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Highlights

Commercial Banks in Bangladesh

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Discovering Thoughts, Inventing Future

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Liquidity and Profitability of Commercial Banks in Bangladesh: A Comparison between before and after the Covid-19 Crisis

By Rejaul Karim, Most. Rani Khatun, Mst. Shahira Hoshain Yesmin & Md. Mahmud Hasan
Varendra University

Abstract- This study aimed to assess the impact of the COVID-19 pandemic on the liquidity and profitability of commercial banks in Bangladesh. The data of the fifteen selected banks were gathered from the financial statements for each quarter of four years, from Q1 of 2018 to Q4 of 2021, encompassing the two years preceding and following the COVID-19 outbreak. This study uses a comparative quantitative methodology to compare the liquidity and profitability of commercial banks in Bangladesh before and after the COVID-19 pandemic. The results revealed that the profitability, measured by return on asset (ROA), and return on equity (ROE), during post-pandemic times was more volatile than the pre-pandemic time, but the trend is almost the same and the difference is statistically insignificant. The liquidity positions of the banks have been measured by Cash ratio (CaR), current ratio (CR), credit-to-deposit ratio (CDR), debt-to-asset ratio (DAR), operating cash flow ratio (OCFR), and debt-to-equity ratio (DER). The results revealed that the pre and post-pandemic liquidity positions are significantly different except for the liquidity measures OCFR, and DER. The findings also confirmed that the COVID-19 pandemic has had a substantial detrimental effect on the liquidity of banks.

Keywords: *COVID-19, commercial banks, profitability, liquidity.*

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Rejaul Karim [α], Most. Rani Khatun [σ], Mst. Shahira Hoshain Yesmin [ρ] & Md. Mahmud Hasan [ω]

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Keywords: COVID-19, commercial banks, profitability, liquidity.

I. Introductions

The COVID-19 epidemic affected all industries, and its effects continue to be felt, raising questions regarding the future of different markets and the economy. The World Health Organization (WHO) has classified this pathogen as a "global pandemic" (Mohiuddin, 2020). The pandemic COVID-19 has significantly impacted many economies, including Bangladesh. The manufacturing industry, small and medium-sized businesses (SMEs), the financial industry, and individuals have been tremendously hit by the epidemic. Early in March 2020, Covid-19 is discovered for the first time in Bangladesh. The government of Bangladesh has primarily endured ignorance regarding the nature and methods of preventing the proliferation of this infection, just like all other countries. Therefore, immediately following the discovery of this virus in a human body on national soil, a strict lockdown was enforced throughout the country, mimicking Western policies. To keep adequate physical space between residents and implement stringent policies by law enforcement agencies to prevent the spread, the government was initially motivated by an unidentified fear. In 2020, this closure lasted much longer than it should have because it was repeatedly stretched by changes to government notices. Consequently, it also has a significant effect on the nation's commercial operations. Indeed, such severe precautionary steps had an impact on both the actual and monetary industries of the economy. 2020 saw production in all sectors, but particularly in the manufacturing sector, stopped for an extended period due to delays brought on by these extreme anti-spreading measures (Kashem, 2022).

Even before COVID-19, the financial sector of Bangladesh was driven by many issues. As a result, the banking industry struggled to keep the necessary capital sufficiency, make provisions for non-performing loans (NPLs), and comply with international banking rules. The NPLs now account for over 30% of some banks' total loan portfolios, e.g., Basel Accords (Robin et al., 2018). The covid-influenced era has worsened the situation in the banking industry in Bangladesh (Karim et al., 2023). The covid-19 epidemic has had a detrimental impact on the financial sector's investment potential and production. Thus, the financial industry also experiences an instant economic decline due to the pandemic. People are alarmed by the prospect of growing NPLs in the global financial system due to the extreme economic decline brought on by the Covid-19 epidemic and the level of debt on a worldwide scale (Park & Shin, 2021).

A severe economic downturn brought on by the COVID-19 epidemic resulted in unemployment issues, which have a negative impact on the transfer of funds and investment in the economy (Gurhy et al., 2020). Thus, some predicted devastating failures have occurred in the banking industry throughout the globe due to the COVID-19 outbreak. Wilson (2020) highlighted the danger of insolvency, increasing failure rates, declining credit growth, and the possibility that funds will be withdrawn due to the global pandemic. The

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epidemic has worsened the problems with bad debt, shaken administration, delays, and precarious financial conditions. In recent years, the amount of problematic loans in the financial sector has already gotten out of hand. The advent of COVID-19 had an impact on all business operations in the nation, forcing the government to provide financial aid to the impacted businesses in order to aid in their ability to recoup their losses. Due to the decline in the financial standings of the debtors, NPLs do not return to the record after departing institutions (Babu, 2020). The ability of banks to make loans are limited by high problematic debt rates, which also raise stockholder risk by the middle of 2020, the majority of banks were in danger of not generating an operating profit.

The financial sector has been negatively affected by the negative growth of the real estate sector as it is closely connected to the overall economy. However, the government and the central bank of Bangladesh have eased a number of regulatory policies to aid the financial sector and introduced a number of policies to encourage companies and firms. The real estate and financial industries were not entirely capable of being saved by such expansionary policies. The banking industry is likely to make more money if the central bank implements expansionary policies because the banking system mainly transmits the monetary policy of the economy (Kashem, 2022).

Impact Covid-19 appears to affect all sectors, particularly the economic sectors of all affected countries in the world, followed by the severely harmed banking sector (Athari, 2021; Park & Shin, 2021). Even before COVID-19, the banking system of Bangladesh was riven by a number of issues like NPLs and the hit of COVID-19 made the banking industry more vulnerable as it struggled to maintain capital adequacy, make provisions for high NPLs, and comply with international banking regulations during COVID-19-affected period.

The financial sector is the most expanding and influential sector in the economy of Bangladesh. In most instances, the financial industry determines the growth of an economy. In the highly competitive world of finance, banks are persevering by improving their performance and efficacy. The profitability of a bank depends on many external as well as internal factors. These factors attempt to influence the net income of a bank. The banking sector in Bangladesh is recovering from the pre-COVID-19 pace in its activities by regaining the economic boosters all around. A well-capitalized banking sector has a significant role in the pace and scope of economic slump recoveries. Low levels of capital have a detrimental impact on the loan supply in particular (Schularick et al., 2020). Liquidity, as well as profitability, are essential things for any type of firm, which ensures that the company can meet its extant obligations, whereas profitability management ensures that the company can generate sufficient income to cover its expenses (Chowdhury & Barua, 2009).

Bangladesh detected the first verified case of COVID-19 on March 8, 2020. The government adopted immediate measures to shut down the nation for nearly two months. The government suspended all services and prohibited social gatherings, with the exception of emergency services. The army of Bangladesh had been sent to assist the civil administration in containing the virus's spread. Green, yellow, and red zones denoted low-risk, moderate-risk, and high-risk areas, within major cities. The COVID-19 outbreak has brought an immense change in banking operations and the use of technologies in financial sectors all over the world (Pierri & Timmer, 2022; Rahman et al., 2020; Yan et al., 2021), which also makes a possible substantial difference in the liquidity and profitability status of all sorts of banks in Bangladesh. Thus, this paper intends to identify the changes in the profitability and liquidity positions of the commercial in Bangladesh during the pre-COVID-19 and post-COVID-19 pandemic. We have separated the study time span into two parts: the pre-COVID-19 the eight quarters (2018Q1 to 2019Q4), before the pandemic and post-COVID-19 the eight quarters (2020Q1 to 2021Q4) after the pandemic.

II. Literature Review and Hypotheses Development

Before the COVID-19 pandemic, the liquidity, as well as the profitability positions of banks were impressive. Das et al. (2015) found that the liquidity positions of commercial banks in Bangladesh were increasing rapidly due to rapid economic growth and the application of technologies in banking services. Abdullah (2015) evaluated the liquidity and profitability trend before the outbreak of the COVID-19 pandemic in Bangladesh. It was determined that, on average, all institutions were performing better in liquidity and profitability due to the technology implementation. A study conducted in India by Bharti & Singh (2004) and found that international and private banks possessed greater liquidity and profitability tendencies than public banks. Lartey et al. (2013) found that the liquidity and profitability trends were stable, and there was a positive correlation between the bank's profitability and liquidity. Similar findings have come out through the many other studies conducted in different countries (Al Nimer et al., 2015; Charmler et al., 2018; Ibrahim, 2017; Malik et al., 2016; Vesic et al., 2019).

While Akter & Mahmud (2014) found that there were differences in terms of the liquidity and profitability in the banks in different classes by analyzing the 12 banks— from four different sectors: state-owned commercial banks, Islamic shariah-based banks, international banks, and private commercial banks which are being operated in Bangladesh. Parvin et al.

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(2019) found that the private banks in Bangladesh are doing in terms of liquidity. Using the linear regression model, they determined that government banks had variable liquidity, whereas banks in other sectors were stable. In addition, there were variations in profitability across all industries, and the study found no statistical correlation between profitability and liquidity in Bangladeshi banks serving various sectors. Paul et al. (2020) came to the conclusion that, generally speaking, liquidity influence has a significant impact on the revenue of the private commercial banks in Bangladesh.

The profitability and liquidity of banks after the COVID-19 epidemic were not the same as they were in pre-COVID-19, as found in many studies conducted at home and abroad. Gazi et al. (2022) discovered that the profitability of listed private commercial banks in Bangladesh had been affected by high NPLs rates, maintaining more liquid assets, a substantial amount of hedging capital, and insufficient bank capacities. As a result, the banking sector of Bangladesh should be mindful of diversifying its holdings, keeping cash on hand when it's needed and appropriately authorizing and monitoring loans. Additionally, their research suggests that a lower level of leverage can boost the profitability of banks; as a result, banks should raise the necessary cash by issuing stocks.

Mohammed et al. (2022) made an effort to a study focusing on the bank spread, COVID-19, and net interest margins through the analysis using the Thomson Reuters DataStream database from 2016 to 2021 and imbalanced quarterly bank data of the major five economies in Europe and South Asia and found that the bank spreads decreased in Asia, whilst bank spreads increased in the EU during COVID-19. There is evidence that foreign banks have an arbitrage chance to engage in rising higher spreads. This would strengthen the financial systems of these nations, reducing net interest margins and bringing them closer to those of industrialized countries.

Jordà et al. (2021) have used newly created data for the balance sheet of banks in seventeen countries since 1870, the first comprehensive analysis of the long-term history of the capital structure of modern banking. They have found that the capitalization of the financial sector influences the macroeconomic rate of economic recovery. They research the connection between capital structure and financial volatility in addition to creating generalized facts about the shifting financing composition of banks. No correlation between more cash and a reduced chance of a financial catastrophe is found. However, as credit comes back more easily, countries with good-capitalized banking systems rebound from financial disasters more quickly.

Karim et al. (2021) discovered that COVID-19 had a significant adverse impact on the economic sectors of Bangladesh. To evaluate the liquidity, they used liquidity measures, and to assess the financial stability of non-manufacturing businesses, they updated Altman's Z-Score Model. To evaluate the effect, the rates are contrasted before and after the COVID-19 era. After the start of the epidemic, they discovered a decline in their financial and solvency positions. Even though the banks' cash levels and financial situation were terrible before the epidemic started, they got even worse in the second quarter of 2020. The majority of banks have weak capital balances and solvency levels. Comparatively, Islamic banks are in worse financial shape than conventional commercial banks, and all banks are in the danger zone overall. Due to the effects of COVID-19 on the Bangladesh banking sector, Barua & Barua (2021) predicted a decline in the risk-weighted value of assets, capital adequacy ratios, and interest revenue at the individual bank and sector levels for all banks. In addition, they recommended immediate and creative strategies to prevent a widespread and spreading financial meltdown in Bangladesh.

Li et al. (2020) attempted a study on the liquidity shock that banks in the United States suffered very much. They have found that as the COVID-19 crisis approaches, firms withdraw enormous quantities of money in expectation of cash flow and financial troubles. Small banks are experiencing a slower increase in liquidity needs. Because the largest banks service the largest firms, the increased demand for liquidity is centered on them, leading to the lack of liquidity. Banks, on the other hand, have dealt with it by relying on the Federal Reserve and deposits.

Demirgüç-kunt et al. (2020) discovered, by analyzing bank stock returns, government pronouncements, liquidity premiums, and the COVID-19 pandemic, that COVID-19's adverse effects on the banking industry were more pronounced and persisted longer than on other financial sectors. The authors discovered that despite the fact that larger, publicly traded institutions had greater liquidity and more potent cooperative abilities, their stock returns dropped as a result of having to cope with the COVID-19 disruption.

Dadoukis et al. (2021) found that banks that used modern IT before the pandemic fared better during the COVID-19 timeframe. They concentrated on the technologies employed by banks to provide a market-adjusted return. Their findings support that technology may promote financial stability by improving bank performance, liquidity, and resilience. While Albuquerque et al. (2020) discovered that in the first quarter of 2020, equities with higher environmental and social (ES) ratings had substantially higher returns, decreased return fluctuation, and increased operating profit margins. The findings of the study support the notion that increased investor and consumer loyalty is a necessary condition for the resilience of ES companies. Since they accounted for time-invariant unobservable firm impacts in the difference-in-differences regression analyses for high and low ES firms, it is unlikely that

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systematic unobservable differences between high and low ES firms explain their findings.

Li et al. (2020) discover that Paycheck Protection Program(PPP) lending by banks rises with typical metrics of association lending: greater for small banks, past expertise in the local market, commitment lending, and core deposits. Their findings suggest a new advantage for businesses with close ties with their banks, which are regularly the primary channel for accessing government subsidies. Using the framework of bank-level lending, they develop a local supply metric that influences the structure of banking systems.

Barua & Barua (2021) examined the consequences of the COVID-19 epidemic on three particular parameters — firm value, capital sufficiency, and interest income — under different NPL shock situations using a state-designed stress testing model. The results indicate that risk-adjusted asset values, capital adequacy metrics, and interest income are projected to decrease at both the individual bank and sectoral levels for all banks. Thus, many other studies done regarding the impact of the COVID-19 pandemic on profitability. Many studies found detrimental effects of the COVID-19 outbreak negatively affected the profitability of banks (Elnahassa et al., 2021; Katusiime, 2021; Lelissa, 2023; Qadri et al., 2023).

Thus, the study is guided by the following hypotheses based on the existing literature.

H1: COVID-19 pandemic has a significant impact on the liquidity position of commercial banks in Bangladesh.

H2: COVID-19 pandemic has a significant impact on the profitability position of commercial banks in Bangladesh.

III. Objectives

The study aims to assess the impact of COVID-19 on the financial sector in Bangladesh. The specific objectives of the study are:

1. To assess the pre- and post-COVID-19 profitability positions of the commercial banks of Bangladesh.
2. To evaluate the pre- and post-COVID-19 liquidity positions of the commercial banks of Bangladesh.

IV. Methodology

a) Sample and Data

This study uses a comparative quantitative approach and it compares the liquidity and the financial performance of Bangladeshi commercial banks before and after the COVID-19 pandemic. The sample in this study amounted to fifteen banks including 11 conventional banks and 4 Islami shariah-based banks using purposive sampling. These banks were chosen on the basis of the availability of data, their scale, their performance, and their importance in characterizing the economic conditions of Bangladesh. We used the econometric analysis technique on quarterly data of 4 years time series to observe the liquidity and bank profitability trends spanning of total 16 quarters— Q1 of 2018 to Q4 of 2021. The data of this study has been collected from the published quarterly financial statements of 15 out of 61 scheduled commercial banks in Bangladesh. The data were analyzed using descriptive statistics, trend analysis, and the paired sample t-test.

Table 1: The Sample Banks

Conventional Banks	Islamic Shariah-based Banks
1. AB Bank	12. First Security Islami Bank
2. Bank Asia	13. ICB Islamic Bank
3. BRAC Bank	14. Islami Bank Bangladesh
4. Dutch-Bangla Bank	15. Standard Bank
5. Eastern Bank	
6. IFIC Bank	
7. Mercantile Bank	
8. Mutual Trust Bank	
9. One Bank	
10. Trust Bank	
11. United Commercial Bank	

To attain the specific objectives of the study, the data were analyzed using Microsoft Excell and STATA software to examine the tendencies of the profitability and liquidity of banks before and after the COVID-19 pandemic. A paired t-test was then conducted to ascertain whether there was a statistically significant distinction between the profitability and liquidity situation prior to and after the pandemic.

b) Variables Specification

The study uses two profitability and six liquidity measures established by the existing literature.

