



**OHLSON'S MODEL AS A TOOL TO PREDICT PERFORMANCE: A COMPARATIVE STUDY BETWEEN COMMERCIAL BANK OF CEYLON PLC AND BANKING INDUSTRY**

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**ABSTRACT**

The Banking Industry provides a substantial contribution to the Sri Lankan economy. This research aims to compare the forecast performance indicators of the Commercial Bank of Ceylon PLC with the Banking industry. The researcher has selected the Commercial Bank of Ceylon PLC as a sample since it is ranked 1st in the Banking Sector on Colombo Stock Exchange and the only Sri Lankan bank to be ranked for the 10th consecutive year by "The Banker". In this study, the researcher has used statistical software named R to analyze the data considering Profitability, Liquidity, and Capital Adequacy indicators. Data has been gathered over ten years from 2009 to 2018, and the predictions were made adopting Ohlson's Forecasting Model for the subsequent years 2019 and 2020. The Commercial Bank PLC is on track with the industry norms except in areas, especially Net Interest Margin, Liquidity, and Core Capital Ratio, where significant improvements are needed to bring their performance on track, the findings reveal. The Ohlson model's robustness was tested using Mean Absolute Percentage Error (MAPE). It

**confirms that the model best fits the two variables used in the study named Core Capital Ratio and Total Capital Ratio.**

**Keywords – Financial performance, Banking Industry, Profitability, Liquidity, Capital Adequacy**

## **1. INTRODUCTION**

Commercial Bank of Ceylon, a public limited company that belongs to the Banking Industry of Sri Lanka, is the largest private bank in the country with total assets of over 1 trillion. It has 266 branches and 830 ATMs throughout the country. The bank has expanded its operation across Sri Lanka, Bangladesh, Maldives, Myanmar, and Italy.

Sri Lanka's best bank has a big story dating back to the pre-independence era (Annual report, 2020). In the 1920s' during British colonial time, the commercial bank was born. However, in 1969, the Commercial Bank of Ceylon became an independent entity. The bank had been established with the adoption of the second constitution in 1978. It established its foreign currency banking unit to promote its offshore banking business in 1979. The Commercial Bank of Ceylon expanded its business with two associate companies named Commercial Insurance Service Pvt (Ltd) and Commercial Leasing Ltd. The Commercial Bank uses a state-of-the-art core banking system and ATM system at all its branches. This bank is the largest ATM provider in Sri Lanka, with ATMs installed across the country. Moreover, it provides the service such as utility bill payments, funds transfer between accounts, and many other functions in addition to cash withdrawals.

The Commercial Bank of Ceylon is the largest lender in Sri Lanka to SMEs for the past five years, with a total disbursement of Rs. 952 Bn. The US \$ 790 Mn's market capitalization accounted for 4.31% of the Colombo Stock Exchange's total market capitalization (Annual report, 2019). The Commercial Bank of Ceylon is the first private bank to exceed Rs.1000 Bn regulatory capital. Moreover, the Commercial Bank of Ceylon is the first Sri Lankan bank to be included in the top 1000 banks globally and has maintained this status over the past ten consecutive years. According to the above information, it is clear that the Commercial Bank of Ceylon provides a substantial contribution to the Sri Lankan economy. So, it is imperative to compare the Commercial Bank of Ceylon's performance with the industry average since it can be used as an essential piece of information to identify the Commercial Bank of Ceylon PLC's contribution to the banking industry and eventually to the nation.

During the British colonial period (1802 -1948), banking was introduced to the Sri Lankans as branches of foreign banks. In 1950, the Central Bank of Sri Lanka had been established under the Monetary Law Act No. 58 of 1949. The banking industry, which belongs to the service sector, provides a valuable service to the Sri Lankan economy. The banking sector provides 60% of the contribution to the gross domestic product of Sri Lanka. Commercial banks expanded their service from traditional to different kinds of new sectors. Investment, banking, finance, marketing advisory service, leasing, insurance, etc., can be identified as examples for new sectors.

In the early years, banking activities had been conducted manually. The development of technologies led to all the activities becoming controllable through computers and the internet, known as e-banking. New rules and regulations have been introduced to the banking sector owing to the vast competition among different private and state banks, locally and internationally.

The Banking Industry of Sri Lanka has been thriving amidst challenges. The last decade witnessed a surge in the services provided by the financial institutions, despite the setbacks. The country has twenty-six commercial banks now, operating as regulated by the Central Bank of Sri Lanka. Ten of them were formed locally, whereas the rest are functioning as foreign banks' branches. Most businesses in the country, both big and small, find the banking sector their staple source of financing.

The basic presumption, which supports a large part of the financial performance research and discussion, is that growing financial performance will improve organizations' capacities. The subject of financial performance and research into its estimation is well advanced within management and finance fields. If organizations need to confront the rivalry effectively, it is vital to accomplish powerful and productive financial performance. In this study, the researcher has selected one bank from the Banking Industry to analyze the financial performances with the banking sector's industry performance.

This study proposes discussing and comparing Profitability, Liquidity, and Capital Adequacy, which are financial performance indicators, to study the Commercial Bank of Ceylon's performance. It will help fulfil the need for a wide range of internal and external users to make their business decisions. To evaluate the Commercial Bank of Ceylon's internal performance, financial indicators are constructed from its financial statements. Through financial analysis, the company's performance can be predicted, leading to face future business threats successfully. On the practical dimension, this study may help decision-makers in the banking sector to focus on the critical financial

movements that may expand the bank positioning and performance positions compared with other banks. Such information should assist commercial banks with making suitable financial stratagems to achieve the planned performance.

