, Cpi at the significance level of 1%.

Table 4
TESTING OLS FOR FACTORS IMPACTING THE CAPITAL ADEQUACY RATIO OF COMMERCIAL BANKS IN VIETNAM

Dependent Variable: CAR				
Method: Least Squares				
Date: 06/26/21 Time: 11:22				
Sample: 1 198				
Included observations: 198				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Probability**
C	0.313205	0.011499	27.23669	0.0000
ROA	-0.512332	0.061688	-8.305278	0.0000
SIZE	-0.022032	0.001278	-17.23329	0.0000
LIQ	-0.040795	0.007429	-5.491453	0.0000
GDP	0.003002	0.001001	2.998533	0.0031
CPI	-0.001109	0.000151	-7.327932	0.0000
R-squared	0.705948	Mean dependent var		0.135939
Adjusted R-squared	0.698291	S.D. dependent var		0.015559
S.E. of regression	0.008547	Akaike info criterion		-6.656749
Sum squared resid	0.014024	Schwarz criterion		-6.557105
Log-likelihood	665.0181	Hannan-Quinn criteria.		-6.616416
F-statistic	92.18934	Durbin-Watson stat		0.664482
Prob(F-statistic)	0.000000			

Source: Data processed by Eviews 10.0

Table 4 showed that the OLS is a regression model in which all coefficients are constant over time and according to the individual characteristics of each individual. The author will not consider the data set in terms of space and time. But OLS is purely a conventional OLS model estimate. This method will evaluate the effect of the individual characteristics of each individual to be the same. However, the OLS regression method supplied the best, unbiased, efficient linear estimator. The results showed that factors such as Roa, Size, Liq, Gdp, and Cpi affecting

Car at a 1% significance level. Besides, Car is the dependent variable, and the rest are independent variables.

Table 5
TESTING GMM FOR FACTORS IMPACTING THE CAPITAL ADEQUACY RATIO OF COMMERCIAL BANKS IN VIETNAM

Dependent Variable: CAR				
Method: Generalized Method of Moments				
Estimation weighting matrix: HAC (Bartlett kernel, Newey-West fixed				
Standard errors & covariance computed using estimation weighting				
Instrument specification: CAR C ROA SIZE LIQ GDP CPI				
Variable	Coefficient	Std. Error	t-Statistic	Probability
C	0.308967	0.015897	19.43532	0.0000
ROA	-0.500253	0.115618	-4.326764	0.0000
SIZE	-0.021715	0.001786	-12.15613	0.0000
LIQ	-0.036651	0.011501	-3.186923	0.0017
GDP	0.002724	0.001031	2.643426	0.0089
CPI	-0.000894	0.000127	-7.033533	0.0000
R-squared	0.693295	Mean dependent var		0.135939
Adjusted R-squared	0.685308	S.D. dependent var		0.015559
S.E. of regression	0.008728	Sum squared resid		0.014628

Source: Data processed by Eviews 10.0

Table 5 showed five factors: Roa, Size, Liq, Gdp, and Cpi affecting Car at a 1% significance level. Data showed a total of 198 observed variables from 18 commercial banks for the period 2009-2019.

Table 6
TESTING VIF FOR FACTORS IMPACTING THE CAPITAL ADEQUACY RATIO OF COMMERCIAL BANKS IN VIETNAM

Model	**Collinearity Statistics**	
	Tolerance	**VIF**
(Constant)		
ROA	0.966	1.035
SIZE	0.897	1.115
LIQ	0.804	1.244
GDP	0.767	1.305
CPI	0.721	1.387

Source: Data processed by Eviews 10.0

Table 6 showed five factors: Roa, Size, Liq, Gdp, and Cpi with VIF < 3.0. Data showed a total of 198 observed variables from 18 commercial banks for the period 2009-2019. The above results are consistent with the research data set, and the independent variables had no correlation with each other, or the phenomenon of multicollinearity does not occur.

CONCLUSIONS

The capital adequacy ratio is the basis used to measure a bank's capital adequacy. The capital adequacy ratio reflects the soundness and health of a bank to ensure that banks can endure gain from operating losses. The capital adequacy ratio shows the intrinsic strength of the bank to

withstand losses in times of crisis. In addition, the higher the capital adequacy ratio, the greater the internal power of the bank, ensuring the smooth operation of the bank, thereby protecting the interests of shareholders, investors, and investors depositors. The Basel Committee's regulation on capital calculation is the international standard in calculating banks' capital adequacy ratio. The Basel Committee recommends that banks maintain capital adequacy ratios at a minimum to control the stability and performance of the financial system. Data showed a total of 198 observed variables from 18 commercial banks for the period 2009-2019. Besides, research results showed that five factors such as Roa, Size, Liq, Gdp, and Cpi affecting Car at a 1% significance level. The above result is a fundamental scientific basis for the author to propose the following policy implications.