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Table 2: Variables and their Measurement

	Variables	Measurement
Profitability	Return on asset (ROA)	Profit before taxes/Total assets
	Return on equity (ROE)	Profit before taxes/Shareholders' equity
Liquidity	Cash ratio (CaR)	Cash and cash equivalence/Current liabilities
	Current ratio (CR)	Current assets/Current liabilities
	Operating cash flow ratio (OCFR)	Cash flow from operations/Current liabilities
	Credit to deposit ratio (CDR)	Loan/Deposits
	Debt to assets ratio (DAR)	(Short-term debt + long-term debt)/Total assets
	Debt to equity ratio (DER)	(Short-term debt + long-term debt)/Shareholders' equity

V. Results

a) Descriptive Statistics

Table 3 shows the descriptive statistics of the overall data of profitability and liquidity, dividing the period into pre-and post-COVID-19 pandemic periods. The summary of data presented in the Table 3 revealed that the COVID-19 pandemic had a positive impact on profitability in terms of return on asset (ROA), but had a slightly negative impact in terms of return on equity (ROE). The mean of the pre-COVID-19 ROA and ROE were 0.006 and 0.095 and while these were 0.011 and 0.076 during the post-COVID-19 pandemic, respectively.

The overall liquidity position of the banks during post-COVID has gotten weaken than that the of pre-COVID situation. The comprehensive liquidity positions measures—the cash ratio (CaR), the current ratio (CR), operating cash flow ratio (OCFR), and debt to equity ratio (DER)— used in this study was in better condition during pre-COVID times, except the credit to deposit ratio (CDR), and debt to equity ratio (DAR). The CDR and the DAR has had been found in a higher position than the pre-COVID times.

Table 3: Descriptive Statistics

	Pre-Covid-19					Post-Covid-19				
Variable	Obs.	Mean	Std. Dev.	Min	Max	Obs.	Mean	Std. Dev.	Min	Max
ROA	120	0.006	0.008	-0.042	0.024	120	0.011	0.045	-0.181	0.345
ROE	120	0.095	0.078	-0.044	0.311	120	0.076	0.138	-1.173	0.343
CaR	120	0.332	0.167	0.052	0.842	120	0.287	0.165	0.015	0.826
CR	120	0.814	0.306	0.236	1.696	120	0.684	0.316	0.097	1.709
OCFR	120	0.104	0.579	-0.075	6.370	119	0.042	0.050	-0.022	0.329
CDR	120	0.073	0.031	0.004	0.137	120	0.096	0.048	0.000	0.300
DAR	120	0.704	0.129	0.481	1.197	120	1.806	7.496	0.380	62.894
DER	120	9.904	4.137	0.553	20.846	120	9.838	4.118	1.010	18.726

Source: Authors' Calculation

b) Trends in Profitability and Liquidity

The trends of the profitability and liquidity positions with the mean scores of quarterly data from the sample banks have been presented in Table 4. The trends of the profitability can be found in Table 4andin the visualized Figure 1. The findings show that the ROE was more volatile over the period than the ROA. Figure 1revealed that both profitability measures went down during the start of the COVID-19 pandemic in Q1 of 2020, and in Q3 of the same year, and it became negative in terms of ROA. Then from the Q2 of 2020, profitability began to rise slightly to the pre-pandemic times. At the start of the lockdown in Bangladesh in Q1 of 2020, the government announced some incentives to boost the economy, which may lift the profitability of the banks during Q2 of the same year. The overall profitability position of the banks during the post-COVID period was better than the pre-COVID period, especially in terms of ROA.

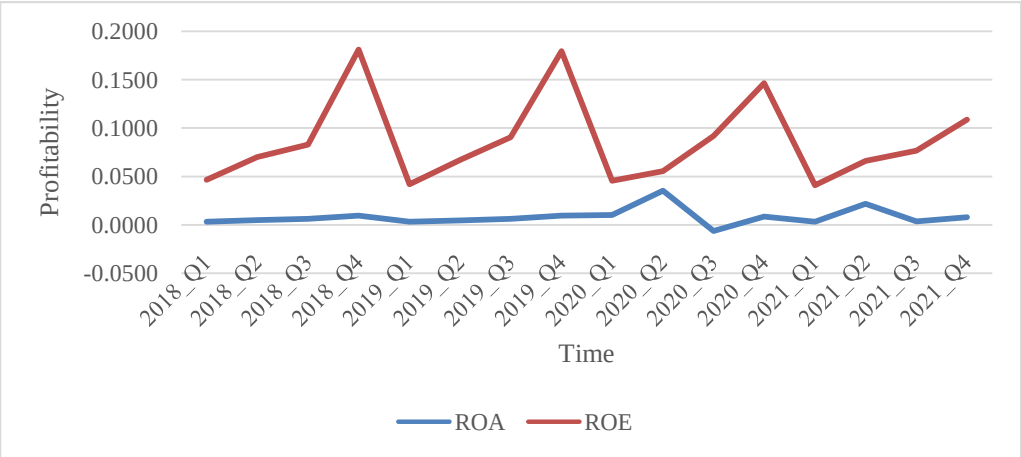
Table 4: The Mean Score of the Profitability and Liquidity of the Sample Banks

Quarters	ROA	ROE	CaR	CR	OCFR	CDR	DAR	DER
2018_Q1	0.0035	0.0466	0.3257	0.8465	0.0332	0.0650	0.6957	9.2029
2018_Q2	0.0051	0.0702	0.3269	0.8060	0.0319	0.0686	0.7164	10.5055
2018_Q3	0.0061	0.0829	0.3231	0.7936	0.0664	0.0683	0.7199	10.1742
2018_Q4	0.0095	0.1811	0.3282	0.8039	0.0487	0.0708	0.6967	9.5190
2019_Q1	0.0035	0.0421	0.3129	0.7614	0.4504	0.0673	0.7091	9.5878
2019_Q2	0.0046	0.0671	0.3543	0.8569	0.0347	0.0732	0.6987	10.2070

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2019_Q3	0.0062	0.0905	0.3351	0.7901	0.0675	0.0876	0.6967	10.1740
2019_Q4	0.0094	0.1795	0.3531	0.8528	0.0983	0.0840	0.6958	9.8599
2020_Q1	0.0103	0.0456	0.3006	0.7115	0.0267	0.0781	2.0013	9.8143
2020_Q2	0.0354	0.0555	0.2655	0.6335	0.0265	0.0975	4.8815	9.9093
2020_Q3	-0.0063	0.0920	0.2599	0.6201	0.0273	0.0984	0.7344	9.8334
2020_Q4	0.0086	0.1466	0.3342	0.7808	0.0860	0.1004	0.6943	9.7934
2021_Q1	0.0033	0.0410	0.3198	0.7552	0.0768	0.0953	0.6862	9.8698
2021_Q2	0.0217	0.0661	0.2681	0.6559	0.0320	0.1041	4.0765	9.7744
2021_Q3	0.0037	0.0766	0.2683	0.6544	0.0451	0.0970	0.6864	9.7790
2021_Q4	0.0080	0.1088	0.2760	0.6619	0.0681	0.0987	0.6859	9.9315

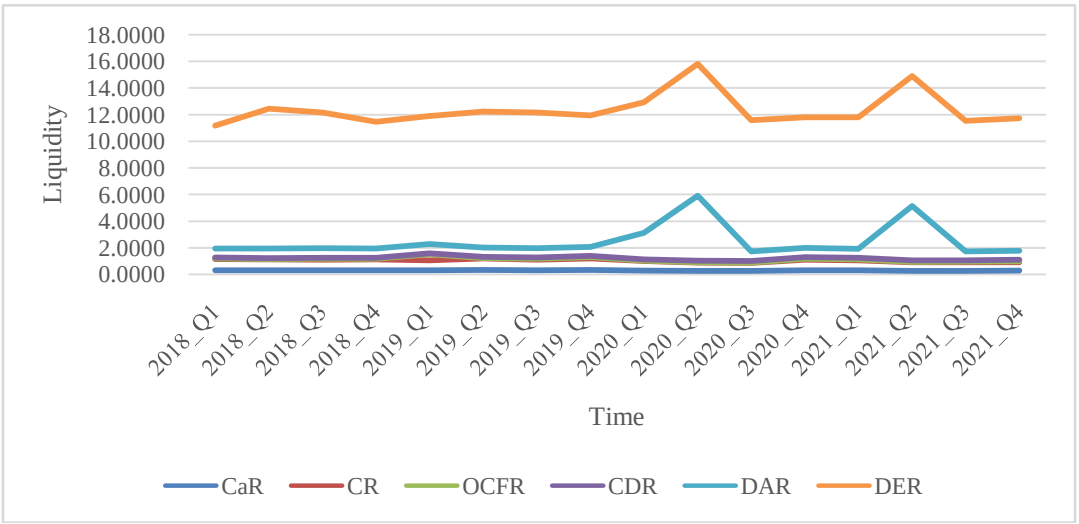
Source: Authors' Calculation



Source: Calculated Data

Figure 1: The Profitability Trends of the Sample Banks

The liquidity position of the sample banks has also been presented in Table 4 and in Figure 2. From the results, it has been found that the trend line of the CaR, the CR, and the OCFR are almost straight, but there is a "downtrend" from Q1 to Q3 of 2020. This means the liquidity ratios declined significantly during the mentioned period. In the case of the DAR, another measure of bank liquidity has become more shaken during the post-COVID period, although it was almost the "straight line" before the pandemic. The DAR has become much higher in the Q1 to Q3 of 2020 and Q1 to Q3 of 2021 which has never happened during the pre-pandemic times. The DER of the sample banks behaved almost the same as the DAR over the period of the study. The DER also increased after the pandemic like DAR. The higher the DAR and the DER mean that banks borrowed more funds compared to the total assets and equity, which significantly decreased the liquidity level.



Source: Calculated Data

Figure 1: The Liquidity Trends of the Sample Banks

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c) Paired Sample t-test Results

Before and after the COVID-19 crisis, the observed trend of profitability and liquidity was evaluated using a paired t-test. In practice, the acquired data (mean scores) from the sample banks were compared to assess whether the differences were statistically significant. The results of the paired sample t-test have been presented in Table 5.

With regard to profitability, the results revealed that the difference in the profitability position of the sample banks before and after the pandemic was statistically insignificant, indicating that the distinctions we have discovered in terms of profitability are not statistically significant as we have found p-values greater than 0.10.

Regarding liquidity, the findings of the study exposed that the differences in the liquidity positions of the sample banks in the case of the CaR, the CR, the CDR, and the DAR during the pre and post-pandemic period were statistically significant as we have p-values of less than 0.10. While the differences in the liquidity in terms of the OCFR, and the DER during the pre and post-pandemic period are statistically insignificant. This indicates that the OCFR and the DER do not significantly differ during the pre and post-COVID-19 period.

Table 5: Paired Sample t-test

	obs.	Mean 1	Mean 2	dif.	St. Error	t-statistic	p-value	Sig.
ROA	120	0.006	0.011	-0.005	0.004	-1.100	0.266	
ROE	120	0.095	0.076	0.019	0.012	1.600	0.120	
CaR	120	0.333	0.287	0.046	0.013	3.500	0.001	***
CR	120	0.814	0.684	0.130	0.026	5.050	0.000	***
OCFR	120	0.104	0.042	0.062	0.053	1.150	0.247	
CDR	120	0.073	0.096	-0.023	0.004	-7.100	0.000	***
DAR	120	0.704	1.806	-1.102	0.685	-1.600	0.099	*
DER	120	9.904	9.838	0.066	0.173	0.400	0.704	

*Note: *** p<0.01, ** p<0.05, * p<0.10*

Source: Authors' Calculation

VI. Discussion and Practical Implications of the Results

The results of the study revealed that the profitability during post-COVID-19 was significantly increased than the pre-COVID-19 pandemic. Although the results show that the profitability of banks after the pandemic was more volatile, especially in terms of ROE. But the results of the paired sample t-test confirmed that the differences in the pre and post-pandemic profitability measured by the ROA and ROE were statistically insignificant. This indicates that the COVID-19 pandemic did not significantly affect the profitability of the level of commercial banks in Bangladesh. These results contradict the findings of many of the results of the previous studies (Elnahassa et al., 2021; Gazi et al., 2022; Katusiime, 2021; Lelissa, 2023; Qadri et al., 2023). The findings of the study revealed that the liquidity ratios deviate a bit more than the profitability positions due to the pandemic. The results show that the differences in the liquidity positions during the pre and post-pandemic period are statistically significant, measured by the CaR, the CR, the CDR, and the DAR. At the same time, the results show that these differences are not statistically significant in terms of the OCFR, and the DER. Overall, the results exposed that the COVID-19 pandemic has significantly changed the liquidity positions of commercial banks in Bangladesh. The findings show that the liquidity position of the banks had been negatively affected by the COVID-19 outbreak. The results are aligned with the findings of previous studies(Almeida, 2021; M. R. Karim et al., 2021; Katusiime, 2021; Korzeb & Niedziółka, 2020; Mwangagi, 2021), but these findings contradict some other studies (Gazi et al., 2022; Marshal et al., 2020), which revealed a significant positive impact of COVID-19 on the liquidity positions of the banks. The dynamic nature of the Bangladesh economy with GDP growth may be one of the reasons that caused to maintain the profitability of the banks, while the liquidity position had been significantly reduced during the pandemic maybe for the panicked withdrawal of deposits by the customers.

VII. Conclusion

The study intended to evaluate the effects of the COVID-19 outbreak on the profitability and liquidity positions of commercial banks in Bangladesh. This study uses a comparative quantitative approach and compares the liquidity and the financial performance of commercial banks in Bangladesh before and after the COVID-19 pandemic through the analysis of the quarterly data. The results revealed that the profitability during post-pandemic times is more volatile and slightly increased than the pre-pandemic time, but the trend of the pre and post-pandemic profitability is almost the same and the difference is statistically insignificant. Whereas, the liquidity positions of the banks substantially reduced in the post-pandemic times and the differences of the pre and post-pandemic liquidity situations significantly differed. Thus, the study

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concludes that COVID-19 has brought a significant negative impact on liquidity, although the profitability level did not experience a significant change in the commercial banks of Bangladesh.

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Effect of Capital Structure on Financial Performance of Manufacturing Firms Listed at the Nairobi Securities Exchange

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Abstract- The study investigated the effect of capital structure on financial performance of manufacturing firms that are listed at the Nairobi Securities Exchange. The population of the study consisted of 8 manufacturing and allied firms. The period of study was over 8 years (eight-years) period from 2013 and 2020. The study used secondary data. Multilinear regression model was used to assess the financial performance of these manufacturing firms that are quoted at NSE. Both descriptive statistics and Pearson correlation matrix was used to assess the outcome of the study. The following results were found: A unit increase in the debt in the firm capital structure results in a -0.782 decrease in the financial performance of the manufacturing firms while an increase in one unit of equity results in 0.667 increase in financial performance of the firms. There was negative correlation between the debt ratio and the financial performance and a positive correlation between equity and financial performance of manufacturing firms. The study also showed that firm's liquidity level has a positive influence on the financial performance, which indicates that, the more liquid a firm is in meeting its short term obligations the more profitable it becomes.

Keywords: *debt, equity, liquidity, firm size, return on asset, growth option and manufacturing listed firms.*

GJMBR-C Classification: *LCC: HG4001-HG4285*



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Odipo [α], Martin Khoya [σ] & Obbayi Getrude [ρ]

Abstract- The study investigated the effect of capital structure on financial performance of manufacturing firms that are listed at the Nairobi Securities Exchange. The population of the study consisted of 8 manufacturing and allied firms. The period of study was over 8 years (eight-years) period from 2013 and 2020. The study used secondary data. Multilinear regression model was used to assess the financial performance of these manufacturing firms that are quoted at NSE. Both descriptive statistics and Pearson correlation matrix was used to assess the outcome of the study. The following results were found: A unit increase in the debt in the firm capital structure results in a -0.782 decrease in the financial performance of the manufacturing firms while an increase in one unit of equity results in 0.667 increase in financial performance of the firms. There was negative correlation between the debt ratio and the financial performance and a positive correlation between equity and financial performance of manufacturing firms. The study also showed that firm's liquidity level has a positive influence on the financial performance, which indicates that, the more liquid a firm is in meeting its short term obligations the more profitable it becomes. The study concludes that there is a strong positive relationship between capital structure at channels and firm financial performance of manufacturing firms listed at Nairobi Securities Exchange and that 64.6% of the total changes in financial performance of the manufacturing firms. This can be attributed to changes in the debt level in the capital structure, equity, firm's liquidity, firm size and firm growth. The study shows that equity, firm's liquidity, firm size and firm growth affects financial performance of the manufacturing firms' performance positively and in a statistically significant way. Which indicates that, the more liquid a firm is in meeting its short term obligations the more profitable it becomes. The study concludes that firm size is positively correlated with the financial performance of firms listed at NSE.

Keywords: debt, equity, liquidity, firm size, return on asset, growth option and manufacturing listed firms.