This research intends to identify any trends between the Commercial Bank of Ceylon and the Banking Industry's performance metrics. In this context, the research objective is to compare the forecast performance metrics of the Commercial Bank of Ceylon PLC with the Banking Industry. Management can overcome their problems and determine what strategies could be used to achieve their financial goals through such information. Similarly, by comparing the selected bank's performance, current investors can know about their investment yield, whereas prospective investors can choose the best opportunity for their investment among possible alternatives. Further, the study seeks to contribute to multiple stakeholders by providing them with a clearer understanding of the future direction in the wake of unfolding megatrends.

## **2. LITERATURE REVIEW**

The Ohlson model (1995) aimed to formalize the relationship between accounting information and firm value (Silvestri & Veltri, 2012). The Ohlson model has been used to evaluate the relevance of historical accounting information, the accuracy of forecasting information and the model's efficiency in predicting a firm value and market expectations.

Multiple studies have analyzed and tested the Ohlson model to validate it with multiple variables. Martinez (2012) examined the reliability and validity of the Ohlson model to predict Latin American stock prices through an empirical application of a panel data analysis of 1,112 companies over the period from 2002 to 2009. The model can be used successfully in some countries in Latin America, the findings revealed. In these lines, Silvestri and Veltri (2012) tested the Ohlson model on the financial sector of the Italian Stock Exchange. Using multiple regression analysis, the researchers found that the relation between accounting variables and the market price is fully proved on the Italian Stock Exchange. This is one of the pioneering studies that tested the validity of the Ohlson model.

Zhang (2016) examined the value relevance of historical and forecast accounting information in the Chinese market using the Ohlson model along with the Feltham-Ohlson model. The test results reveal that contrary to several previous research studies, historical information by itself is more closely related to the current firm value rather than when it is combined with forecast information, whereas forecast information might have helped to improve the accuracy of models. Rivera et al. (2018), along the lines of Zhang, conducted a study to investigate the value of Big Data for AT&T by applying the Ohlson

model. The scholars intended to quantify the relevance of the relationship between accounting information and firm value. The findings reveal no statistically significant association between the constructs of the Ohlson model, big data, and firm value. The authors recommend expanding the sample size and/or examining more periods to get a vivid picture regarding the valuation of the Ohlson model and big data.

Aravind and Nagamani (2013) investigated the State Bank of India's financial performance for 2000-2012. The researchers have researched different ratios like Capital Adequacy Ratios, Asset quality Ratios, Capability Ratios, Profitability Ratios, and Liquidity Ratios. The researchers have examined that the bank's financial performance has been almost progressive over the operational periods considered for the study. The analysis shows the points where the banks need to increase and sustain financial performance development.

Aspal and Malhotra (2013) computed Indian public sector banks' financial performance using the CAMEL model and employing tests like Anova, F test, and arithmetic test for the data collected years of 2007-2011. They determined that the top two performing banks are Baroda and Andhra banks because of high capital adequacy and asset quality. The worst performer is the United Bank of India, owing to its management inefficiency, low capital adequacy, and inadequate assets and earning quality. The Central Bank of India secured the last position, followed by UCO Bank and Bank of Maharashtra.

Jeevarajasingam (2014) has studied the liquidity and profitability of Private Banks in Sri Lanka, which showed that liquidity ratio has a strong positive correlation with return on assets. In a similar context, Thayaparan and Pratheepan (2014) studied the total factor productivity growth of commercial banks in Sri Lanka. The outcomes presumed that relatively chosen private banks are more effective than state banks in the investigation time frame in Sri Lanka.

Anojan and Nimalathan (2014) conducted a comparative study on Financial Performance of State and Private Sector Commercial Banks in Sri Lanka. This investigation analyzes public and private business banks' financial performance utilizing the Capital Adequacy, Assets Quality, Management Soundness, Earnings, and Liquidity (CAMEL) rating framework in Sri Lanka from 2008-2012. In this investigation, the CAMEL rating framework used to analyze banks' financial performance is one of the quantitative methods, and it is generally utilized in the current world. CAMEL rating framework affirmed that the Commercial Bank of Ceylon PLC was one or stable. Bank of Ceylon (BOC) was two or more satisfactory, Hatton National Bank (HNB) PLC was rated as three or reasonable, and People's Bank rated as four or negligible. As

indicated by the CAMEL framework results, as scholars endorse, HNB PLC and People's Bank should expand financial performance through effective plans to contend and successfully uphold the business in the Sri Lankan banking area.

Velnamby and Anojan (2014) conducted a study on private and state banks' financial performance during and after the post-war period from 2007 to 2012 in Sri Lanka. The outcome has shown that private banks' financial performance is higher than the state banks' financial performance during this time. The state banks attempt to improve the financial performance to survive, and private banks attempt to accomplish the planned financial performance for long haul endurance.

Santamero and Watson (2015) conducted a research in which they explained that by enacting onerous regulations for the capital market, banks had reduced their credits, leading to the collapse of productive investments. They discussed that in terms of society, the best degree of capital for the financial framework should be resolved through the focuses where the latter results of the bank capital are accurately equivalent to the latter expenses of the bank capital.

Moudud-Ul-Huq (2017), in his research, examined the financial performance of the banking industry of Bangladesh for the period of 2013-2014. According to the composite rating system, in which the researcher ranked them, ten private commercial banks have been considered. CAMEL model has been used to evaluate the financial performances of these banks. The research disclosed that most banks rely more on the managerial capability in formulating strategic plans and the competent execution of their strategies. Upholding asset quality is the major challenge seen in the paper and is forecast to remain so.