Policy Implications

Based on the results mentioned above, the author enhances the following policy implications:

(1) The research results showed that the impact of return on total assets (ROA) on capital adequacy ratio (CAR) of Vietnamese commercial banks in the period 2009-2019 is harmful and has an estimated coefficient is -0.5002 with a standard error of 0.1156 (p = 0.000). That is, return on total assets (ROA) increases by 1 unit, the capital adequacy ratio (CAR) of commercial banks decreases by 0.5002 units, provided other factors remain unchanged at the level of significance of 1%. Based on the above results, commercial banks should focus on improving financial capacity, focusing on increasing charter capital from issuing shares to foreign investors, financial investors, and investors. In addition, they are implementing other capital-raising measures such as issuing tier-2 bonds, raising the Car from the surplus, issuing additional shares, and increasing the Car from the internal resources of Vietnamese commercial banks.

(2) The research results showed that the impact of bank size (SIZE) on capital adequacy ratio (CAR) of Vietnamese commercial banks in the period 2009-2019 is not positive and has an estimated coefficient of -0.0217 with the standard error is 0.0017 (p = 0.000). The bank size (SIZE) increases by 1 unit, the capital adequacy ratio (CAR) of Vietnamese commercial banks decreases by 0.0217 units, provided other factors remain unchanged at the 1% significance level. Based on the above results, banks need to improve and expand banking services to enhance payment deposits. Developing activities to attract capital in the inter-bank market through inter-bank payment services increases the proportion of economic organizations' deposits by improving the service quality. In addition, expand and diversify forms of foreign currency capital mobilization. Besides, commercial banks need to improve profitability and liquidity. If the liquidity ratio (LIQ) increases by 1 unit, the capital adequacy ratio (CAR) of Vietnamese commercial banks will decrease by 0.0366 units, provided other factors remain constant at the 1% significance level.

(3) Research results show that the impact of liquidity (LIQ) on the capital adequacy ratio (CAR) of Vietnamese commercial banks in the period 2009-2019 is not positive and has an estimated coefficient of -0.0366 with the standard error is 0.011 (p = 0.001). Based on the above results, banks need to increase their capital by retaining profits depending on the bank's profit level, which may not be enough to meet the bank's growing prosperity. Therefore, to raise the Car, banks can issue common shares to attract capital from domestic and foreign investors: issue new ordinary shares, convert bonds into common shares.

(4) Research results showed that the impact of Gross Domestic Product (GDP) on capital adequacy ratio (CAR) of Vietnamese commercial banks in the period 2009-2019 is positive and has an estimated coefficient of 0.0027 with a standard error of 0.0010 (p = 0.008). When the economic growth rate (GDP) increases by 1 unit, the capital adequacy ratio (CAR) of Vietnamese commercial banks increases by 0.0027 units, provided other factors remain constant at the 1% significance level. Based on the above results, the Government continues to reform key policies: Policies need reform related to many issues, such as infrastructure investment and connectivity promotion; adaptation to climate change; train, and maintain high-quality skilled human resources. Besides, the Government needs to have sanctions to ensure the publicity and transparency of information on production and business activities and the annual financial performance of enterprises. Furthermore, strictly handle reporting

and financial information mistakes, specify responsibilities for the bank's head, and improve bank management capacity.

(5) Research results showed that the impact of the consumer price index (CPI) on the capital adequacy ratio (CAR) of Vietnamese commercial banks in the period 2009-2019 is not positive and has an estimated coefficient of -0.000894 with a standard error of 0.000 (p=0.000). When the consumer price index (CPI) increases by 1 unit, the capital adequacy ratio (CAR) of Vietnamese commercial banks decreases by 0.000894 units, provided other factors remain constant at the 1% significance level. Based on the above results, the Government needs to control the spending of the state budget from the central to local level to ensure savings and efficiency in budget spending: review the spending structure, cut the investment is not feasible, and welfare expenditures are beyond the capacity of the economy, renovating the state management apparatus which is cumbersome and ineffective, causing a waste of the state budget. Besides, the State Bank of Vietnam continues to operate a proactive and flexible monetary policy, contributing to controlling inflation, stabilizing the macroeconomy, and supporting economic growth.

REFERENCES

Bariff, E.G., & Michael S. (2018). The determinants of bank capital ratios in an underdevelopment economy. *Journal of Financial Economics, 5*(3), 155-172.