I. Introduction

Two major studies carried out in Nairobi Securities Exchange in the last decade on the effect of capital structure have come up with contradicting results. One study concludes that Capital Structure has positive influence on financial performance of a manufacturing firm. This was based on one manufacturing firm. The other study conclude that capital structure has negative influence on financial performance of manufacturing firms. This study examines a number of manufacturing firms that are listed in Nairobi Securities Exchange to determine the effect of capital structure in relation to financial performance, taking into account all listed manufacturing firms from 2013 to 2020.

An important aspect to finance managers' responsibility is that of making financial decisions which enables them to recognize when to obtain finances and how to meet the investment needs of the company Zhao & Wijewardana (2012). The finance decisions form the firm's capital structure (CS) that defines the financial stability of the corporate which is of significance. The importance of the CS ratio of debt to equity cannot be compromised as it forms the foundation of the operations of the corporate Copeland, Weston & Sharsti (2013). This study is anchored on five theories, pecking order theory Myers & Majluf (1984), trade off theory Myers (1984), capital structure theory Modigliani & Miller (1958) market timing theory Luu & Dang (2022) and liquidity preference theory Keynes (1936). Modigliani & Miller (1958) assert that, financial performance and hence the value of firms are dependent on risk and cash flows. Most decisions related to capital structure are anchored on other aspects such as applicable taxes, liquidity and cost which directly affect the use of finances in a company. The notion of pecking order states that companies favor internal resources rather than external resources Myers & Majluf (1984). They presume that companies do not aim at debt ratios, but prefer external sources of money when inadequate internal funds are available. The idea of trade off highlights the distinction between the costs of distress-related to money and the tax advantage of capital structure usage of debt. It suggests that organizations deal with a variety of factors including liquidity exposures and the expense for the organization's interest tax protection benefit Black & Scholes (1974). Capital structure refers to how a company supports its activities via the use of bank loans, equity or both Brigham & Houston (2015) it is the various alternatives used by a corporation in financing its assets Kyissima, Xue, Koselle & Abeid (2020). Economic performance is the frame work of financial dealings and shows the company's capacity to transfer its finances into relevant

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activities Chen (2014). The impact of public decision-making can also be wildly overstated since many of these variables may be handled through risk and capital selections that encourage investment and the accomplishment of corporate goals Majumdar (2014). The choice of the firm's CS mix is influenced by several factors for instance the firm's growth rate, market conditions, tax exposure, business risk and the cost of capital Huang & Song (2016). CS is generally classified as debt or equity finance or a combination of both being the firm's components of its sources of financing. The debt to equity ratio (D/E) is used in calculating CS. Equity financing is a method of raising capital whereby shares in an enterprise are sold, that is to say capital is raised internally. It includes own savings, contribution from partners, contribution from board members, retained earnings, deferred income and cash flows of the business Kongmanila & Kimbara (2007). Equity financing comprises of IPOs and SEOs issues of stock by a company as a form of coming up with capital through the sale of stock as opposed to obtaining additional debt Abdula & Zaby (2021). Debt financing, on the other hand, is a method of raising working capital externally, from borrowing outside the enterprise. Debt financing includes bonds, debentures, leases, mortgages, certificates and notes. It aids the firm to raise capital where they lack adequate internal resources to assist them carry out operations and investments Onchong'a, Muturi & Atambo 2016. Debt financing can be broadly categorized into two; short-term or long-term. Short-term debt financing is whereby such finances are repaid in a period of less than a year while long-term financing is whereby the debt repayment is beyond a year Zietlow, Hankin, Seidner & O'brien (2018). The optimal CS is that combination of debt and equity that is obtained at the least cost and yields the maximum shareholder's wealth. The optimal CS should minimize the entire enterprise's COC, since the enterprise creates value when it provides a return greater than its COC.

Financial performance is a subjective approach in measuring an organization's effectiveness in the use of available assets and finances in fulfilment of their business objectives Ikapel & Kajirwa (2017). The financial performance of a firm can either be making profits, breaking even or making losses at the end of the financial period. In the view of the shareholders, financial performance is measured by the favorability of the shareholder at the period end of the financial year compared to the beginning which can be deduced using ratios derived from financial statements; that is statement of financial position and the income statement, or using data on stock market prices Berger & Bonaccosi Di Patti (2006). Financial performance is assessed in several ways, like: return on asset Kopecka (2015), return on equity (ROE) or net profit in a period Drury (2017). In addition, standard accounting key performance indicators (KPIs) include sales growth, operational profit margin, economic value added and income before tax Abshir & Nigib (2016].

Firms which convert mechanical, physical or chemical materials into finished goods are what are referred to as manufacturing firms KAM (2018). The manufacturing sector in Kenya is wide and divided into sub divisions dealing with different areas, with food products being the largest contributing around 43% of the entire manufacturing sector contribution to GDP; with other sectors including textile and apparel, non-metallic minerals, basic equipment among others. (KAM, Manufacturing Priority Agenda, (2018).

According to Kenya National Bureau of Statistics (2017), in 2010, the manufacturing industry in Kenya experienced its highest growth rate with 5.8%. This growth rate nevertheless was lower than the 10% growth rate anticipated in Vision 2030 goal. To add to this, the GDP contribution of the manufacturing sector too deteriorated from 9.2% in 2016 to 8.4% in 2017, which is also further from the 2022 target of 15% set by the government as part of the Big Four action plan of enhancing manufacturing KAM (2018). The 2018/2019 budget allocated US$21million in order to create employment in the manufacturing sector to over 800,000 job Kenya Budget Estimates (2018/2019)

This study sought to establish how capital structure affects financial performance of manufacturing firms listed at the Nairobi Securities Exchange in particular it has five objectives: To establish the effects of debt financing on financial performance of manufacturing firms listed at the Nairobi Securities Exchange; to ascertain the effects of equity financing on financial performance of manufacturing firms listed at the Nairobi Securities Exchange; to assess the effects of liquidity on financial performance of manufacturing firms listed at the Nairobi Securities Exchange; to determine the effects of firm size on financial performance of manufacturing firms listed at the Nairobi Securities Exchange; to find out the effects of growth on financial performance of manufacturing firms listed at the Nairobi Securities Exchange.

II. Literature Review

The study is grounded into the following theories; pecking order theory, trade off theory, capital structure theory, market timing theory and liquidity preference theory. Pecking order theory was developed by Myers & Majluf (1984) as an attempt to unfold managers' financial proclivity. It implies that managers do not have a fixed CS, instead they heed to specific hierarchical ranking. Internal funding is the first preferred source of finance followed by external funding from debt, convertible debt and equity. Myers (1984) posits that equity is issued as the final course of action when debt capacity has been depleted. This is due to the fact

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that additional costs associated with raising capital from external sources should always be minimal. The underlying assumption of this theory is asymmetric information. This means that facts in regards to the company such as the entity's present earnings and future growth prospects lie with the managers as opposed to investors thus creating information imbalance. As the degree of asymmetric information widens, so does the cost of financing increase Brennan & Kraus (1987).

Issuance of new shares holds the highest degree of information asymmetry. Potential investors conclude that the stock issued by the entity is overvalued since the managers have greater insider intelligence. This indicates that management is sourcing finances by diluting company shares. In turn, a lower value is placed on the newly issued shares by investors from factoring in the costs of adverse selection. This would mean that additional shares of stock have to be sold to raise the same amount of proceeds. Furthermore, investors capture more than the Net Present Value (NPV) of the new project resulting to the existing shareholders going at a loss as a result of severe underpricing. The project, in such a case, will be rejected regardless of the NPV being positive. Similarly, managers must always act in the best interest of the shareholders if issuance of equity will be of much substantial benefit to the new shareholders at the expense of the old Fischer, Heinkel & Zechner (2009). Myers (1984) Posits that investors might also take external equity issuance as unfavorable indicator on the organization's performance. Such will be taken negatively as it assumes that managers want outside shareholders to share the losses thus increasing cost of external equity. Firms can avoid costs of adverse selection by issuing equities with minimal asymmetric information like equity to existing stock holders or to employees in their compensation plan Fama & French (2005).

Debt financing is preferred to equity since the cost of debt is lower than the cost of equity. Lower returns are set for debtholders as opposed to shareholders since a higher claim of assets are entitled to them in the event of dissolution or bankruptcy. Owner managers favor internal funds since this type of financing ensures they can retain control over operations and assets Holmes & Kent (1981). Furthermore, no flotation costs are incurred and competitive advantage is not lost from additional disclosure of financial information to the public. High financial slack in a company enables internal funding without resorting to external sources. The theory poses limitations as it implies that it is only internal funds, or lack thereof, that motivates firms to raise funds externally while ignoring institutional factor effects which might affect the entity's choice of funding Adedeji (1998). The study assumes that this theory is relevant since it asserts that the best CS choice is that with the least asymmetric information. Asymmetric information increases as the entity moves from internal sources of funding to external.

Trade off theory was suggested by Myers (1984) as a development of MM irrelevancy theorem by taking into account the effects of bankruptcy costs and taxes. Unlike the pecking order theory, this theory holds that an entity has an optimal capital structure determined by weighing the cost against the benefits of debt financing. Firms, thus acquire debt gradually until they reach their target debt-equity ratio. Once reached, the entity is able to utilize financial performance by adding up the potential costs against the expected benefits of leverage Bontempi & Golinelli (2001). Al-Tally (2014) posits that firms with more tangible assets take up debt whereas those with more intangible assets issue equity since they diminish in value in case of liquidation. The tax benefit accrued from debt financing is tax shield which means that interest payment on debt is tax-deductible Hutchinson & Hunter (1995). The entity in turn pays less taxes than they would have if they had used their own equity financing. Therefore, after tax profits increases with leverage thus increasing the firm's profitability and in turn the company's value. However, with an increase in debt financing, the cost of financial distress and agency costs also increases. According to Shirata (2012) financial distress are the costs that arise as a result of failure to meet financial obligations by an entity when due which can lead to bankruptcy. Brealey, Meyers & Mohanty (2018) noted that shortage of funds by the entity, reduction of trade credit by suppliers, firm's borrowings are at a maximum and the entity's books of account display consistent losses are indicators of financial distress. These actions by stakeholders towards the entity inevitably lead to drop in financial performance, hence a decline in the firm value. Declaring bankruptcy has been the most prevalent basis for an entity's financial distress Davidson (2020) this theory is challenged by various researchers such as Miller (1977) who argued that the theory concentrates on maximizing the tax shield advantage while downplaying the costs of financial distress encouraging entities to be more levered than they are Guner (2015) contend that profitable firms rely on internal funds rather than debt which is contradictory to the trade-off theory that profitable firms are highly levered so as to benefit from tax shield.

Modigliani & Miller (1958) investigated capital structure and made several propositions. At the onset, they found that the traditional perspective unacceptable in part because it seemed unsupported by the theoretic frameworks. In particular, they found little reasons apart from some marketing perceptions which affect the capital structure of the firm and hence altering the value of that firm Banafa (2015). After all, neither the earnings flows nor the inherent risk could alter the value because

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it would remain the same under the same industries. The capital structure changes will have no effect on the current financial performance of the firm. At dis-equilibrium a levered firm may appear to have a higher value which according to MM will not persist for long and the levered firm is overvalued and therefore the investors in this company will attempt to make a switch from a levered firm to unlevered firm. Such investors will sell shares of a levered, borrow an amount which is equivalent to the amount which the management of the firm had borrowed on his behalf and then invest entire cash proceeds in the levered firm. As investors attempt to make a switch from a levered to an unlevered firm the financial performance of a levered firm will come down to equilibrium point where the financial performance of a levered firm shall equal to unlevered firm Modigliani & Miller (1958). Since a perfect market under manufacturing industry in Kenya does not exist, the research will establish the effects of entry of certain conditions that will influence the CS and its impact on financial performance.

Market Timing Theory as propounded by Luu & Dang (2022) asserts that entities select the structure of financing at a particular time, be it debt or equity that are more valued by the market. When the financial performance of stock is perceived to be overvalued, the firm takes the opportunity and issues new shares, whereas repurchases shares when they are under-valued. Organizations favor equity financing when they deem the cost of equity is fairly low otherwise debt financing is preferred. Entities judge the cost of equity from better understanding of themselves and their industry and from following specific psychological patterns such as reference points, as proposed by prospect theory.

Similar to Pecking order theory, there is no specific optimal CS attached to this theory, instead, managers time the equity markets for favorable conditions. Boudry, Kallberg & Liu (2010) posit that due to fluctuation of stock prices, CS arises from market timing of when to issue debt or equity in regards to market performance. The prevailing market conditions and frequent observations of financial market results in the financial structure of an entity Graham & Harvey (2001). Under this theory, economic agents are presumed to be rational, in that entities issue equity immediately after positive information is publicized since information asymmetry between the management and stockholders is reduced. With a decrease in information failure comes an increase in stock prices thus benefiting the entity. A firm can create its own timing opportunities by disclosing information frequently. The study will seek to establish whether the prevailing market conditions in the manufacturing industry in Kenya has a bearing in the CS choice of manufacturing firms listed in NSE as claimed by this theory.

a) Liquidity Preference Theory

This theory was developed by Keynes (1936) 'The General Theory of Employment, Interest and Money' to construe liquidity determinants from supply and demand for money. He argued that investors lend out their money when liquidities are high as they are willing to hold less money so as to benefit from profit. Whereas borrowers opt for long term debt in order to eliminate constraints of repaying the debt under adverse conditions, short term investments are favored by investors since they are convertible to cash easily with loss of principle being minimal Trinh (2022).

b) Determinants of Financial Performance

Over the years, capital structure has been perceived to directly influence the financial performance of firms. Optimal capital structure translates to an improved financial performance of a firm. The determinants of financial performance include liquidity, growth and firm size.

i. *Liquidity*

Begg, Fisher, Vernasca & Dombush (2014) defined liquidity as the conversion of assets to cash with ease without affecting the market price when needed by the asset holder. Pecking order theory propose that higher liquid firms are less leveraged since it is a part of internal source of financing. Oztekin & Flannery (2012) support POT by concluding that highly liquid enterprises use that as a source of financing in place of debt. Trade off theory differs in that it argues that debt is more appealing to firms with suitable liquidity since it can repay its debt while benefiting from its advantages.

When it comes to liquidity and financial performance, different studies have yielded differing results. Investigation done by Sarlija & Harc (2012) on the impact of liquidity on the CS of Croatian firms, found a statistically significant correspondence between liquidity ratio and leverage ratio. The study concluded that the relationship between liquidity and debt ratio as negative. This finding however contradicts the study done by Sibilkov (2009) whose research was based on American companies and concluded that liquidity and leverage are positively related.

ii. *Growth*

Hossain & Ali (2012) posited that the more growth prospects an enterprise has, the less leveraged it should be and rather engage more in equity financing. Reason being wealth from investments is shifted from shareholders to debtholders Huang & Son (2016). Booth, Cornett & Tehranian (2002) assert that agency costs related to debt is increased with increase in growth opportunities. Jensen & Meckling (1976), argue that growth is negatively associated with leverage. This is because growing firms have a bigger investment pool hence issue less debt to avoid potential unprofitable investments, in line with the tradeoff theory. Pecking order theory prefer internal sources funding which would

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imply that growing firms have a negative correlation with leverage Watson & Head (2010).

On the other hand, Kariuki & Kamau (2014) investigated the determinants of CS in 121 food and beverages private manufacturing firms listed in KAM (2018) as of 2013 concluded that growth and CS are positively correlated, since growth opportunities usually rely more on debt than equity.

iii. *Firm Size*

Pecking order theory asserts that larger firms have stronger access to capital market and have less asymmetric information costs and so would opt for equity as opposed to debt. Rajan & Zingales (1995) similarly argue that smaller firms are more leveraged since the cost of asymmetric information is high.

Trade off theory, however, implies that larger firms are highly leveraged since the cost of debt will be less due to advantages of economies of scale. Larger firms would therefore apply more debt as a financing measure (Vasiliou, Eriotis & Daskalakis, 2009).

A study on the effect of CS determinants of financial performance of firms listed in NSE was carried out by (Bongoye, 2018). The study concentrated on 37 non-financial entities under NSE and concluded that firm size had a positive and significant interplay with financial performance.

iv. *Empirical Literature*

Multiple empirical researches have made contradictory results with some indicating little influence of remittances on economic growth while others found financial performance greatly impacted on the company. The influence of CS on the corporate profitability in Sri Lanka was studied by (Tharmila & Arulvel 2013). Thirty companies were included in the research for five years throughout 2007 and 2011 listed on the Colombo Stock Exchange. Secondary data was used for the examination with financial statements, mainly income statements and statements of financial position, as the primary source of data. Pearson products-to-moment correlation coefficients and regression analysis evaluated the premise that there is a favorable connection between capital structure and financial performance. In order to explain the strength and influence of the variables, correlation and regression analyses were performed. The conclusion was that there is a weak negative correlation between CS in terms of debt and financial performance, therefore rejecting the hypothesis. This is because most entities spend on interest expense since they depend on debt capital as a source of financing.