Kobika (2018) investigated the financial performance of the banking sector in Sri Lanka, the purpose being the comparison of financial performance of state and private sector banks. The study compares state and private commercial banks' financial performance with the use of Capital Adequacy, Assets Quality, Management Soundness, Earnings, Liquidity (CAMEL) rating system in Sri Lanka from 2013-2017. Private sector banks fare better than state banks in terms of capital adequacy, earnings, and liquidity position of the banks, the findings demonstrated.

### **Spotting the Gap**

The development of the banking industry will be a boost to a country's economy. However, in Sri Lanka, there is a lack of comparative information relating to the banking industry's performance. Various researches conducted

by the Sri Lankan researchers relating to the banking industry have compared the state banks with private sector banks and disclosed the banks, which showed better performance in different periods. It is indispensable to compare a single bank's performance with the industry to give the stakeholders a deeper look of the areas in which the bank concerned outperforms the mainstream Banking Industry. Comparing the Commercial Bank of Ceylon's performance with the industry's performance will fill the lacuna created in the Banking industry of Sri Lanka due to lack of comparative information. Great deal of research has been done using the Ohlson Model for western countries, but no such research exists concerning Sri Lanka and, more specifically, the Banking industry. This has led to the researcher initiating the study, concentrating on this particular interest in these relatively less researched areas.

### **3. RESEARCH METHOD**

#### **Sample and Data Collection**

For any research study, data collection is the most crucial factor. The collection of data for the study directly affects the results which the researcher wants to achieve through the study. In this study, secondary data has been used throughout the research. The data was gathered from the banks' financial statements published by both CSE and the Commercial Bank of Ceylon to achieve the research's objective. By calculating vital financial ratios, the researcher obtained the research's annual data, from 2009 through 2018, of the Commercial Bank of Ceylon and Banking Industry. To evaluate industry data, Central Bank data were used.

#### **Forecasting Model**

The Ohlson model has been used in this study to evaluate historical accounting information's relevance in estimating future performance metrics. The Ohlson model (1995) is the best-known models of value relevance aimed at formalizing the relationship between accounting values and firm value. This model constitutes a solid theoretical framework for market evaluation based on fundamental accounting variables and other kinds of information that may be relevant in predicting firm value. The accounting information used in this study is based on the selected financial performance metrics as ROA, ROE, NIM, Liquid Assets Ratio, Core Capital Ratio, and Total Capital Ratio.

#### **Description of Variables Used in The Study**

The Table 1 shows the constructs, variables, and measurement indicators for operationalizing the study.

**Table 1: Operationalization of Variables**

<b>Construct</b>	<b>Variable</b>	<b>Measurement</b>	<b>Description</b>
Profitability Ratios	Return on Assets (ROA)	$(\text{Profit After Tax} \div \text{Average value of Total Assets}) * 100$	A profitability ratio calculated as profit after tax expressed as a percentage of average total assets, used along with ROE, as a measure of profitability and as a basis of intra-industry performance comparison.
	Return on Equity (ROE)	$(\text{Net Income} \div \text{Share Holders' Equity}) * 100$	After-tax profit less preferred share dividends, if any, expressed as a percentage of average ordinary shareholders' equity.
	Net Interest Margin (NIM)	$(\text{Net Interest Income} \div \text{Average Value of the Total Assets}) * 100$	The distinction between what a bank attains on resources, for example, advances and securities, and what it pays on liabilities, for example, deposits, refinance funds, and inter-bank borrowings expressed as a percentage of Average Total Assets.
Liquidity Ratios	Liquid Assets Ratio (LAR)	$(\text{Total Average Liquid assets} \div \text{Total Deposits}) * 100$	Liquid assets are held in cash or in a form that can be converted to cash readily, such as deposits with other Banks, Bills of Exchange, and Treasury Bills expressed as a percentage of Total Deposits.
Capital Adequacy Ratios	Core Capital Ratio (CCR)	$(\text{Tier I Capital} \div \text{Risk-Weighted Assets}) * 100$	Tier I capital is expressed as a percentage of Risk-weighted assets. It is also known as the Core Capital. Tier I Capital comprises of share premium, statutory reserve fund, the total of paid-up ordinary shares, non-cumulative, non-redeemable preference shares, general and other reserves, published retained profits, less goodwill. Risk-weighted assets are the face



amount of lower-risk assets that are discounted using risk weighting factors to reflect a relative risk per rupee among all types of assets.

Total Capital Ratio (TCR)  $(\text{Tier I Capital} + \text{Tier II Capital}) \div \text{Risk-Weighted Assets} * 100$

Total capital is the sum of Tier I capital and Tier II capital. Tier II capital consists of revaluation reserves, general provisions, hybrid capital instruments, and approved subordinated debentures. The percentage of risk-adjusted assets upheld by capital as characterized under the framework of risk-based capital norms established by the Bank for International Settlements (BIS) and as amended to suit local requirements by the Central Bank of Sri Lanka.