Bosdone, C.M. (2017). Determinants of capital adequacy ratio in banking sector: An empirical analysis from Singapore. *The British Accounting Review, 9*(3), 11-29.

Chowdhury, S., Mishu, A.A., Uddin, N., Tasneem, S., & Zayed, N.M. (2019). Strategic handout of economic sides to economic extension in Bangladesh: an area bound test approach. *Academy of Strategic Management Journal*, 18(4), 1-6.

Hasan, K.B.M.R., & Zayed, N.M. (2018). The new basel-iii capital accord: Capability of the banks in adapting and adopting the new regime in Bangladesh. *International Journal of Development Research (IJDR)*, 8(9), 22782-22791.

Hasan, K.B. M. R., Zayed, N.M., & Islam, M.R. (2019). Corporate governance and non-performing loans: A study on commercial banks in Bangladesh. *International Journal of Strategic Management & Marketing (IJSMM)*, 1(3), 1-12.

Islam, M.R., Kabir, S., Akter, R., Kulsum, U., Roufuzzaman, M., & Zayed, N.M. (2019). A Strategic Analysis on the User Acceptance, Challenges, and Prospect of Internet Banking in Bangladesh. *Academy of Strategic Management Journal*, 18(6), 1-7.

Karim, M.Z.A. (2016). The Thailand banks' directors and their risk-taking behavior: A corporate governance and finance perspective. *Journal of Management Studies, 6*(7), 191-211.

Khurram, S.T. (2017). Determinants of capital adequacy ratio in banking sector: An empirical analysis from Cannada. *Academy of Economics Research Journal, 3*(5), 21-39.

Kultan, K.G. (2016). Determinants of capital adequacy ratio in banking sector: An empirical analysis from Pakistan. *Academy of Economic Research Journal, 4*(5), 11-29.

Marsida, H.G. (2016). The determinants of capital adequacy ratio in the albanian banking system during 2007-2015. *International Journal of Economics, 1*(3), 1-10.

Mishu, A.A., Afroz, N., Chowdhury, S., & Zayed, N.M. (2019). Acceptance of e-banking by the consumers of dhaka city, Bangladesh. *International Journal of Family Business & Management, 3*(2), 1-8.

Mishu, A.A., Chowdhury, S., & Zayed, N.M. (2020). An analysis of the causal relationship among economic growth, export, and import in Bangladesh. *International Journal of Family Business & Management, 4*(1), 1-5.

Sathuva, G.M. (2018). Factors affecting capital adequacy ratio of commercial banks: The Kenyan scenario. *International Journal of Applied Economics and Finance, 7*(2), 135-147.

Trecas, R.T. (2017). Determinants of capital adequacy ratio in selected Bosnian banks. *Journal of Social Sciences, 8*(2), 49-62.

Yonas, M.F. (2017). Determinants of capital adequacy ratio of Angola commercial banks. *European Scientific Journal, 2*(5), 15-27.

Zayed, N.M., Chowdhury, F.N., Hasan, K.R., Nargis, N., & Shahi, S.K. (2020). Testing melitz model to examine purchasing power parity in bangladesh: 1980-2019. *International Journal of Management, 11*(8).

Zayed, N.M., Chowdhury, F.N., Kamruzzaman, M., & Islam, M.S. (2019). Factors influencing purchasing power parity (ppp) in bangladesh economy: 1986-2017. *Academy of Strategic Management Journal, 18*(2), 1-8.

Zayed, N.M., Islam, M.R., & Hasan, K.R. (2018). Testing Phillips curve to examine the inflation rate regarding unemployment rate, annual wage rate and GDP of Philippines: 1950-2017. *Academy of Accounting and Financial Studies Journal*, *22*(5), 1-9.

Zayed, N.M., Kamruzzaman, M., Chowdhury, S., Tasneem, S., & Islam, M.S. (2019). A strategic analysis of patterns of growth in advanced countries during 1870-2006. *Academy of Strategic Management Journal*, *18*(4), 1-6.

Zayed, N.M., Kamruzzaman, M., Mumu, F.E., Hasan, K.R., & Islam, M.S. (2019). Strategic evaluation of macroeconomic performance of USA: 1929-2008. *Academy of Strategic Management Journal*, *18*(5), 1-5.

Zayed, N.M., Khan, S., Shahi, S.K., & Afrin, M. (2020). An analysis on the pivotal relationship among export, exchange rates and economic growth in the USA: 1960-2018. *MAT Journals*, 20-24.

Zayed, N.M., Mustafa, J., Hasan, K.R., Sahajalal, M., & Islam, M.S. (2019). Strategic determinants and stability of real exchange rate in Bangladesh: 1976-2017. *Academy of Strategic Management Journal*, *18*(3), 1-7.