A study done by Al-Qudah (2017) to establish the relationship between CS and financial performance in companies in United Arab Emirates, came up with differing findings. A sample of 48% of all entities listed in Abu Dhabi Securities Exchange from the years 2008 to 2015 was considered. The study hypothesis was interpreted using statistical package for the social sciences while the variables of capital structure and financial performance were analyzed using ANOVA, model summery and coefficients. Capital structure was represented using debt ratio while financial performance was expressed in terms of ROA and ROE. The data collected from published financial statements, specifically income statement and balance sheet, was analyzed and concluded that generally CS and financial performance, in terms of ROA are positively correlated. However, CS is inversely correlated to profitability in terms of ROE.

Mauwa, Namusonge & Onyango (2016) carried out a study to determine the difference between CS and the financial success of six Rwandan stock-listed firms as of 2014. Descriptive research approach and referred to secondary sources. Secondary data was collected from the audited accounts of the companies, interviews were carried out for the collection of primary data. Result showed that CS was negatively connected to the performance in terms of both ROA and ROE.

Ibrahim (2009) carried out a study on Egyptian listed non-financial firms' to determine corporate financial performance between 1997 and 2005. Using a multiple linear regression analysis, the study found no connection between debt and business performance.

The link between capital structurer and financial performance in Kenya was examined by Maina and Ishmail (2014). They carried out a study to determine if there is link. The study aimed at determining the financial impact of CS on selected quoted firms in NSE from 2002 to 2011. They used secondary data obtained from balance sheet and profit and loss account. Panel data was used over multiple periods. Using casual research design and statistical software for regression analysis, it was discovered that the association between capital structure and financial performance is negative and significant. This infers that an increase in debt results to poor financial performance which can be explained by agency conflicts that cause firms to be highly leveraged resulting to dwindling financial performance.

Langat, Chepkoech, Shavulimo, Wachira and Thuo (2014) studied the relationship of CS and financial performance in the Tea Development Authority processing factories in Kenya and concluded contrary findings. Total debt and long-term debt were strongly and positively linked to financial performance using both ROE and ROA as a measure of performance. The results concur with the findings of Banafa (2015), which found that CS has a substantial favorable connection to Kenya's financial success.

III. Methodology

The study used descriptive research design as it presents a comprehensive impression of a

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phenomenon. The target population under this study was 8 manufacturing and allied firms listed in NSE with an eight-year evaluation between 2013 and 2020. Listed firms were chosen since access to their financial reports is readily available as they are published as part of Capital Markets Authority regulations. The study utilized secondary data as it is readily available and can be examined over a long period of time. Panel data, comprising of cross-sectional and time series data, was employed in the study. The analyzed data was sourced from audited financial statements of company websites and NSE Handbook. From the income statement, the sales, earnings before interest and tax and retained earnings will be collected for analysis. In the balance sheet, the study utilized both the assets and liabilities while also considering the interest-bearing debt.

a) Diagnostic Tests

The genetic testing mostly on data to check that they comply with the underlying principles of the traditional pattern of linear regression. Multicollinearity was tested to find out whether independent variables may be potentially correlated to each other. Existence of multicollinearity results in an unstable regression and inflation of standard error. Variance inflation factor was utilized to test how each independent variable is related to the others. Normality testing was carried out to ensure that sample data is drawn from a normally distributed population. Jarque Bera test was used to establish the skewness and kurtosis. Homoscedasticity was tested using the Breush-Pagan test to establish that the error terms along the regression are constant. Linearity test indicated that the relationship between the independent variables and dependent variable are linear.

b) Data Analysis

The multiple linear regression model used was;

$$Y=\beta 0 + \beta 1\ X1 + \beta 2\ X2+ \beta 3\ X3+ \beta 4\ X4+ \beta 5\ X5+\varepsilon$$

Where Y is the financial performance of firms determined by return on assets.

$\beta 0$= Is the constant. β_1, β_2, β_3, β_4 and β_5 are the independent variables coefficients and determine the response of Y to a unit change in variable x.

X1= Debt: Measured by total interest-bearing debt liabilities.

X2= Equity: Measured by total assets – total liabilities.

X3= Liquidity: Measured by current assets/current liabilities

X4= Firm size: Measured using the Natural Log of Total Assets

X5= Growth option: Measured using Revenue Growth Ratio.

c) Test of Significance

The combined meaning of all equations and the test significance of individual coefficients were tested using the F-test. In 95 percent confidence interval and 5 percent level of significance, the importance of the regression model was established.

IV. Results and Discussion

This section presents the research findings on the study on the relationships between capital structure and the financial performance of manufacturing firms listed at Nairobi Securities Exchange. Applying analytical tools which include descriptive statistics, regression and correlation analysis, the research findings were represented on tables as illustrated in the subsequent sections. The research used yearly secondary data, which covered a time of 8 years from the year 2013 and 2020. The study obtained complete data for the considered period.

a) Descriptive Statistics

Descriptive statistics comprises of the mean, standard deviation, maximum, minimum values, number of observations, skewness and kurtosis. Table 4.1 shows the descriptive results.

Table 4.1: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Dev	Skewness	Kurtosis
Financial performance	64	0.02	0.11	0.07	0.03	0.52	0.32
Debt	64	2377142	11075714	6536607	2796214	-0.44	-0.76
Equity	64	3681144	17151390	10122318	4330100	0.53	-0.99
Liquidity	64	0.27	0.65	0.49	0.13	0.33	-0.97
Firm size	64	6.91	12.68	9.21	2.31	-0.84	-0.64
Growth	64	0.02	0.54	0.21	0.20	0.51	0.45

The finding on table 4.1 indicates that the average financial performance of the listed manufacturing firms for the considered study period was 0.07 with a minimum and maximum financial performance of 0.02 and 0.11 respectively. The results further show that the average debt is 6536607 with a minimum and maximum fluctuation of 2377142 and 11075714 while the average equity is 10122318 with the minimum and maximum values being 3681144 and 17151390 respectively. The findings further show that the average liquidity over the study period is 0.49 with minimum and maximum liquidity being 0.27 and 0.65 where as the average firm size is 9.21 with the minimum and maximum firm size being 6.91 and 12.68

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respectively. The average firm growth is 0.21 with the minimum and maximum firm growth being 0.02 and 0.54 respectively. The kurtosis and skewness values range between the recommended ranges of -1 and +1 thus an indication the data is normally distributed.

b) Diagnostic Tests

Diagnostic tests were completed before running the regression model. In relation to this study the diagnostic tests done included normality test, multicollinearity test, auto correlation and homoscedasticity tests.

c) Normality Tests

To test for normality, the researcher used the Shapiro-Wilk test. Below are the null hypotheses as well as the alternative hypotheses.

H_0: The secondary data is not normal.

H_1: The secondary data is normal.

A p-value more than 0.05, would lead to rejecting the null hypothesis and vice versa. The table 4.3 below summarizes the outcomes.

Table 4.2: Shapiro-Wilk Test of Normality

Variables	Shapiro-Wilk Statistic	df	Sig.
Debt	.747	210	.401
Equity	.656	210	.401
Liquidity	.742	210	.401
Firm size	.703	210	.401
Firm Growth	.703	210	.401
Financial performance	.616	210	.401

In accordance to the results, the Shapiro-Wilk values were 0.401 for debt, equity, firm size, liquidity, firm growth and financial performance each. The data revealed a p- value of higher than 0.05 hence rejecting the null hypothesis and accepting the alternative hypothesis which means the normality test revealed the data was normally distributed. This data was henceforth suitable for usage in guiding parametric tests like ANOVA, Pearson's correlation as well as regression analysis.

d) Homoscedasticity Test

Breusch-Pagan test was applied in order to test for homoscedasticity. This test is conducted on the basis that there is a normal distribution in the error terms. The null hypothesis of the test is a constant variance. Consequently, if the p-value is very significant, the null hypothesis is rejected in support of alternative hypothesis that is variance is not constant. Results below show that the p value is greater than 0.05 thus the error term is constant.

Table 4.3: Test for Heteroscedasticity

Breusch-Pagan/Cook-Weisberg test for Heteroscedasticity		
Ho: Constant variance		
Variables: fitted values of net profit		
chi2 (1)	=	1.34
Prob> chi2	=	0.248

Basing on the level of output, the values obtained were greater than 0.05, hence there is no big difference existing in the variation of dependent to independent variables that were tested. Therefore the data tested was Homoscedastic.

e) Multicollinearity Test

Multicollinearity in statistics is an instance where two or more predictor variables are highly correlated. Strong correlations among independent variables are undesirable situation. In situations where there are two or more linear relationship between some of the variables a perfect multicollinearity is said to exist. Multicollinearity test was carried out on the data collected. VIF value of the variable was applied. Result where the value of VIF is below 10 means that multicollinearity is nonexistent. The analysis found no VIF value of more than 10, meaning that there was no multicollinearity. The outcome of multicollinearity test was as presented in table 4.4

Table 4.4: Multicollinearity Test

	Collinearity Statistics Tolerance	VIF
Debt	.500	2.000
Equity	.608	1.646
Liquidity	.633	1.580
Firm size	.493	2.027

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Firm Growth	.416	2.404
Financial performance	.242	2.083

f) Test of Stationary

Stationarity was tested using Augmented Dickey Fuller test and the table below shows a summary of the results. All variables were found to be stationary at 1% confidence level having taken care of any trends and drifts.

Table 4.5: Serial Correlation

	Test Statistics	1% Critical Value	5% Critical Value	10% Critical Value	Sig.
Debt	-3.311	-2.457	-1.697	-1.31	Stationary
Equity	-2.152	-2.457	-1.697	-1.31	Stationary
Liquidity	-2.304	-2.457	-1.697	-1.31	Stationary
Firm size	-3.301	-2.457	-1.697	-1.31	Stationary
Firm growth	-2.613	-2.457	-1.697	-1.31	Stationary
financial performance	-3.512	-2.457	-1.697	-1.31	Stationary

g) Correlation Analysis

To test the relationship existing between two variables a correlation analyses was done. A negative and positive correlation coefficient indicates a negative and positive correlation respectively. Pearson correlation test was applied in evaluating the correlation between financial performance and the independent variables under study. Correlation was used to determine the strength of the connection among the variables. Table 4.6 shows the correlations.

Table 4.6: Correlation Matrix

	Financial performance	Debt	Equity	Liquidity	Firm Size	Firm Growth
Financial performance	1					
Debt	-0.773	1				
Equity	0.463	0.316	1			
Liquidity	0.618	0.163	0.216	1		
Firm size	0.652	0.161	0.233	0.462	1	
Firm Growth	0.456	0.145	0.245	0.143	0.352	1

The study established the association between debt, equity, liquidity, firm size and firm growth and the financial performance of manufacturing companies listed at the Nairobi Securities Exchange using a Pearson Correlation analysis. The study findings presented in Table 4.6 established that there is a significant negative relationship between financial performance and Debt (r=-0.773). Therefore, it can be implied that an increase in debt is associated with decreased financial performance. Secondly, the findings showed that there is a positive significant relationship between financial performance and equity (r=0.463). This is an indication that an increase in equity will definitely increase the financial performance of the manufacturing firms listed at the NSE. Also, there was a significant positive relationship between liquidity and financial performance (rho=0.618) an indication that higher liquidity level increases the financial performance of the manufacturing firms listed at the NSE. Further, there was a significant positive relationship between firm size and financial performance (r=0.652) an indication that increase in firm size increases the financial performance of the manufacturing firms listed at the NSE. Finally, the findings showed that there is a positive significant relationship between firm growth and financial performance (r=0.456) an indication that firm growth have a positive impact on the financial performance of the manufacturing firms listed at the NSE.

h) Regression Analysis

The relationship between debt, equity and the financial performance of manufacturing firms listed at the Nairobi Securities Exchange was established using multiple regression model after the diagnostic tests indicated that the assumptions of multiple regression model would not be violated. Regression analysis involved the analysis of coefficient of determination, model significance and model coefficients.

Table 4.7: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.804053	0.646501	0.616543	1.035581

Dependent Variable: Financial performance
Predictors: (Constant), debt, equity, liquidity, firm size and growth

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In determining the influence of selected predictor variables on financial performance, the research employed the coefficient of determination- R-squared. The study findings indicate that the value of the R-square was 0.646 implying that the selected predictor variables explain 64.6% of changes in financial performance. The R-square column highlights the quality of prediction by the independent variables. The study revealed that the predictor variables and the response variable have a strong relationship as shown by an R value of 0.804.

Table 4.8: Anova of the Regression

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	123.56	5	24.712	21.580	0.000002
Residual	66.4158	58	1.1451		
Total	**189.9758**	**63**			

Dependent Variable: Listed manufacturing firms' financial performance
Predictors: (Constant), debt, equity, liquidity, firm size and growth

Table 4.8 provides the outcomes of the ANOVA. With P value being 0.000 and below the critical p value of 0.05, the model was considered statistically significant wholly and this is confirmed by an F statistic of 21.580 which implies that the selected predictor variables are good predictors of financial performance.

Table 4.9: Coefficient of Correlation

	Un-standardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	3.77	0.451		8.3592	0.000
Debt	-0.782	0.221	0.146	-3.538	0.001
Equity	0.667	0.215	0.526	3.102	0.004
Liquidity	0.737	0.123	0.645	5.992	0.000
Firm Size	0.549	0.2654	0.442	2.069	0.045
Growth	0.463	0.179	0.142	2.587	0.014

a. Dependent Variable: financial performance

$$\text{Financial performance} = 3.77 - 0.782X_1 + 0.667X_2 + 0.737X_3 + 0.549X_4 + 0.463X_5 + \varepsilon$$

The findings in the table 4.9 above show the statistical significant test of the predictor variables in the study model. It shows the estimation of the independent variables, standard error and the t-ratios. According to the regression model shown above, the financial performance of manufacturing firms quoted at NSE is 3.77 provided all the other independent variables are held constant at zero value. A unit increase in the debt in the firm capital structure will result to a -0. 782 decrease in the financial performance of the manufacturing firms quoted at NSE. Similarly, a unit change in equity in the firm capital structure will lead to 0.667 increase in financial performance. When liquidity increases with one-unit financial performance of the manufacturing firms quoted at NSE increases by 0.737. Further a unit increase in firm size will result to an increase on financial performance of the manufacturing firms quoted at NSE by 0.549. Finally, when the firm growth increases with one unit, the financial performance of the firms quoted at NSE increases by 0.463.

i) Interpretation of the Findings

Results of the Pearson's correlation coefficient depicts that there is a significant negative relationship between financial performance and debt. Therefore, it can be implied that an increase in debt is associated with reduced financial performance. Similar findings were found by Adekunle (2009) who did a research study on the impact of financial structure on the firm's profitability in Nigeria for the period 2001-2007. Kaumbuthu (2011) also concluded that a negative correlation exists between debt and the financial performance in NSE. This study has established a positive relationship between liquidity and financial performance implying that an increase in firm liquidity increases the financial performance of manufacturing firms quoted at NSE. In addition, a positive relationship has been established between firm size and financial performance implying that an increase in firm size increases the financial performance of manufacturing firms quoted at NSE. In tandem with the study findings Booth, Cornett and Tehranian (2002) assert that agency costs related to debt is increased with increase in growth opportunities. From Jensen and Meckling (1976), expected growth is

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negatively associated with leverage. This is because growing firms have a bigger investment pool hence issue less debt to avoid potential unprofitable investments, in line with the tradeoff theory. Pecking order theory prefer internal sources funding which would imply that growing firms have a negative correlation with leverage (Watson and Head, 2010). Furthermore, a positive relationship was established between growth and financial performance implying that an increase in firm growth increases the financial performance of manufacturing firms quoted at NSE. As Jensen and Meckling (1976) assert, expected growth is negatively associated with leverage. This is because growing firms have a bigger investment pool hence issue less debt to avoid potential unprofitable investments, in line with the tradeoff theory. Pecking order theory prefer internal sources funding which would imply that growing firms have a negative correlation with leverage (Watson and Head, 2010).

V. Conclusion

The study shows that there is a strong relationship between capital structure channels and firm financial performance of manufacturing firms listed at Nairobi Securities Exchange. 64.6% of the total changes in financial performance of the manufacturing firms listed at NSE can be related to debt, equity, firm size, liquidity and sales growth

VI. Suggestion for Further Research

The study suggests that further research should be conducted for an extended period of time, incorporating more variables including macroeconomic variables. In addition, the research study suggests similar study to be conducted covering the whole of East Africa.

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Fiscal Policy, Monetary Policy and Stock Market Development in Ghana

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Abstract- The purpose of the paper is to investigate the influence of fiscal and monetary policy on stock market development in Ghana. The study adopted quantitative approach. Dynamic OLS regression technique was used for running the formulated model as well as Toda-Yamamoto Granger no-causality approach for the causal relationships. The first hypothesis fiscal policy (inflation) revealed a positive and significant effect on stock market development. The second hypothesis also revealed a negative and significant relationship between interest rate and stock market development. Monetary policy rate revealed a positive and significant relationship with stock market development. Thirdly, the causal model analyzed found two bi-directional relationships: between interest rate and monetary policy rate; and inflation and government revenue. The study recommends incorporate of both fiscal and monetary policies in a single model as their interaction exerts significant effect on the stock market development. Also, the study recommends moderate inflation which would propel the stock market to expand as the share prices increases.