Source: Author's systemization

#### 4. DATA ANALYSIS AND FINDINGS

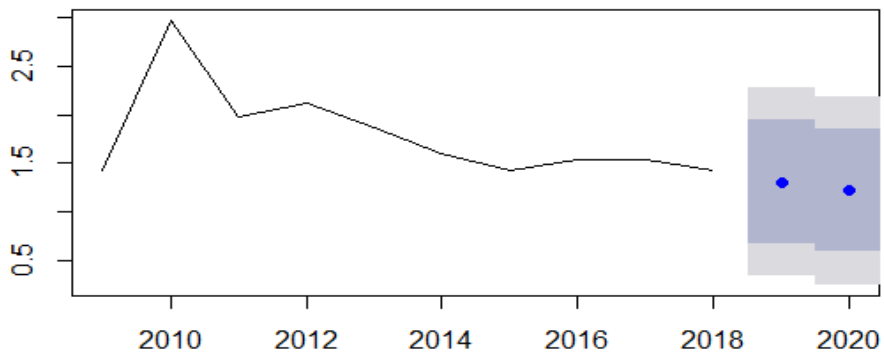
##### Compare The Forecast Performance Metrics of Commercial Bank of Ceylon and Banking Industry

###### Return on Assets

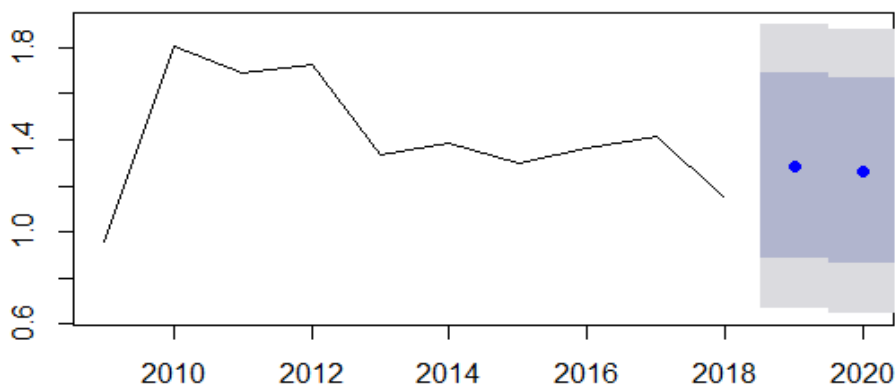
Table 2: Ohlson's forecasting estimates of Return on Assets

Forecast Data						
Year	CBC			BI		
	Point forecast	Interval forecast	Interval forecast	Point forecast	Interval forecast	Interval forecast
2019	1.30	0.33	2.28	1.28	0.67	1.9
2020	1.22	0.25	2.19	1.26	0.65	1.88

Note: The interval estimates at 95% confidence level



**Figure 1: Commercial Bank of Ceylon PLC - ROA**



**Figure 2: Industry Average – ROA**

In virtually every decision they make, managers of today consider different types of forecasts. In this context, the researcher has followed the Ohlson’s forecasting method using annual data from 2009 to 2018 to predict the Commercial Bank of Ceylon and Banking Industry's performance for 2019 and 2020. As it is apparent from table 2, the point estimates of Return on Assets of Commercial Bank of Ceylon were forecast to be at 1.3 in 2019 and 1.22 in 2020, while the estimates for Banking Industry were expected to be at 1.28 in 2019 and 1.26 in 2020. In interval estimates, the forecast values were expected to be within a minimal range for the Banking Industry than Commercial Bank of Ceylon. For instance, predictions of the interval estimate for Return on Assets for 2019, were between 0.33 and 2.28 for the Commercial Bank of Ceylon and between 0.67 and 1.9 for the Banking Industry, at 95% confidence interval.

*Return on Equity*

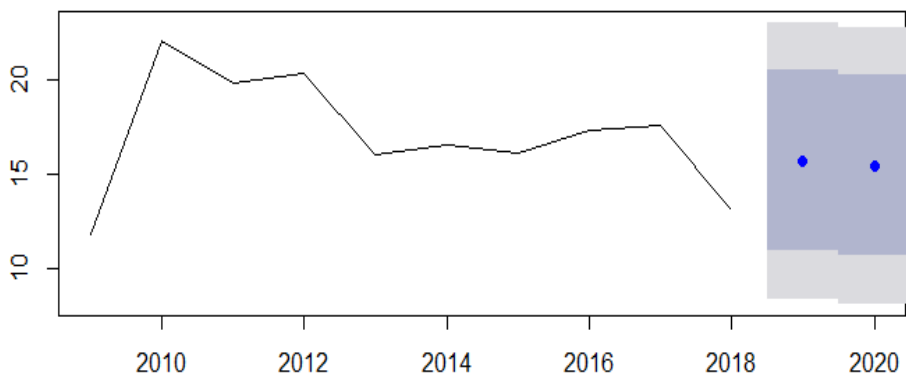
**Table 3: Ohlson's forecasting estimates of Return on Equity**

Forecast Data						
Year	CBC		BI			
	Point Forecast	Interval forecast	Point Forecast	Interval forecast		
2019	17.48	13.23 21.73	15.70	8.43	22.96	
2020	17.39	13.14 21.64	15.45	8.18	22.72	