Keywords: single-digit inflation, dynamic ordinary least squares (DOLS), fiscal policy, monetary policy, stock market development, toda-yamamoto granger no-causality approach.

GJMBR-C Classification: LCC: HJ257.2-HJ257.5



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Fiscal Policy, Monetary Policy and Stock Market Development in Ghana

Seth Gyedu [α], Joshua Nii Nyang Welbeck [σ] & Stephen Appiah [ρ]

Abstract- The purpose of the paper is to investigate the influence of fiscal and monetary policy on stock market development in Ghana. The study adopted quantitative approach. Dynamic OLS regression technique was used for running the formulated model as well as Toda-Yamamoto Granger no-causality approach for the causal relationships. The first hypothesis fiscal policy (inflation) revealed a positive and significant effect on stock market development. The second hypothesis also revealed a negative and significant relationship between interest rate and stock market development. Monetary policy rate revealed a positive and significant relationship with stock market development. Thirdly, the causal model analyzed found two bi-directional relationships: between interest rate and monetary policy rate; and inflation and government revenue. The study recommends incorporate of both fiscal and monetary policies in a single model as their interaction exerts significant effect on the stock market development. Also, the study recommends moderate inflation which would propel the stock market to expand as the share prices increases.

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I. Introduction

The impact of economic indicators on stock market prices has been a subject of investigation. This investigation is centered on varied theoretical postulations and inconsistent empirical evidences. Another issue has to do with the size and nature of this impact (Amarasinghe, 2015). The economic theory suggests that stock market development should reflect the expectations in the fiscal and monetary policies changes. Thus, for fiscal and monetary policies to be formulated correctly, the causal relations and dynamic interactions among the underlying economic indicators and stock market are very important.

Stock market is characterized by brokers who trade with shareholdings of listed firms (Karmal, 2013). In spite of the numerous studies on stock markets, there is still no consistent economic variable that have been approved as the only variable to measure stock market development. According to Nwokoye and Oti (2018) using different types of indicators would reveal findings that would be consistent. Stock market development is described as a complex concept and this may be the reason for the varied variables applied in measuring it. Stock market development provides a plethora of advantages when it is established. Some of the merits include: ready access to capital, enhanced the firm's profile, attract high quality employees and finally it increases the firm's visibility when the IPO was a success. (Kunofiwa, 2018).

According to Havi and Enu (2014), fiscal policies can be grouped into number of applications. That is, expansionary fiscal policies and contractionary fiscal policies. Expansionary fiscal policy is adopted when an economy is experiencing a recession. The government in this case would lower tax rates and increase expenditure to cause an increase in the country's growth. The impact of this is that when producers and consumers pay lower taxes, they have more funds to spend, save and invest. This boosts aggregates demand or economic growth. Thus, governments seek their country's expansion by increasing expenditure. This is done by building more infrastructures such as schools, hospitals, roads and other essential capital-intensive projects. On the other hand, contractionary fiscal policies are adopted in the face of galloping inflation. The government reduces its expenditure, basically through spending within the thresholds of its revenue.

In most countries, the government or the central bank decides on how much money should be circulated in the financial system. The US adopt a quasi-approach where the current government in power in conjunction with the central bank decides on how money to circulate, although it is the central bank that print the money. Government all over the world is face with monetary policies that would be suitable if applied well in the economy. Monetary policy is how the central bank or the government governs the money in circulation and prevailing interest rate in the country. Monetary policy is formulated based on inputs gathered from various macro-economic indicators, Geopolitical development, concern group's government and other credible sources (Cioran, 2014). The role of fiscal policy, monetary policy and stock market development are support by some theoretical arguments. Some of these theories may

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include efficient hypothesis, keysian theory, fisher theory, and arbitrary pricing theory (McCallum, 1974; Akosah, 2015; Mpho, 2016; Amata, Muturi & Mbewa, 2016). These theories argue out varied assumptions about the relationships among these subjects. For instance, the efficient market hypothesis has it that there is an insignificant relationship among these variables whereas arbitrage pricing theory opined that there is a significant association between these variables under consideration (Ball, 2009; Anghelache, Jakova & Oanea, 2016).

Aside this, there is the empirical studies, which demonstrate that the study variables are still related and that prior studies have been conduct by some scholars in Ghana. These prior studies may include that of Antwi, Xicang and Mills (2020); Asante, Amporfu and Sakyi (2017); Ofori-Abebrese (2016); Quartey (2014) and others on fiscal policy, monetary policy and the stock market development. However, both theoretical and empirical studies provide evidences which depict mixed results and as such further research in this subject area is still relevant (Ofori-Abebrese, 2016). Thus, this study views fiscal and monetary policy to be closely related and are at times they are referred to as sister policies (Do & Need, 2020). This is because in both variables are aimed at achieving macroeconomic objectives. These objectives include, controlling inflation, consumption, boosting growth and liquidity.

The central banks of developed countries had to implement directives that prove to be different from what they were doing the past. They provided liquidity to a variety of agents including deposited taken institutions, money market and insurance companies. They also bought massive of governments bonds. These actions were necessary to boost aggregates demands. The central bank came to the realization that, a low and stable inflation rate was a necessary condition but not a sufficient condition for the stability in the economy. Thus, these central banks in their hard times did followed directives and regulations that were much less transparent and much less measurable than just a change in the policy rate (Mishkin& Eakins, 2012). In addition, some directives and regulations issue out by the central banks may results the decline in economic growth due to a potential crisis they have envisage or forecasted. This action can spring up political pressure, on them. And in some cases, sovereignty of the apex bank was questioned. Although, the apex bank had the mandate of controlling the economy, two problems are seen here. One is implementing policies that are quite different from everyday policies that they implement. And two, having the government in power controlling and enacting policies (political economy) while the central bank is sidelined (Giannoulakis, 2017).

In Ghana, the central bank, Bank of Ghana has the mandates to pursue sound monetary policies that would result in a stable price and create employment and also create an enabling environment for continues economy growth. The price stability is explained to mean the medium-term inflation target 8% percent with a symmetric bond of + or - 2 (%) percent. To achieve this target, the Bank of Ghana implement suitable monetary and fiscal policy framework is based on Inflation Targeting (IT). Inflation targeting is described as the application of policy rate as the main policy tool that provides guidance on monetary policy and ensuring stable inflation (BoG, 2019). The fiscal development in Ghana in first quarter of 2019, revealed revenue short falls of 1.8%. The revenue under-performance was largely attributed to lower than expected cost-insurance-freight (CIP), using zero-rated cost-human-freight and tower-than anticipated personal income taxes. Furthermore, the 2019 annual fiscal and monetary reports revealed that monetary developments in the country were modest and consistent with the dis-inflation process. The reserve money growth was moderated in 2019 as compared with 2018. Annual growth in reserve money was reduced by half to 7.9% as compared with 14.8% in 2018.The increase in reserve currency was due to an increase in net foreign assets, which was offset by a decline in net domestic assets in the comparative period. The annual growth in broad money (M2+) grew by 18.5% in 2019. This growth in total liquidity reflects an increase in NFA. That notwithstanding, inflation remain within the medium-term target band of 8% + or - 2%, as some marginal increases in inflation occurs, which is driven by pass-through effects of the currency depreciation. In same year the monetary policy rate remained unchanged that is 16% as compared with 18% in 2018 (BoG report, 2019).

Stock exchange composite index continued to trend downwards mainly by underperformance of banks due to the impact of the financial sector clean-up exercise. In 2019, the index was 32.82 as compared with 84.03 in 2018. This decline caused the market capitalization to fall by 0.41. There is no doubt that the fall was a very significant loss in value of stocks. Evidently, these facts and figures indicate that fiscal and monetary policies are truly subjects of great importance in Ghana and its development as a nation. And policies and directives have an important relationship with stock market development. Also, these may be detrimental if it's wrongly applied. In light of these developments, this study seeks to examine the influence of fiscal and monetary policy on stock market development. Additionally, this study seeks to fill a gap by examining the causal relationships that exits among the study variables. This is made possible by employing a robust technique known as Toda-Yamamoto estimation technique after employing standard vector-autore gressive (VAR) frame work. The study would verify the

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empirical findings on fiscal policy and monetary policy to see if the current period of time had resulted in any changes.

The rest of the paper is organized as follows: theoretical literature, empirical literature, lessons learnt and gap summary, section 2 outlines the method used; section 3 presents data source and properties; section 4 also presents empirical results and discussion; and Section 5 ends with the conclusion.

II. Theoretical Literature

The Keynesian theory was built around the assertions by John Maynard Keynes. Back then in the 1930s, he tried on several counts to use this theory to grasp the premises causing Great Depression. The theory essentially talks about the fact that, government can impact productivity levels in the macro-economy through the increase or decrease of taxes and expenditures. He argued that whenever government expenditures are increased through huge capital infrastructural expenditure, incomes are pumped into the pockets of the citizenry which in turn cause an increase in the overall economy. The theory also supports the fact that there is no one powerful tool that can move productivity and employment to the highest level. The Keynes concept is a broad concept where deployment of funds could be used to influence a country's sources of funds. The policy rate transmits by means of the rate of interest and focused on traditional Keynesian version of money for real interest rate movement.

Interest rate channel is a major way by which policy rates decisions that have implications on the economy are made. According to this channel, a change in the rate of interest will cause a change in the required rate of return, which in turn will affect the present value of the firms' future net cash flows, in this way, a high rate of interest will cause a low present value of future net cash flows, which in turn affects the present value of firms; future net cash flows (Chatziantoniou, Duffy & Filis, 2013).

Credit Channel is another monetary policy transmission medium. It has it that the Apex bank alteration of the rate of interest is the medium through which investment decision can be made. Thus, the share prices of firms on the exchange are determined by the level of corporate investment. This assertion by the Keynesian theory implies that where there is a rise in the firms' investments, automatically the firms' future cash flow would rise as well; thereby causing an upward movement of the demand for the firm's shares, this in turn pushes the firms 'market value upward and by extension the stock price. On the other hand, if there is a fall in investment, market value of the firms' share prices also falls. Evidently, investment and market value are directly related (Adam & Tweneboah, 2008).

Equally, wealth effect is another transmission mechanism that affects stock market values of firms. The wealth effect asserts that when there is a rise in the cost of borrowing; fixed asset' value would depreciates. Likewise for share prices, the price falls. In similar way, the ability of the rate of interest to determine stock prices is such that an increase in the rate of interest will cause stock prices to fall.

Another transmission mechanism is the exchange rate. The exchange rate indicates the manner at which the rate of interest influences share prices. The effect of monetary policy on the stock market is expounded by the effect of the rate of interest on the foreign exchange system. In particular, an increase in the interest rate will lead to an increase in the domestic exchange rate, resulting in an increase in imports and decrease in exports. If imports are high and exports are low, this affects local industry and it leads to lower production; ultimately, it leads to lower commodity prices. Tobin (1969) argued that a higher rate of interest would lower the market value of firms listed on the stock exchange market.

III. Empirical Literature

Fiscal policy influences the price of listed firms' stock through the crowding out effect and aggregate demand effect, thus pushing prices of stock higher (Nwaogwugwi, 2018). This empirical study is very vital to the study. This is because there is an ongoing debate on whether to consider fiscal policies and monetary policies separately when making policy decisions or they are to be considered tandem. This calls further analysis and more investigation to reveal more conclusive evidences. This study provided evidence by estimating causality between the proxies for fiscal and monetary policies respectively. One major study done in Ghana by Havi and Enu (2014) digressed from stock market development but rather used economic growth. As such our attention is on the factors used in the study which includes money supply and general government consumption were the independent variables to that served as proxies for monetary policy and fiscal policy respectively. They also applied Ordinary Least Square (OLS) approach which in most case are associated with spurious results because the variable applied are not stationary. Their findings revealed that monetary policy relates positively to economic growth. The current study followed they in using money supply as measure for monetary policy, but it went further applied a different by estimating technique called Dynamic OLS instead of the ordinary least square (OLS).

Idowu, Bamidele, and Elumah (2020) examined the effects of monetary and fiscal policy on the stock market. Data on monetary and fiscal policy variables cover the period from 1985 to 2017. An ex-post facto research project was used. Monetary and fiscal policy

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variables used were monetary policy rate, broad money, exchange rate, government revenue as a share of GDP, government spending as a share of GDP, and government budget balance as a share of GDP. The study shows that there is a long-term relationship between monetary policy, fiscal policy and the stock market. This indicates that fiscal and monetary policies have a significant impact on the stock market. This study used similar proxy variables when dealing with the research variables, but if the results prove to be similar, then a similar conclusion will be drawn, otherwise it remained inconclusive.

In addition, Nwaogwugwu (2018) studied the effects of macroeconomic policies and stock market behavior. He used ARDL frontier test and the results showed that money supply, government spending, taxation, and interest rate have a long-run and short-run relationship with the stock market. Similarly, Prukumpai and Sethapramote (2019) use structural vector autoregression (SVAR) models to estimate the effects of monetary and fiscal policies on the Thai stock market. Although they use different methods, they arrived at the same conclusion. They conclude that fiscal and monetary policies are related to the stock market. The first quarter shows that monetary policy has a greater impact on the stock market. The fiscal policy sector also shows that fiscal policy affects the stock market in the second and third quarters. The impact of fiscal policy is faster but shorter in duration compared to the impact of monetary policy. Thus, we can conclude that the Prukumpai and Sethapramote study supports the argument that fiscal and monetary policies go hand in hand, and the expectations of this study are also correct.

In the United States, Mbanga and Darrat (2015) studied the short- and long-term effects of fiscal and monetary policies on U.S. stock returns. Their findings suggest a strong long-run connection between stock prices and fiscal policy. For monetary policy, the results are reversed. Further tests show that fiscal policy is the main driver of relative stock market activity. While the results confirm this judgment and suggest that fiscal policy is transmitted through the stock market to the real economy. On the other hand, they do not indicate whether monetary policy is related to the stock market. Thus, the research in this area has been inconclusive and has not supported the consistent claim that the two policies move together. This contrasts with Idowu, Bamidele, and Elumah's (2020) study, which examined the same area and found that both fiscal and monetary policies affect the stock market. In our view, monetary policy refers to the control of the money supply by the central bank to ensure that the quantity and price of credit is consistent with specific national objectives.

Genuine empirical research has confirmed the fact that monetary policy variables affect stock market development. This finding occurred in the 1980s, coinciding with the development of statistical techniques such as co-integration and causality tests. Ho (1983) studied the impact of monetary policy on the stock markets of six countries - Australia, Hong Kong, Japan, the Philippines, Singapore and Thailand. He used monthly data on stock prices and measures of money supply M1 and M2. Co-integration and causality methods were used for the period 1975 to 1980. The study revealed a unidirectional causal relationship from money supply to stock prices in Japan and the Philippines respectively. A causal relationship also exists for money supply M2 in the stock markets of Hong Kong, Australia and Thailand. Singapore was found to be the only stock market country where a two-way relationship existed for both money supply M1 and M2. The Indian stock market reacts to unplanned and unexpected monetary policy announcements. Khuntia and Khiremat (2019) assess the relationship between monetary policy announcements and stock returns in emerging markets. They focus on the expected component of planned announcements. They point out that in times of financial crisis and macroeconomic instability, central banks follow unplanned monetary policy announcements to stabilize markets. These unplanned monetary policy announcements forced market participants to change their behaviour, forcing most market participants to engage in jerk behaviour, which in turn have a considerable effect of unplanned monetary policy announcements on equity returns. They suggested that the monetary authorities should implement some additional policy initiatives on an ongoing basis to restore market efficiency.

In Ghana, Abaka (2009) also used the Johnansen co-integration technique and Granger causality to examine the possible long-run and short-run effects between monetary policy and stock prices. The results suggest that there is a negative long-run relationship between interest rates and stock prices. In addition, an unexpectedly negative long-run relationship between money supply and stock prices is found. The results of the study further reveal an unexpected positive relationship between inflation and stock prices. The results of this study share the same expectation that there is a negative relationship between interest rate and stock market development. Earlier, Anokye and Tweneboah (2008) found the existence of a cointegrating relationship between macroeconomic variables and stock market index. Both studies showed that inflation is positively related to the stock market. This study took a different approach to see if the same conclusion could be drawn for the relationship between fiscal indicators and stock market performance. If the study finds the same result, it will argue that some of these earlier findings are still valid. Similarly, Echekoba, Okaro, Ananwude, and Akuesodo (2017) were

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motivated to look at the relationship between capital market performance and monetary policy. They used secondary data on all equity indices in the Nigerian capital market for the period 1986 to 2016 to conduct the test. They used the ordinary least squares (OLS) regression technique. The results of Ananwude and Akuesodo (2017) showed that the monetary policy rate has a negative and significant relationship with the stock market. This is consistent with the expectations of this study and, more importantly, supports the theoretical results. According to Yoshino, Taghiadeh-Hesary, Hassanzadeh, and Danu-Prasetyo (2014), the variables of monetary policy include the currency itself, the exchange rate, and inflation. They estimate the price response of Asian stock markets to exogenous monetary policy shocks using a vector error correction model (VECM). The results show that the response of stock prices to an exogenous monetary policy easing is systematically increasing. The variance decomposition shows that 53% of TEPIX (Tehran Equity Exchange Price Index) stock prices are affected by an independent shock (US-Iran exchange rate).

In the sub-Saharan region, no research has been done on fiscal and monetary policy in the general market for financial assets in this region. Few studies have been done on economic development in this region. One such study was conducted by UbiAbi and Ekere (2018), who argue that governments should focus on designing and implementing programs to support product investment, trade, and an enabling environment. They reached this conclusion after examining the impact of fiscal and monetary policies on economic growth. A comparative analysis of the two policies showed that fiscal policy has a greater impact on economic growth than monetary policy. However, this study examines the same area in light of stock market developments and further reveals whether fiscal and monetary policies are moving in parallel.

Also, Perveen and Rahman (2018) examined the impact of fiscal and monetary policies on the stock market along with identifying the moderating role of political stability in Pakistan. The results indicate that there is a long-term relationship between fiscal and monetary policies and the stock market, while the short-term relationship exists only with respect to monetary policy measures and stock market functioning. They also showed that government spending, fiscal deficit, and money supply reflect a positive relationship with the stock market. On the other hand, tax revenue and interest rate showed a negative relationship with stock market performance. Moreover, political stability only moderates the relationship between interest rate and stock market performance, while the other relationships are not moderated by political stability. In the same country, an international study was conducted by Qureshi, Khan, Rehman, Qureshi, and Ghafoor (2019). They examined effects of monetary and fiscal policies on bond mutual funds and the stock market. The results suggest an inverse bidirectional relationship between bonds and the stock market in the case of developed countries. Expansionary monetary policy is negatively related to bond mutual funds, while expansionary fiscal policy is positively related to bond mutual funds and the stock market. This shows that monetary policy signals an improvement in economic conditions. They argued that the interaction between fiscal and monetary policies is stronger in developed countries (Chatziantoniou, Duffy & Filis, 2013). The current study suggests reaching a similar conclusion only if a different estimation methodology is applied. International research supports the claim that fiscal policy, monetary policy, and stock market performance are all related (Chatziantoniou, Duffy & Filis, 2013). This part of the study shed light on the empirical studies that support this claim. It showed that the empirical results on attitudes are still inconclusive. There are few studies on the effects of fiscal policy, monetary policy, and the stock market. This study would serve as further research to provide these associations with more evidence.

IV. Methodology

This section discusses appropriate methods for addressing the research problem and achieves the objective of the study. The data collected at this stage were assigned to each respective specific hypothesis before the data been entered into the statistical package. E-Views software version 11.0 was used in analyzing the data collected. Data were summarized, analyzed, interpreted and presented to address the three research objectives of the study.

a) Dynamic OLS Estimation Approach

The present study started by estimating the dynamic ordinary least square (DOLS) regression to establish the type of connection among the variables of study. This study further contributed to empirical literature with use DOLS in regression estimation as against the use of OLS estimation technique.

$$LSDEV_{it} = \alpha_0 + \sum_{i=-q}^{p} \beta_1 LGE_{t-i} + \sum_{i=-q}^{p} \beta_2 LGR_{t-i} + \sum_{i=-q}^{p} \beta_3 LM2_{t-i} + \sum_{i=-q}^{p} \beta_4 LINT_{t-i} + e_t.$$

Where; $LSDEV_{it}$ denotes natural logarithm of stock market development, and the independent variables were *LGE,LGR, LM2, LINT* denoted by natural logarithm of government expenditure, government revenue, money supply and interest rate respectively. e_t denotes error term.

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b) Data Source and Properties

This study sourced data was the secondary data type. This type of data was appropriate and in line with the research design and method. Secondary data were chosen over primary data for four reasons. First, secondary data are easily available and accessible. Secondly, sources of secondary data such as International Monetary Fund (IMF) and Bank of Ghana (BoG) are more credible than primary data which may have been subjected to the researcher's bias. Thirdly, the study used secondary data because it is in line with research approach and most importantly prior empirical studies. Finally, it is difficult to construct primary data for some of the variables which were the subject of the investigation. Thus, it is appropriate to adopt secondary data for this research.

The data collected were annual series that spanned from 1991 to 2019. The key variables measured with this data were stock market development, government spending, government revenue or tax revenue, money supply, interest rate, inflation, monetary policy rate. The study treated stock market development as the dependent variable, while government spending, government revenue, money supply, inflation, monetary policy rate and interest rate were the exogenous variables. The endogenous variable which was stock market development was measured by stock market capitalization. Fiscal policy was measured by government expenditure and tax revenue as adopted by Foresti and Napolitano (2016). Similarly, monetary policy was measured by interest rate and money supply (Haitsma, Unamis & De-Haan, 2016). Summary of the variables, their proxies and sources are reported in Table 1.

Table 1: Study Variables, Proxies and Sources

Variables		Proxies/Measurement	Sources of Data
Stock Market Development		Market Capitalization	Ghana Stock Exchange
Fiscal policy	Government Expenditure	Natural log of Government spending	Bank of Ghana
	Government revenue	Natural log of Government tax revenue	Bank of Ghana
	Inflation	Annual Inflation rate	International Monetary Fund
Monetary policy	Interest rate	Natural log of 3-month Treasury Bills	Bank of Ghana
	Money supply	Natural log of Broad Money supply (M2)	Bank of Ghana
	Monetary policy rate	Annual Monetary policy rate	Bank of Ghana

Source: Field Data (2020)

c) Diagnostic Tests

i. *Descriptive Analysis*

The purpose of estimating descriptive analysis is to aid in understanding the features of the study data. This presentation is made possible by measuring the data and summarizing the data. This measure is divided into two parts: a measure of central tendency and a measure of variability (spread of the data). Measures of central tendency include the mean when the data exhibit ratio or range characteristics and the median when the data can only be grouped and ranked. In addition, measures of variability include standard deviation, minimum and maximum variables, and tests for skewness, the Jarque-Bera statistic and kurtosis.

The first preliminary test conducted was the normality of the variables under study. The reason for this test is to investigate mean error term. And see if the result would be zero. Then the variables were normally distributed. This test was conducted because non-normality of the variable could lead to non-normality of the residuals which is a problem. Thus, to avoid this pitfall, normality test was conducted. In order for a variable to be normally distributed, its skewness must be close to zero, its kurtosis must be equal to three, and the Jarque-Bera statistics must be non-significant. From Table 2, skewness was less than one and closer to zero, signifying a normal distribution. None of kurtosis was equal to zero or close to three. Thus, based on the Jarque-Bera statistics, the data turned out to be not normally distributed and insignificant.

The measure of variability was determined by estimating the mean values of all variables considered for the purpose of this study. Table 2 presents the descriptive statistics of the study variables. The research variables *lgexp, lgr, linf, lint, lm2, lmpr, and lsdev* represent the logarithm of government expenditure, the logarithm of government revenue, the logarithm of money supply in the broad sense, the logarithm of monetary policy rate, and the logarithm of stock market development, respectively. Even though all the averages

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are the most common values, the results show positive averages, meaning that the average value is greater than zero. Comparing the mean values with the maximum and minimum values, we found that all the mean values are closer to the maximum value than to the minimum value. This indicates that the mean is a high value. The dependent variable, stock market development (*lsdev)* had the highest mean value of 4.99. And inflation (*linf*) had the lowest mean value. The corresponding standard deviation revealed stock market development *(lsdev)* with the lowest or relatively less deviation of 0.05, the rest of the variables have relatively high deviations.

Median is reported when the study data prove to non-normally distributed. The median values are closer to mean values. This reveals that study variables are normally distributed. The median values are *3.24, 3.14, 0.89, 1.18, 1.17, 1.20, and 4.98 for lgexp, lgr, linf, lint, lmpr and lsdevrespectively.* Again, stock market development (lsdev) had the highest positive middle number. This implies that all the variables are skewed to the right.

Table 2: Descriptive Statistics of Study Variables

	LGEXP	LGR	LINF	LINT	LM2	LMPR	SDEV
Mean	3.17	3.07	0.89	1.21	1.13	1.23	4.99
Median	3.24	3.14	0.89	1.18	1.17	1.20	4.98
Maximum	3.78	3.69	1.29	1.41	1.84	1.41	5.05
Minimum	2.39	2.37	-0.06	0.97	0.30	1.10	4.48
Std. Dev.	0.44	0.42	0.19	0.15	0.47	0.092	0.05
Skewness	-0.26	-0.21	-0.89	-0.04	-0.19	0.56	-4.41
Kurtosis	1.77	1.71	7.05	1.54	1.81	2.50	44.68
Jarque-Bera	13.27	13.66	147.08	15.95	11.75	11.14	13616.49
Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sum	570.38	552.41	160.78	217.71	202.76	220.97	899.01
Sum Sq. Dev.	33.95	32.06	6.25	4.01	39.16	1.50	0.53
Observations	180	180	180	180	180	180	180

Source: Field Data (2020)

ii. *Unit-Root Testing*

Unit root analysis is one of the methods used to establish the stability of data, assuming that the time series is stable (Dasgupta, 2012). It assumes that the time series is stationary (Dasgupta, 2012). In this study, both Augmented Dickey Fuller (ADF) test and Kwiatkowski-Phillips-Schmidt-Shin (KPSS) test were applied. ADF test is used to determine the presence of unit root in time series data. The null hypothesis states that there is a unit root in the series and the alternative hypothesis states that there is no unit root in the series. If the null hypothesis is not rejected, this test is evidence that the series is non-stationary. Augmented Dickey Fuller (ADF) unit root handles the correlation error of the test model by including sufficient regressive lags. On the other hand, the KPSS test is used to test the stationarity of the time series; the null hypothesis of KPPS indicates that the *process is trend stationary*. The null hypothesis of KPPS indicates that the *process is trend stationary*, while the alternative hypothesis indicates that the *process is not trend stationary*. In order to ensure that the series is truly stationary, it is desirable to apply both tests. In this case, non-stationary differences in the time series description can be used to correct the problem.

The results in Table 4 confirm the study's expectation of estimating time series data I (1) that are stationary and integrated to one. Therefore, we reject the null hypothesis and accept the alternative hypothesis that there is no unit root. Therefore, *LGEXP, LGR, LINF, LINT, LM2, LMPR*, and *LSDEV* are stationary at 1% in both ADF and KPSS unit root tests.

Table 3: Results of ADF and KPSS Unit Root Test on Study Variables

Variables	ADF		KPSS		Order
	T-Statistics	P-Value	T-Statistics	P-Value	I (1)
LGEXP	-3.09	0.03	3.38	0.00	I (1)
LGR	-2.66	0.08	3.64	0.00	I (1)
LINF	-5.24	0.00	97.29	0.00	I (1)
LINT	-5.72	0.00	108.37	0.00	I (1)
LM2	-12.54	0.00	9.01	0.00	I (1)
LMPR	-4.51	0.00	179.77.	0.00	I (1)
LSDEV	-13.57	0.00	579.32	0.00	I (1)

Source: Field Data (2020)

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V. Correlation Analysis

Correlation analysis is the technique used in this study to justify whether or not the study variables have multi-collinearity problems. For a study variable to be highly correlated, the coefficient should not exceed 0.9. The results of the correlation coefficients for this study are presented in Table 3. The regressors, monetary policy rate and government revenue, showed a strong positive relationship with inflation and government spending. The reason being that government revenue was directly spent by the government at the consumption stage.

Interest rate and money supply variables form the basis for setting the monetary policy rates by the Apex bank. The monetary policy rate exhibits a strong direct relationship with interest rates. The interest rate also shows a weak inverse correlation of -0.09 with the inflation rate. This confirms the general view that when interest rates are low, the economy grows and inflation rises. Conversely, when interest rates are high, the economy slows down and inflation declines. The same relationship exists between money supply and inflation rate, and money supply and interest rate at -0.24 and -0.34, respectively. Monetary policy rate and government spending, monetary policy rate and government revenue, and inflation rate and government revenue show moderate positive relationships of 0.36, 0.36, and 0.26, respectively. The other variables exhibit weak positive relationships. Most importantly, the coefficient of the correlation analysis conducted is less than 0.9, indicating that there is no multi-collinearity problem.

Table 4: Correlation Analysis of Study Variables

	LGEXP	LGR	LINF	LINT	LM2	LMPR
LGEXP	1					
LGR	0.53	1				
LINF	0.13	0.26	1			
LINT	0.07	0.15	-0.09	1		
LM2	0.13	0.14	-0.24	-0.34	1	
LMPR	0.36	0.36	0.05	0.69	0.03	1

Source: Field Data (2020)

VI. Analysis using Dynamic Ordinary Least Square (DOLS) Regression

This study uses this estimation technique to address the proposed research question. The dynamic OLS technique is suitable for revealing the nature of the relationship. Thereby, dynamic OLS explained the extent to which policies affect the development of the exchange market. DOLS involves augmenting regression with leads and lags so that the resulting residual equations are orthogonal to the overall estimated model (Mehonood, Feliceo & Shahid, 2014). When estimating DOLS, certain assumptions need to be established, essentially, making it a better choice than OLS. Firstly, dynamic ordinary least squares improve OLS by coping with small samples and bias from dynamic sources. Secondly, misspecification of one equation does not affect the other. Thirdly, the variables in the study are integrated to first order (Al-Azzam & Hawdon, 1999). The DOLS regressions to be estimated must satisfy the Gauss-Markov conditions. The first condition is that the residual value should be anticipated value of zero. This means that the positive residual values cross out the negative residual values. The mean of the residual value then becomes zero. Secondly, there is no autocorrelation between the residuals so that some of the properties of dynamic ordinary least squares are not violated. In addition, the error terms or residual value have equal variances. Finally, regression specification model is correct, with no missing or incorrect functional forms (Gujarati, 1998).

Table 5: Dynamic Regression Estimation

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LGEXP	0.101476	0.097275	1.043192	0.2984
C	4.324764	0.223050	19.38921	0.0000
LINT	-0.143339	0.027592	-5.194875	0.0000***
LINF	0.035262	0.018726	1.883090	0.0615*
LGR	0.118254	0.111312	1.062368	0.2897
LM2	-0.136888	0.102170	-1.339803	0.1822
LMPR	0.237783	0.050185	4.738129	0.0000***

*Note: R^2 0.606, Adjusted R^2 0.574176, Mean dependent var of 4.996, S.D. dependent var of 0.055308, S.E. of regression0.036, Sum squared resid of 0.207, Long-run variance of 0.0014. *, **and *** denote 10%, 5% and 1% significance level. Source: Field Data (2020).*

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Table 6 reports statistics from the dynamic regression analysis. The reported R^2 provides estimates of the degree of impact or change in stock market development attributable to changes in government spending, government revenue, money supply and interest rates as explanatory variables and two control variables: inflation and monetary policy rate. The model estimates from Table 7 reveal an R^2 of 0.6064 and an adjusted R^2 of 0.5741. Again, the R^2 statistic indicates a positive relationship between endogenous and exogenous variables. In this case, the endogenous variable is stock market development and the exogenous variables are government spending, money supply, government revenue and interest rate. The policy rate and inflation rate are good indicators of monetary policy and are included in the exogenous variables. Thus, R^2 explains 60.64% of the variation in stock market development that is caused by these independent variables. In addition, these independent variables as well as the control variables explain 57.42% of the total variation in stock market development. This finding is supported by reported adjusted R^2 of 57.42% in the estimated models. When estimating such models, researchers are often confronted with the problem of autocorrelation and usually use the Durbin-Watson test statistic as a basis for demonstrating the presence of autocorrelation. In contrast, the DOLS estimation technique is a superior approach when estimating regressions because it solves the autocorrelation problem by selecting lags and leading lines. With this in mind, Table 7 reports that the dynamic ordinary least squares (DOLS) estimation technique omits the Durbin-Watson statistic and provides the assumption that there is no autocorrelation in the regression. DOLS is also a non-stationary estimation technique. In addition, the study used the standard error of regression (S.E.R.) to determine the mean distance of the observations from the regression line. The rule of thumb is that the smaller the S.E.R value, the better the model is estimated. This indicates that the observations are closer to the regression line. The S.E.R reported from Table 6 is 0.03609, which indicates that the fitted mean stronghold is approximately 0.03% body fat. The revealed S.E.R value is very small, less than 1%. The study concluded that the regression model was relatively close to the regression line.

a) Objective One: Effects of Fiscal Policy on Stock Market Development

A previous discussion cites government expenditure and government revenue as proxies for measuring fiscal policy. The results for these two variables are therefore fundamental proof of the kind of the association between stock market development and fiscal policy. First, Table 7 reports government expenditure and shows a positive coefficient of 0.1015 with a probability value of 0.2984, which is not significant at the 10% level. Therefore, the null hypothesis which states that there is no significant relationship between government expenditure and stock market development is accepted. Technically speaking, there is no relationship between government expenditure and stock market development. This implies that a rise in government expenditure does not lead to a change in stock market development. Similarly, government revenue reports a positive coefficient of 0.1183 with a probability value of 0.2897. The probability value for government revenue is also insignificant at 10%. Therefore, there is no relationship between government revenue and stock market development. This implies that an increase in government revenue does not have an impact on the development of the stock market.