Note: The interval estimates at 95% confidence level



**Figure 3: Commercial Bank of Ceylon PLC - ROE**



**Figure 4: Industry Average - ROE**

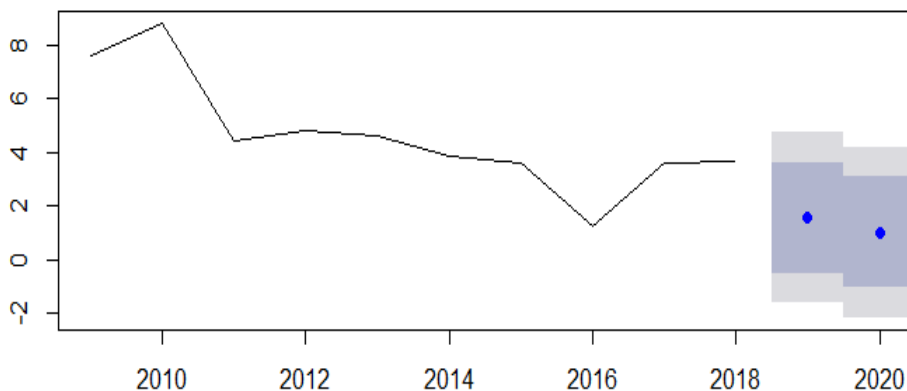
Table 3 shows the Point Forecast values of ROE for the CBC and the Banking Industry for 2019 and 2020. As revealed from the table and figures, the Commercial Bank of Ceylon's forecast data were 17.48 and 17.39 for 2019 and 2020 respectively. The low and high value remains between 13.23 and 21.73 for 2019 and 13.14 to 21.64 for 2020 at a 95% confidence level. When considering the Banking Industry, the forecast value is 15.70 and 15.45 for 2019 and 2020. The low and high values vary between 8.43 to 22.96 for 2019 and 8.18 to 22.72 for 2020. The Commercial Bank of Ceylon remains well above the Banking Industry, as apparent from the forecast results.

*Net Interest Margin*

**Table 4: Ohlson's forecasting estimates of Net Interest Margin**

Forecast Data						
Year	CBC			BI		
	Point Forecast	Interval forecast		Point Forecast	Interval forecast	
2019	1.57	-1.59	4.72	3.50	2.99	4.01
2020	1	-2.15	4.17	3.40	2.68	4.11

Note: The interval estimates at 95% confidence level

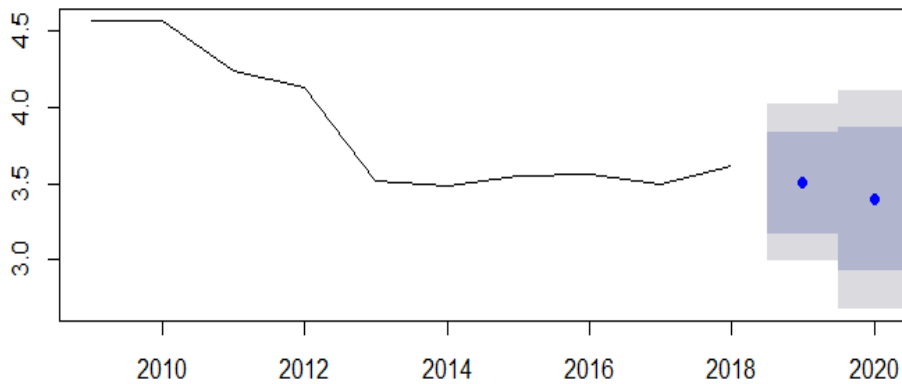


**Figure 5: Commercial Bank of Ceylon PLC - NIM**

As a critical component of profit, the researcher has predicted the NIM ratio for 2019 and 2020 at 95% significance level. Table 4 portrays the value of 1.57 and 3.50 as forecast data for the Commercial Bank of Ceylon and Banking Industry for 2019 respectively. The low and high values remain

between -1.59 to 4.72 for the Commercial Bank of Ceylon and 2.99 to 4.01 for the Banking Industry.

For the year 2020, the Banking Industry's predicted value is 2.68, while the Commercial bank of Ceylon's is 1.0. The NIM of CBC remains between -2.15 to 4.17, while the banking industry's value remains between 2.68 to 4.11 in 2020. It is evident from the table that the Commercial Bank of Ceylon's performance as proxied by NIM is inferior to the Banking Industry for both years.



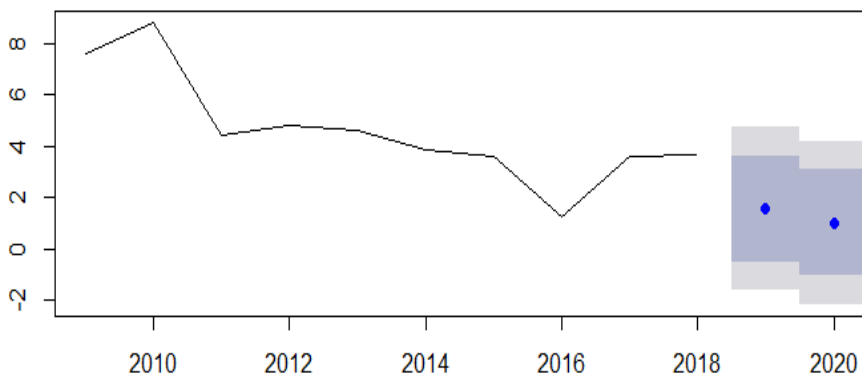
**Figure 6: Industry Average - NIM**

*Liquid Assets Ratio*

**Table 5: Ohlson's forecasting estimates of Liquid Assets Ratio**

Forecast Data						
Year	CBC			BI		
	Point Forecast	Interval forecast		Point Forecast	Interval forecast	
2019	24.96	15.94	33.98	29.17	21.63	36.71
2020	24.14	15.12	33.17	28.31	20.77	35.85

Note: The interval estimates at 95% confidence level



**Figure 7: Commercial Bank of Ceylon PLC - Liquid Assets Ratio**



**Figure 8: Industry Average - Liquid Assets Ratio**

The above table and figures reveal the forecast data regarding liquidity for the year 2019 and 2020. CBC's predicted value is disclosed to be 24.96 for the year 2019 and 29.17 for the Banking Industry. At 95 % confidence level, the predicted data varies between 15.94 to 33.98 for the Commercial Bank of Ceylon and 21.63 to 36.71 for the Banking Industry.

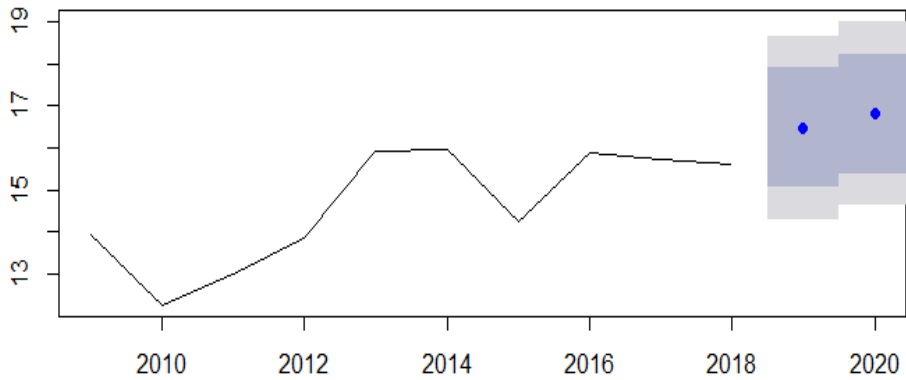
The Commercial Bank of Ceylon shows 24.14 as forecast value for 2020. When it comes to the banking industry, it is revealed to be 28.31. The interval estimates for Liquidity ratio were projected to be between 15.12 and 33.17 for the Commercial Bank of Ceylon and between 20.77 and 35.85 for the Banking Industry for the year 2020 at 95% confidence interval. The point forecast values impart that Commercial Bank of Ceylon PLC is far behind the industry norms in both the years.

*Capital Adequacy - Core Capital Ratio*

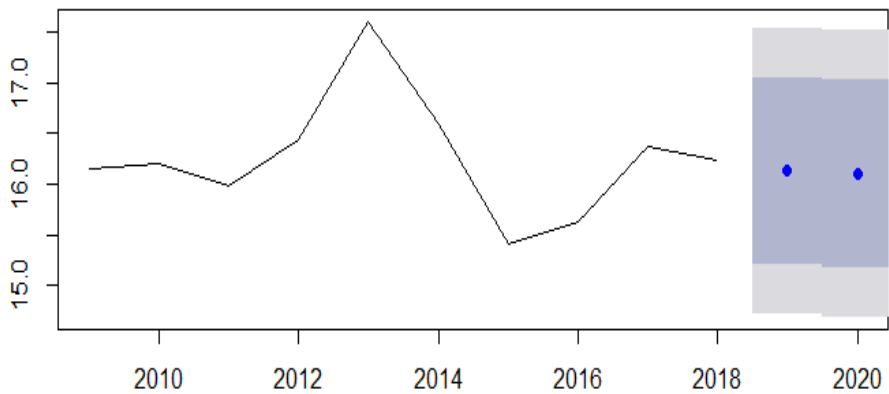
**Table 7: Ohlson's forecasting estimates of Total Capital Ratio**

Forecast Data						
Year	CBC		BI			
	Forecasting Data	Interval forecast	Forecasting Data	Interval forecast	Forecasting Data	Interval forecast
2019	16.48	14.30	18.66	16.13	14.71	17.54
2020	16.81	14.63	19.00	16.10	14.69	17.52

Note: The interval estimates at 95% confidence level



**Figure 11: Commercial Bank of Ceylon PLC - Total Capital Ratio**



**Figure 12: Industry Average - Total Capital Ratio**

Table 7 reports the two years of forecast data related to the Commercial Bank of Ceylon and the Banking Industry's Total Capital Adequacy. As apparent from the above table, the Commercial Bank of Ceylon exhibits a value of 16.48 for the year 2019 as the forecast value. Under the 95% confidence level, the low and high values are disclosed to be 14.30 and 18.66, respectively.

When it comes to the Banking Industry, the forecast value is obvious as 1.28 for the year 2019. At 95% confidence level, low and high values are shown as 0.67 and 1.90, respectively. As proved from table 7, Total Capital Adequacy of CBC for the year 2020 shows 16.81 as the forecast value. At 95% confidence level, there is a possibility of variation in the Total Capital Adequacy of CBC from 14.63 to 19.00. In the case of Banking Industry, the forecast value is 16.10, and it varies between 14.69 to 17.52. As mentioned above, the forecast results signal that the Commercial Bank of Ceylon's Capital Adequacy Ratio as proxied by Total Capital Ratio is on par with that of the Banking Industry for 2019 and 2020.