These results are inconsistent with research expectations. Based on the literature review, the study expected fiscal policy to have a significant positive impact on stock market development. Apparently, the results found by applying government expenditure and revenue as proxies for fiscal policy showed an insignificant positive relationship with stock market development. In particular, the study is inconsistent with the theory of market efficiency. The theory of market efficiency implies relevant information, which includes data on individuals, firms, investors and governments (Fama, 1970). When markets are efficient, then all the information has been incorporated into the stock price. Therefore, all this information influences the development of the market and makes it efficient. As an example, the development of the market is influenced by fiscal policy.

Similarly, inflation is a control variable for the application of fiscal policy. Table 7 reports a coefficient of 0.0353 with a p-value of 0.0615 at the 10% level of significance. In other words, a 1% change in stock market development leads to a 3.53% change in the inflation rate. Inflation rate has a positive and significant effect on stock market development, while government expenditure and revenue do not provide any significance or support any theoretical hypothesis. Although, the underlying theories such as Keynesian theory and market efficiency theory support that the implementation of fiscal policy helps to boost aggregate demand and employment. Therefore, when aggregate demand increases; employment increases and in turn stock market capitalization increases. Economic growth in Ghana is very low because the highest bank of authority has adopted a single-digit inflation strategy to stabilize the inflation and maintain good currency depreciation. However this study shows that when inflation is allowed to increase, it will lead to an increase in the development of the stock market in this country as well as the overall economic growth. The Bank of Ghana should therefore look at the drawbacks of this inflation

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targeting technique and implement a policy of boosting the economy and the stock market through regular price increases.

In all sectors of the economy, capital is important to sustain and avoid economic collapse. With this in mind, this study shows that funds are not flowing to the sectors of the economy that would have boosted aggregate demand. The agricultural sector is the one sector of the economy that would have improved, as growth in GDP leads to growth in the overall economy, which includes all private and public consumption, government spending, investment and external balance of payments trade. Thus, most of government expenditure and revenue generation could have been concentrated in this sector. Furthermore, Ghana does not generate enough revenue from taxes and international grants to support the economy and lead to further development of the stock market. Nevertheless, this study affirms the findings of inflation and concludes that fiscal policy is positively associated with stock market development.

From a recent study by Idowu, Bamidele and Elumah, (2020), there is empirical consistency from the perspective of fiscal policy and stock market. Idowu, Bamidele and Elumah, (2020) found that when they used an unrestricted vector autoregressive model, there was a positive significant relationship. The same results were obtained in this study when dynamic ordinary least squares were used. Similarly, Foresti and Napolitano (2017) establish evidence of a negative correlation between fiscal policy and the stock market. This is in contrast to the results of this study. Truly, the study variables on fiscal policy exhibited a direct influence on the stock market development. Irrespective of the fact that fiscal income and deficit testified an insignificant coefficient; the coefficients implied a direct relationship. Previous studies by Amo-Yartey (2014), Havi and Enu (2014) and Afonso and Sousa (2009) affirm the position that fiscal policy, when properly applied, has a positive impact on the exchange market and the economy. Interestingly, Asamoah, (2017) explains that fiscal deficit as a sizable and powerful effect induced by fiscal spending leads to revenue shortfall. The current study supports this assertion that government expenditure is greater than revenue leading to fiscal deficit. This is evident from the comparative percentages of their coefficients of fiscal expenditure and fiscal revenue of 11% and 10% respectively.

The implication of the findings of this study is that government revenue comes from taxation and unsecured international grants. So basically, it is taxes and loans or debt. This directs attention to how the government finances its debt. If government spending is financed through higher taxes, then the increase in taxes may offset the increase in spending and aggregate demand will not increase and there will be no impact on stock market development. Ghana's debt ratio suggests that our government spending is not entirely financed by taxes. The results of this study show that the government revenue rate is lower than the government expenditure rate. Therefore, higher spending can lead to crowding out. Crowding out is when government spending is higher but has the effect of reducing private sector spending. For example, if the government borrows or sells treasury bills to individuals, individuals will have less investment savings.

A further implication of this finding found government spending coefficient to be insignificant. Although, in free market economy, spending should be significant enough to have an effect on the market or the economy. If this is not the case, it leads to inefficient government spending. This, in turn, is caused by poor information systems and lack of incentives, which leads to misallocation of resources and lower economic growth, which in turn leads to low stock market performance.

b) Objective Two: Effects of Monetary Policy on Stock Market Development

The results of interest rate analysis have affirmed the theoretical views of some academics. The discounted dividend theory, for example, argues that the performance of the stock market is seen as the discounted value of future dividends. In turn, an appreciation in price causes an increase in the risk-free rate, leading to a decrease in the value of the stock price. Miller and Modigliani (1961) argue that the interest rate is one of the key determinants of stock prices, to the extent that the efficiency of the market depends on it. This suggests that an increase in the level of interest rates reduces the level of stock market development. Again, the results of this study do support this view as it reveals a negative and significant coefficient for the interest rate, which is the main proxy for measuring monetary policy.

In line with empirical contribution, the findings of this study under the second specific objective are consistent with some previous studies. Wong, Khan and Du, (2005) find that the stock market in Singapore moves in tandem with interest rates. They used multiple regression methods and Granger causality. The study concluded that the coefficient on interest rates was inversely related to stock market development. The difference lies in the methodology used. This study uses dynamic regression analysis and the Toda-Yamamoto method.

The specific objective stated in Chapter one is to attempt to determine the relationship between monetary policy and stock market development in Ghana. In testing the existence of this relationship, a null hypothesis was formulated in order to achieve this objective. The coefficients of the monetary policy

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variables were used as determinants to address this hypothesis.

It is evident from the dynamic ordinary least squares regression estimates that money supply and interest rate are the main measures of monetary policy, while the monetary policy interest rate is included as a control variable for measuring monetary policy. Interest rate shows a negative and significant relationship with stock market development in Ghana. The significance level of interest rate indicates that monetary policy has a significant effect on stock market development. The results show that the coefficient of interest rate is -0.1433 with a significance level of 1%. The negative coefficient indicates a negative connection between interest rates and stock market development. In addition, it shows that a 1% change in the development of stocks leads to a 14.33% decrease in the level of interest rates, all other things being equal. Applicability-wise, this indicates that when the level of monetary policy deepens, the level of stock market development decreases. Similarly, the negative coefficient of money supply is -0.1369 with a p-value of 0.1822, which is not significant. This implies that there is no relationship between money supply and stock market development. Although, coefficient is depicting an inverse relationship; the results were in line with expectations of the study for interest rates. Therefore, money in circulation or money supply does not have any significant influence on the stock market.

On the other hand, there is a positive and significant relationship between monetary policy interest rate and stock market development. Table 6 shows that the t-statistic is 4.738 with a coefficient of 0.2377 and a p-value of 0.000 at the 1% level of significance. The positive relationship implies that when the stock market level increases by 1%, the monetary policy rate will increase by 23.77%. This result for the monetary policy rate does support the theoretical hypothesis. The expectation of the study is that there is an inverse relationship between the two variables. In fact, the Bank of Ghana uses the monetary policy rate to control inflation, unemployment and economic growth. The result of this study implies that when the Bank of Ghana increases the policy interest rate, it induces an increase in stock market development as well. In order for the stock market to develop, the Bank of Ghana should increase the policy interest rate. This restrictive policy action may not be welcomed by commercial banks and other financial institutions because it becomes expensive to borrow more money. This approach is used in the context of strong economic growth and possible high inflation. There is also a tendency for investors to shift their investments from treasury bills to the stock market due to higher policy rates, which in turn would increase the cost of borrowing from these financial institutions, thus reducing their return on investment. At the same time, the price of the stock market will increase, thus attracting investors to the market. With the Bank of Ghana reducing its policy interest rate, commercial banks and other financial institutions will turn to borrow more money because of the low cost of borrowings. This action results in a reduction in stock market development as well. Obviously, some listed companies will shift their investments from the stock market to other investment vehicles due to the decline in stock prices. For most listed companies, it is difficult to raise investment capital. This is because as share prices fall, it becomes more difficult to raise equity capital by issuing shares, which also reduces investment. In terms of confidence factors, falling share prices can erode consumer and business confidence. A continuation of this situation would indicate impending economic turmoil, and expansionary action should be taken to correct the situation.

Another relevant finding is the study by Eckoba, Okaro, Ananwude and Akuesodo (2017) which investigates the actual impact of monetary policy on stock market. The results showed that monetary policy rate has an inverse and significant effect with stock market. This result is not in line that of monetary policy rate, in this study. This is because it reveals a positively significant relationship rather than a negatively significant relationship. Therefore, it is consistent with the results of this study especially for the money supply and rate of interest.

On the contrary, Havi and Enu (2014) studied the importance of monetary policy on the economy. They reveal that monetary policy is positively related to economic growth. The similarity of this study is that the methodology applied is closely related to that of the present study. The OLS estimation method was not applied in this study because of its associated bias. The main difference is in the dependent variable used. As this study may use stock market development this related literature uses economic growth variables.

Still on the conclusion that is inconsistent with the results of this study, Ubi-Abi and Ekere (2018) reached this conclusion in their investigation of the impact of monetary policy on economic growth. They applied GMM and Dumitrescu-Hurlin causality. They explain that economic policy affects the stock market to a large extent through economic growth. Their results show that monetary policy is positively related to economic growth, which in turn affects the stock market. The differences in the results may be attributed to the methodology applied and to the differences as proxy variables. Similarly, Iddrisu, Harvey and Amidu (2017) had the same inconsistent results. They establish that stock markets in 12 African countries are positively influenced by monetary policy through the interest rate channel. In contrast to this study, the findings of Iddrisu,

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Harvey and Amidu (2017) are derived from 12 different African countries and in each country; they differ in interest rates, policy rates, exchange rates and other macroeconomic variables. Given this, their results should reflect these differences, but their report shows a different picture.

The empirical implications of the results of this study will help to understand the implications of some of these findings. Initially, the flow of money plays a crucial role because it predicts movements in prices, output and employment. The role of the central bank is to provide money for commercial banking and other service transactions, avoiding the need for a barter system. When the money supply is negative, it affects the profitability of any economy. Individuals, households and investors will find it difficult to obtain external financing. This will cause them to cut back on spending. In addition, a negative money supply coefficient indicates the need for measures to create a stronger market. This is because the underlying causes may be intrinsic. These intrinsic causes include increased spending on input costs, natural disasters, wars, increased taxes, and low labor wages.

VII. Conclusion and Implication

In addressing the salient hypotheses, the following conclusions are drawn. The study identifies a direct connection between stock market development and fiscal policy. It shows that fiscal policy is implemented to boost aggregate demand, which in turn boosts the stock market. The study showed that when inflation is allowed to increase, it will lead to an increase in stock market development as well as the overall economic growth of the country. Therefore, the Bank of Ghana should look at the drawbacks of this single-digit inflation targeting technique and implement policies that will boost the economy and the stock market by causing periodic price increases. This study supports the notion that government expenditure is greater than revenue, which leads to fiscal deficit. This is evident from its coefficient comparison percentages of 11% and 10% for fiscal expenditures and revenues, respectively. The study concludes that the government's revenues are mainly derived from taxes and unsecured international grants, and once the revenues collected do not match the projected budget, the functioning of the entire economy becomes problematic and affects stock market investments. Interestingly, there are some inconsistencies with research expectations. The following variables provide some unexpected insights. They are government spending, government revenue and money supply. Although, these variables do establish that they have an impact on stock market development. These variables provide insignificant results. This could be due to the inefficiency of the market.

In addition, monetary policy shows a negative relationship with stock market development when interest rates are used as a proxy for monetary policy. This suggests that when the level of monetary policy deepens, the level of stock market development decreases. Therefore, any change in interest rates can cause difficulties for investors and affect the profitability of listed companies, which can lead to stock price volatility. On the other hand, the study also applies the monetary policy interest rate as an alternative measure of monetary policy. The study established a positive association between monetary policy and stock market development. This led to the conclusion that whenever the Bank of Ghana increases the policy interest rate, it turns to increase the stock market development. This restrictive approach is used by the Bank of Ghana, which is used in a strong economy and not in a depressed economy. In addition, there is a strong tendency for listed companies to shift their investments from treasury bills to the stock market due to the increase in the policy interest rate, which in turn increases the borrowing costs of these financial institutions, thus reducing their investment returns. At the same time, the price of the stock market will rise, thus attracting investors to the market. Nonetheless, in the event that the Bank of Ghana reduces the policy rate, commercial banks and other financial institutions will turn to increase their borrowing because of the low interest rates. This leads to a reduction in stock market development as well. This means less investment wealth, difficulty in raising equity capital and weakened consumer and business confidence.

Furthermore, the first double causality between interest rates and the monetary policy rate implies that because commercial banks' interest rates depend on the interest rate at which the central bank is willing to lend them money. This explains the causal relationship between the flow of monetary policy to the interest rate. On the other hand, the central bank sets the lower and upper limits of the policy rate, and commercial banks can vary within the lower and upper limits. These changes in interest rates for commercial banks and financial services explain the causal effect of interest rate flows to the monetary policy rate. In addition, the second bi-causal relationship between inflation and government revenue implies that inflation affects government revenue, especially when inflation is unanticipated. Unanticipated inflation benefits the government because the government is a larger debtor and gains from taxes as nominal revenues increase. The findings on the unidirectional causality from inflation to interest rates provide evidence to as to role that nominal and real interest rates play in the financial system. This provides evidence to support the understanding that nominal interest rates move in tandem with expected inflation rates in the case of time series data.

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Finally, a second uni-directional relationship from inflation to stock market development provides evidence that firms interested in income-producing stocks are less attractive in the face of high inflation than in periods of low inflation. Inferentially, a third uni-causal relationship from stock market development to interest rates provides evidence for the dividend discounting model, demonstrating that the discount rate is negatively related to stock returns.

VIII. Recommendations

Although the outcomes of fiscal and monetary policies have proved to be asymmetric in most countries, it should be noted that monetary and fiscal policies are interdependent. Therefore, a consistent and sustainable policy mix framework is needed to avoid possible inconsistencies. From a policy perspective, the findings suggest the need to adopt a single model. This single model would comprise of fiscal policies and monetary policies together. This is because the interactions between these policies have a significant impact on the development of the stock market. The two policies should therefore be considered in tandem, rather than in isolation.

The study recommends a moderate inflation rate rather than a single-digit inflation rate. The reason for this is that moderate inflation drives stock market expansion as well as stock prices. The study encourages the Bank of Ghana to apply a moderate inflation to help the exchange market. Moderate inflation will force the Central Bank to expand its purchases of government bonds and other assets. This is done by increasing the money in circulation. This action raises consumers and businesses expectations, thereby encouraging them to spend more than they save. This moderate inflation is therefore more appropriate than maintaining a low inflation rate

First of all, when general prices barely move, many consumers and businesses would postpone purchases because prices is seemingly different or barely changes to the extent that it would affect their forecasted budgets. Secondly, when there is low inflation salaries and wages do not increase. By so doing, there is no reason for labour union and other stakeholders to argue for increase in remuneration. This is not the case when moderate inflation is adopted. Moderate inflation provides reason for increase in wages and salaries which in turn would cause an increase stock market development. Thirdly, with low inflation or single-digit inflation, debt burdens are magnified. In the case, where income is stable overtime, paying interest on loans becomes a heavy financial burden. This has been one of the reasons for Ghana experiencing heavy burden with interest loans. Thus, if Bank of Ghana follows this recommendation and adopts moderate inflation, the country would reap benefits such as reduction in real value of debt; allowing prices to adjust and attain real price; allowing relative wage adjustment and finally causing increase in the stock market development.

Furthermore, this study recommends that Ministry of Finance in collaboration with the parliamentary budget committee provide stringent fiscal rules. This system would guide the fiscal management above and beyond regular annual budgeting. This system also aims at providing clear performance indicators on government debt, borrowings, deficit and expenditure. They have to pay attention to the country's debt rules. By establishing an explicit maximum debt level of which they do not go beyond and for expenditure rules certain specific sub-sets of expenses that are in absolute terms should be limited to specified percentage limits.