### Determining the Aptness of the Ohlson's Model via Residuals and Mean Absolute Percentage Error (MAPE)

**Table 8: Analysis of Residuals**

Year	Metrics	Commercial Bank of Ceylon PLC				Banking Industry			
		Actual	Forecast	Residuals	MAPE	Actual	Forecast	Residuals	MAPE
2019	ROA	1.27	1.30	(0.03)	2.36	0.9	1.28	(0.38)	42.22
	ROE	13.54	17.48	(3.94)	29.09	10.3	15.70	(5.40)	52.42
	NIM	3.51	1.57	1.94	55.27	3.60	3.50	0.10	2.77
	LAR	30.42	24.96	5.46	17.94	31	29.17	1.83	5.90
	CCR	12.30	11.89	0.41	3.33	13	12.84	0.16	1.23
	TCR	16.15	16.48	(0.33)	2.04	16.50	16.13	0.37	2.24
2020	ROA	1.05	1.22	(0.17)	16.19	1	1.26	(0.26)	26
	ROE	11.28	17.39	(6.11)	54.16	11.40	15.45	(4.05)	35.52
	NIM	3.17	1	2.17	68.45	3.10	3.40	(0.30)	9.67
	LAR	44.99	24.14	20.85	46.34	37.30	28.31	8.99	24.10
	CCR	13.22	11.87	1.35	10.21	13.0	12.65	0.35	2.69
	TCR	16.82	16.81	0.01	0.05	16.5	16.10	0.4	2.42

Table 8 reveals the actual values, forecasts, forecast errors, and the Mean Absolute Percentage Error (MAPE) of the performance metrics for the Commercial Bank of Ceylon PLC and the Banking Industry for the years 2019 and 2020. The difference between the observed value ( $Y_t$ ) and the predicted value ( $F_t$ ) is called the forecast error or the residual. The errors measure how closely the model fits the actual data at each point. A perfect fit



would lead to residuals of 0 each time. The table exemplifies the residuals close to 0 for the metrics named TCR and CCR. It is signaling that the model is robust at forecasting the variables mentioned above. The forecast errors were significantly deviating from 0 for the variables named ROA, ROE, NIM, and LAR. Therefore, the model is considered not to provide the best fit for these variables. This implication is reaffirmed by calculating the Mean Absolute Percentage Error (MAPE). It is irresponsible to set arbitrary forecasting performance targets without the context of the forecastability of the data. Further, there is no hard and fast rule on what value of MAPE should be the cause for concern. Even though it is preferable to set +/- 10% error term as threshold. The firm with the lowest error probably has the data that is easiest to forecast.

## **5. CONCLUSION AND DIRECTIONS FOR FUTURE RESEARCHES**

### **Conclusion**

Financial performance is crucial to almost every bank to remain well in the industry. It comprises a wide range of dimensions, namely Capital Adequacy, Assets Quality, Profitability, and Liquidity. Forecasting data plays a crucial role in defining the way the banks are functioning and are of utmost importance to the current and prospective investors. Commercial Bank of Ceylon PLC is no exception to it. Its development determines the growth of the Banking Industry of the country. The Commercial Bank of Ceylon PLC is the largest private bank in Sri Lanka, providing a substantial contribution to the Sri Lankan economy. It is crucial to predict CBC's performance and the entire industry since investors can use that information to make prudent investment decisions.

As it is evident from the forecast results, the CBC remains well above the industry in terms of profitability as defined by ROE and ROA except for the point forecast value of ROA, which was comparatively low in the year 2020. In terms of Net Interest Margin, the banking industry remains well above the Commercial Bank of Ceylon PLC. NIM's point forecast values were recognized to be lower than the industry average in both years, 2019 and 2020. It is signaling that attention has to be paid by the Board of Commercial Bank PLC to boost the NIM since if the downward pattern continues, it would be detrimental to their success. Commercial Bank of Ceylon PLC's liquidity ratio remains well below the industry average, and no substantial variations were observed from 2019 to 2020.

In terms of Capital Adequacy as proxied by Tier I, Commercial Bank of Ceylon PLC remains below the Banking Industry. However, the Industry's Capital Adequacy ratio defined by Tier II is superior to that of the Commercial Bank of Ceylon PLC in 2019 and 2020. Overall, it can be

concluded that the Commercial Bank PLC is on track with the industry norms except in areas, especially NIM, Liquidity, and Capital Adequacy Ratio as proxied by Tier I, where significant improvements are needed to bring their performance on track.

The investors can decide by observing and depending on these results because the CBC has remained at a considerable profit level. On the other hand, as a single organization, the CBC has the profitability performance above the industry most of the time; regulators can increase the industry's performance by making the other banks encourage looking at the CBC. To stimulate the industry's liquidity position, the CBC should try to increase current assets via recovery of the loan and advances, reduce the investment in non-current assets, and reduce short-term borrowings.

The predictive effectiveness of Ohlson's model tested using MAPE reveals that the model is best in forecasting the variables, especially CCR and TCR since they have the MAPE values, which are found to be less than 10%. According to Lewis (1982), MAPE value of  $< 10$  signaling highly accurate forecasting followed by 10 to 20 - Good forecasting; 20 to 50 - Reasonable forecasting; and  $> 50$  - Inaccurate forecasting. The model inaccurately forecasts the ROE for the Banking Industry and the Commercial Bank of Ceylon PLC in 2019 and 2020 respectively, and NIM for the Commercial Bank of Ceylon for 2019 and 2020.

### **Directions for Future Researches**

1. Since the research is a comparative study involving the performance metrics of Commercial Bank of Ceylon PLC against the industry average, findings would not assist the broader stakeholders.
2. There is a notion that past performance is not indicative of future results. It implies that forecast information might not reflect the actual picture of the Commercial Bank of Ceylon PLC and the Banking industry. Therefore, future researchers can take the study to the next level by broadening the techniques from the model used in the study to predict performance. Technical analysis could be one such technique, among others.
3. The study has utilized only six performance indicators of Commercial Bank of Ceylon PLC and compared them with the industry average. Therefore, future researchers could bring forward this idea by incorporating more variables into the study to get to a more analytic ground of performance.

4. As the study is a positivist approach to predicting performance, the interpretive approach can substantially shape the results since corporate performance is a composite term that encompasses financial and non-financial performance.

## REFERENCES

- Ahmeti, S., Hoti, A., & Alshiqi, S. (2014). Analysis of Financial Performance in the Banking System in Kosovo-the Period 2006-2012. *Journal of Knowledge Management, Economics and Information Technology*, IV, 2(2).
- Abbas, F., Tahir, M. (2014). A comparison of financial performance in the banking sector: Some evidence from Pakistani commercial banks. *Journal of Business Administration and Education*, 1(1).
- Alagathurai, A., & Nimalathashan, B. (2013). Corporate governance and banking performance: A comparative study between private and state banking sector in Sri Lanka. Ajanthan, A., S.
- Alrafadi, K. M., & Md-Yusuf, M. (2013). Evaluating the performance of Libyan banks using return on investment. *American Journal of Economics and Business Administration*, 5(2), 84.
- Anojan, V., & Nimalathasan, B. (2014). A Comparative Study of Financial Performance of State and Private Sector Commercial Banks in Sri Lanka: An Application of CAMEL Rating System. Faculty of Management Studies and Commerce, University of Jaffna, Sri Lanka.
- Aravind, M., & Nagamani, P. (2013). Financial Analysis of State Bank of India during 2000-2012. *Asian Journal of Research in Business Economics and Management*, 3(10), 170-184.
- Aspal, P. K. and Malhotra, N. (2013): "Performance Appraisal of Indian Public Sector Banks", *World Journal of Social Sciences*, Vol. 3, No. 3, pp. 71 - 88.
- Gul, S (2011). Factors Affecting Bank Profitability in Pakistan. *Romanian Economic Journal*, 14(39).
- Haidary, Q., & Abbey, B. (2018). Financial Performance of Commercial Banks in Afghanistan. *International Journal of Economics and Financial Issues*, 8(1), 242.

- Haque, A. (2014). Comparison of the financial performance of commercial Banks: A case study in the context of India (2009-2013). *Journal of Finance and Bank Management*, 2(2), 1-14.
- Jeevarajasingam, N. (2014). A study on Liquidity and Profitability of Private Banks in Sri Lanka. *Research Journal of Finance and Accounting*, 5(21), 165-173.
- Kobika, R. (2018). A Comparative study of financial performance of banking sector in Sri Lanka - An application of CAMEL rating system. *International Journal of Accounting and Business Finance*, 4(2), 58-67. DOI: <http://doi.org/10.4038/ijabf.v4i2.34>.
- Lakhtaria, N. J. (2013). A Comparative study of the selected Public Sector banks through CAMEL Model. *PARIPEX-Indian Journal of Research*, 2(4), 37-38.
- Lewis, C. D. (1982). *Industrial and business forecasting methods*. London: Butterworths.
- Malhotra, P. K. (2013). Performance Appraisal of Indian Public Sector Banks. *World Journal of Social Sciences*, 3(3).
- Moudud-Ul-Huq, S. (2017). Performance of banking industry in Bangladesh: Insights of CAMEL rating. *International Journal of Financial Engineering*, 4(02n03), 1750006.
- Ohlson, J. A. (1995). "Earnings, Book Value and Dividends in Equity Valuation," *Contemporary Accounting Research*, 11 (2), 661-688.
- Ongore, V. O., & Kusa, G. B. (2013). Determinants of financial performance of commercial banks in Kenya. *International journal of economics and financial issues*, 3(1), 237.
- Ramlan, H., & Adnan, M. S. (2016). The profitability of Islamic and conventional bank: A case study in Malaysia. *Procedia Economics and Finance*, 35, 359- 367.
- Reynolds, S. E., Ratanakomut, S., & Gander, J. (2014). Bank financial structure in pre-crisis East and Southeast Asia. *Journal of Asian Economics*, 11(3), 319- 331.
- Rivera, I.S., Roman, J. & Schaefer, T. (2018). AN APPLICATION OF THE OHLSON MODEL TO EXPLORE THE VALUE OF BIG DATA

FOR AT&T, *Academy of Accounting and Financial Studies Journal*,  
22(1), 1-9.

Sahyouni, A., & Wang, M. (2019). Liquidity creation and bank performance: evidence from MENA. *ISRA International Journal of Islamic Finance*.

Santomero, A. M., & Watson, R. D. (2015). Determining an optimal capital standard for the banking industry. *The journal of Finance*, 32(4), 1267-1282.

Silvestri, A. & Veltri, S. (2012). "A Test of the Ohlson Model on the Italian Stock Exchange," *Accounting & Taxation*, 4(1), 83-94.

Tabash, M. I., & Hassan, H. I. (2017). Liquidity, Profitability, and Solvency of UAE Banks: A Comparative Study of Commercial and Islamic Banks. *Academy of Accounting and Financial Studies Journal*, 21(2), 1-15.

Tarmizi, H., and Wasiuzzaman, S. (2017), Profitability of Islamic Banks in Malaysia: An Empirical Analysis, *Banking, and Finance*, 6(4), 53-68.

Thayaparan, A., and Pratheepan, T. (2014). "Evaluating total factor productivity growth of commercial banks in Sri Lanka: An application of Malmquist index." *Journal of Management Research*, ISSN (1941).

Wen, W. (2010). Ownership structure and banking performance: New evidence in China. *Universitat Autònoma de Barcelona Departament D'economia de L'empresa*, 24.

Zhang, X. (2016). Value Relevance of Historical Information and Forecast Information in China: Empirical Evidence Based on the Ohlson and Feltham-Ohlson Models. *Academy of Accounting and Financial Studies Journal*, 20, 14-27.