It is deemed important for the government to resource Ghana Revenue Authority with adequate training and development in the areas of expanding tax brackets, revenue collection and accurate data on taxpayers. This would help improve the revenue and expenditure differences. That is having the revenue being higher than the expenditure. Also, the country should focus other sectors such as agriculture and manufacturing in the economy that would bring income into the country. This would help to avoid the problem of Dutch disease.

Finally, the study recommends that bond analyst and policy makers to assign the due attention to monetary policy rates and interest rates. This is because these variables prove to be highly related and that anytime, policy rate changes, interest rate also changes and the other way round. Therefore, these two variables cannot be disentangled when they are doing their analysis. This proves the point that when bond analyst considers these policies together the decisions they make would depict exactly the market trend.

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Reputation as Capital

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Abstract- Decentralized Autonomous Organizations (DAOs) have the potential to upgrade finance. This paper evaluates the design of and system requirements for a decentralized cryptocurrency venture capital investment club that is operating as a DAO (DAOIC). The design of the proposed DAOIC enables investors to substitute capital commitments by way of reputation token staking on proposed portfolio companies. The proposed design has the potential to lower capital requirements and free up liquidity for decentralized smart contract coordinated investment vehicles.

Keywords: *decentralized autonomous organization, venture capital, reputation, non-fungible tokens, fungible tokens, capital, venture funding, finance, token models, cryptocurrencies, feedback effects, emerging technology, tokens, blockchain, distributed ledger technology.*

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Reputation as Capital

How DAOs Upgrade Finance

Wulf Kaal

Abstract- **Decentralized Autonomous Organizations (DAOs) have the potential to upgrade finance. This paper evaluates the design of and system requirements for a decentralized cryptocurrency venture capital investment club that is operating as a DAO (DAOIC). The design of the proposed DAOIC enables investors to substitutecapital commitments by way of reputation token staking on proposed portfolio companies. The proposed design has the potential to lower capital requirements and free up liquidity for decentralized smart contract coordinated investment vehicles.**

Keywords: decentralized autonomous organization, venture capital, reputation, non-fungible tokens, fungible tokens, capital, venture funding, finance, token models, cryptocurrencies, feedback effects, emerging technology, tokens, blockchain, distributed ledger technology.

I. Introduction

Decentralized investment designs have significant advantages overtraditional finance. The need for capital is taken as a basic requirement of traditional finance. All investment decisionsrevolve, on some level, around the existence of investment capital. Derivatives and margin trading, among other financial designs in legacy finance, provided a first step towards the removal of capital in financial transactions. Decentralized systems can take the removal of investment capital from deals to the next level.

In the existing markets, decentralized investment solutions and associated vehicles are subject to significant downsides that make them less competitive than traditional financial investment solutions. Primary among the downsides is the legal uncertainty that is typically affecting decentralized investments and investment platforms. Legal solutions for decentralized funding vehicles are naturally evolving with a delay after innovative new funding vehicles emerged.[1]

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[1] The design proposed herein is technologically possible in 2021. The author recognizes that many jurisdictions will treat the design proposed herein less favorably. However, the author takes not position on legal issues and possible solutions in any jurisdiction that may be associated with the design proposed in this article. Legal solutions are under development in many jurisdictions in 2021. In the United States, the Wyoming DAO is only one example that provides a temporary legal solution that is subject to experimentation. The author believes that legal designs will develop lockstep with a time delay to decentralized DAO governance in finance.

Decentralized markets are overcollateralized, giving traditional markets a fundamental advantage. To enable a decentralized financial transaction, such as a loan or insurance policy, decentralized products typically need to be backed with 100% collateral. In the case of secondary layers, such MakerDAO, 200% collateralization is required. This would be an unthinkable obstacle to liquidity in traditional markets. However, in digital asset markets the lack of alternatives mandates such levels of collateralization.

With the evolution of decentralized infrastructure, decentralized investment designs are increasingly equipped to outperform traditional finance. For example, once secure and meaningful reputation is incorporated into the Web 3 environment, the imbalance between decentralized and traditional finance can be reversed. Reputation tokens that are utilized in decentralized finance are more meaningful than traditional identity verification metrics, and much easier to value. Accordingly, decentralized protocols that use reputation metrics will require less collateralization than in traditional protocols. Given these advantages, the decentralized economy that will be powered by newand innovative designs, such as the one proposed herein, are likely to be more competitive and may eventually gain the upper hand over traditional centralized financial institutions. For example, locking users reputation tokens instead of your fungible assets would be a strong leap in efficiency, giving a powerful economic advantage over traditional finance. This requires a coherent system which securely tracks the value of a reputation token.

II. Basic Concept

a) *Reputation Replaces Capital*

The basic concept introduced in this article revolves around the core mantra of "reputation as capital." In essence, once meaningful decentralized reputation is established, reputation can be used to remove the need for capital base and/or capital requirements. In the DAOIC model, the members of the DAOIC wean off the need for capital in order to participate in DAOIC deals. Instead of capital commitments, DAOIC members stake RNFTs on newly proposed incoming deals. The public market funds the

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DAOIC approved deals and the DAOIC members get paid via the 20% public ROP minting to fungible reputation token.

If members still wish to commit capital on particular deals they can get into deals on the public market side, based on the same conditions. But, they would in essence be paying themselves with the 20% of ROP.

Because DAOIC members are sharing in the ROP of the market with 20%, which may be much more in the aggregate than the individual DAOIC members' ROP, the model amplifies the DAOIC member returns. DAOIC members get paid in fungible reputation tokens. The long-term effect here is that the market replaces the need for capital commitments by DAOIC members. The members still continue to benefit from their staking work without the need to contribute capital. Over time, the reputation effect grows and the uncoupling from capital increases.

Not only are members sharing in the ROP of the market with 20%, which may be much more in the aggregate than the individual DAOIC members' ROP, the model also amplifies the DAOIC member returns because only DAOIC members get paid in fungible reputation tokens. Public investors get paid their 80% ROP via DAIpro rata.

Such tokens are themselves a significant value proposition because the fungible reputation token is based on the deal pipeline upvoted by DAOIC members via RNFT. The fungible reputation token is:

1. A tokenized instantiation of the collective wisdom of the DAOIC members, which may be valued by the market as such, and
2. A representation of the total ROP (100% DAOIC Member ROP PLUS 20% Public ROP) on each deal upvoted by DAOIC members via RNFT.

The combined effect of these factors will likely cause the public perception and corresponding market valuation of the fungible reputation tokens to be favorable.

b) Liquidity

The most efficient and most liquid markets display high levels of transaction rates of highly diverse goods exchanging between a multiplicity of small market participants. This market decentralization is most efficient and provides the most reliable and accurate (price) information, which, in turn, enables the highest levels of truth discovery in the market.

The basic mantra of reputation as capital is that it makes business more efficient and more liquid as it frees resources for further use. Reputation frees up capital. As capital is replaced by reputation it no longer has to be tied to a given asset. Reputation is encumbered and tied to an asset instead of capital. The more reputation replaces capital the less capital has to be allocated, tied, and encumbered. In turn, the ratio of capital becoming unencumbered through reputation increases the deployment of capital ratio, e.g. a higher proportion of unencumbered capital can be newly encumbered. Therefore, reputation increases the degree, speed, and overall ability of an individual or firm to purchase or sell an asset. In turn, reputation increases the availability of liquid assets to a company or market.

The liquidity function of reputation as capital can theoretically be extended to tokenized assets. Reputation can be used to underwrite tokenized assets and provide immutable guarantees for tokenized assets. With reputation staked guarantees on tokenized assets such tokenized assets can, over time, exist like real assets. Reputation allows tokenized assets to be used in business because, just like underwriting, someone is taking on the risk of losing reputation and associated cashflow streams if such tokenized asset should in reality not exist. Insurance could serve a similar function but is much less efficient as it requires the allocation of capital for holding reserves to pay out claims etc. Reputation removes the need to deploy capital for reserves etc. Accordingly, can facilitate unprecedented levels of liquidity. It removes the need for encumbering capital for tokenized assets and at the same time through the guarantees it provides for tokenized assets makes those tokenized assets real for commerce. The combination of replacing capital with reputation for tokenization creates the ideal environment for liquidity. Tokenization itself provides unprecedented liquidity of real assets. Combining tokenization with reputation underwriting further enhances the liquidity effects of tokenization. Again, the benefits for liquidity can only materialize if reputation is meaningful and secure.

In the case of the DAOIC, the replacement of capital with reputation increases liquidity for DAOIC members. In the DAOIC model, because reputation takes over part of the role of capital it frees up otherwise locked capital for DAOIC members. DAOIC members can increase their ability to deploy capital because RNFT staking on deals does not require the deployment of capital while still generating returns, here through the 20% ROP participation on the public side of a deal, that would otherwise only be possible through the deployment of capital.

The replacement of capital with reputation gives the DAOIC members a permanent option and right of first refusal on deals. DAOIC members can merely stake RNFT on a deal without participating in the purchase commitment for such a deal. But, RNFT staking involves two phases, loosely coupled and tightly coupled votes (as described in Calcaterra & Kaal et al (2019)). The information revealed during the loosely coupled voting engagement should, in most cases, make it clear to each DAOIC member what deal parameters are at stake. At the same time, the delayed voting outcomes and associated feedback effects enabled by the transition from loosely coupled to tightly coupled

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voting enable DAOIC members to triangulate their own internal liquidity with deal feasibility. If a DAOIC member suffers a liquidity crisis, such member still participates in the fungible reputation salary payouts.

The removal of capital through RNFT staking also makes capital calls and other liquidity-limiting measures less relevant. There are no ex post capital commitments associated with an RNFT staking participation. DAOIC members will commit capital if they can but during a liquidity squeeze they can opt out of the public side of a given deal while still participating through the RNFT staking and associated fungible token salary.

Because a public secondary market exists for the fungible reputation tokens, DAOIC members not only improve their liquidity by replacing capital with reputation, their liquidity is also ensured after the conversion of capital to reputation. The public market supplements liquidity in fungible reputation tokens if DAOIC members decide they need to convert fungible reputation tokens back to capital. This can help supplement their capital-driven engagements as a liquidity pool.

The removal of capital creates a high level of flexibility for DAOIC members. It allows the DAOIC members to invest if they so choose but it does not force them to invest if they disagree with the collective decision on a given deal.

DAOIC members can decide which deals are so good that it would be worth paying themselves the 20% of ROP on the public side as a fungible token salary. However, the nature of the publicly listed fungible reputation token is a better value proposition for the DAOIC members, especially in the long run.

Liquidity can also be significantly improved in the DAOIC design through the selling of RNFT to the open market. For example, if the DAOIC should not have enough capital to cover the staked token commitment in firm commitment underwriting, it may be able to overcome the shortfall immediately by selling RNFT, which is in effect selling future cashflow rights associated with the RNFT.

Individual members should have a stable way to exit the system by selling their reputation tokens for a fair market valuation of the future expected value of their reputational salary. This is more problematic for reputation than for most other cryptocurrency tokens, since reputation is less fungible because a token's value is tied to the post in which the reputation was created and subject to separate review. But in principle it could be algorithmically valued.

This situation of selling RNFTs via the OTC market only arises in ICD firm commitment underwriting deals that did not sell out on the public portion. In order to satisfy the capital call that results from the inability to sell out the public portion of the firm commitment deal, the respective RNFT member is forced to sell RNFT on the OTC market only if the respective ICD member cannot satisfy his or her pro rata capital requirement with liquid capital held by the ICD member. In that case, RNFT may be sold to cover the lacking liquidity. It is very likely that the other RNFT holders who still have liquid assets will wish to purchase the RNFT on the OTC market as it gives them a larger share of the future cash flows via FRT/GT.

The other relevant situation for selling RNFT via the OTC market and with it the right to all future cash flows that derive from the RNFT, is retirement of an ICD member. Should an ICD member wish to retire from the ICD permanently, the respective ICD member can sell her RNFT.

c) Risk Optimization

Running a DAOIC is subject to several risk factors, including but not limited to the following:

- Limited token opportunities
- High level of uncertainty in digital asset market
- Only 1 in 100 of token opportunities returns 100x, 30x, 10x
- Regulatory uncertainty - investigations
- Gaining access to industry expertise in digital assets create challenges
- Difficult to distinguish core expertise in digital assets
- Since its inception, the digital asset industry has evolved in silos of information and expertise, making it more difficult for early-stage investors to gain access to a broad spectrum of engineering and technology insights.
- Early stage investing in digital assets is a relationships business. It is key for early-stage investors in digital assets to be part of a core network of early-stage experts in the industry.
- Without access to a network of core expertise, early-stage investments in the digital asset industry are rarely successful
- Without access to experienced decentralized system architects, legacy investors and venture capitalists struggle navigating the market for digital assets. During the early days of the digital asset evolution a very limited amount of people had relevant experience with the technical and market aspects of digital assets. Very few were able to build cryptocurrencies that attempted to solve incentive issues and create tokens that were compatible with the incentives design in order to enable participants in the network to act non-opportunistically and align their utility and economic incentives in systems with anonymous actors.
- The anonymity in decentralized networks requires a special skill set for system architects who know how to navigate the limitations in system design that is associated with anonymity.

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- Only very few architects have figured out how to create system solutions in ways that overcome the challenges of anonymous and autonomous systems. That skill set is still very rare in the early 2020s.
- Venture capitalists and crypto hedge funds require keyexpertise in helping their portfolio companies on the operating side.
- Limited amount of qualified technical talent: A key skill thatcontributes to portfolio companies' success is the ability to hire engineers and run technical teams. The most successful digital asset investors are able to use their network to help their portfolio companies successfully hire technical talent.
- Venture companies that do not have a strong background in community building can be disadvantaged in the digital asset market. In the digital asset space generally, and more specifically in the context of ICOs and token design, it is essential to have some expertise in open-source software and the associated community building. Incentive designs for open-source software contributions can also play a largerole.
- Technical decentralized designs take a long time to reach maturity. Because of the community building aspect and the built-in experimentation with design features, decentralized network design can take much longer than other technical network designs.
- The cryptocurrency market in the early 2020s is still afflicted with questionable designs, as well as legal and ethical issues. Many top projects in 2020 are still afflicted by technical issues that have not been ironed out.
- Because the market has been so hype driven, technical experience has not added significantly to overall market development and maturity. Yet, several indicia suggest that this can change over time.

The mantra of "Reputation as Capital" has built-in multiple levels of risk mitigation for the network participants. Through meaningful reputation in a business network, network participants are incentivized to cooperate without performing the extra due- diligence analysis on counterparties in the network and possible agents of the network.

Reputation removes the need for monitoring cost. It lowers transaction costs in orders of magnitude. Through reputation in the interaction between principals and agents, both are incentivized to watch out for each other and further each other's profit. It is simply good business to do so as it extends the opportunities for future frictionless business opportunities. Because reputation is at stake in each interaction, parties to the network as well as principals and agents are incentivized to go significantly beyond the key parameters of their respective contractual obligations to maintain, extend and protect each their respective reputation.

Reputation is not only the gateway to future revenues and business opportunities but also becomes a currency with its own value proposition. Removing readily available and fungible cash and emphasizing reputation in the network disperses power fairly. Participants in the network with equivalent talent are equally acceptable as they are most likely to help protect the reputation of the collective and each other's reputation at the same time. Accordingly, anyone available with similar talents can be given opportunities. In the case of the DAOIC, the collective wisdom of DAOIC members helps hedge against purchase risk. The applicable decentralized reputation staking governance mechanisms (Calcaterra & Kaal et al (2019))[2] provide an optimal incentive design to coordinate collective decision making. Improved collective decision making in the DAOIC further mitigates purchaserisk.

Similarly, RNFT staking by DAOIC members removes counterparty risk. The desire to preserve and increase RNFT scorespredominates the DAOIC decision making. Therefore, bad actors are less likely to occur in the system as their reputation would inevitably suffer.

Moreover, because the applicable decentralized reputation staking governance mechanisms (Calcaterra & Kaal et al (2019)) with loosely and tightly coupled votes will very likely make all tightly coupled votes unanimous. Accordingly, DAOIC members are less likely to lose RNFTs and continue to receive the stream of fungiblereputation tokens.

Liquidity risk is addressed because the fungible reputation tokens can be sold on the secondary market as needed by DAOIC members.

d) Decentralized Underwriting

The DAOIC form of underwriting can be distinguished from traditional underwriting where underwriters are typically gatekeepers and create barriers to entry. In the tradition underwriting market, underwriters serve as gatekeepers for the purpose of screening offerings for investors. Underwriters with a good reputation can charge issuers of traditional securities higher rates, giving underwriters a financial incentive to screen. However, in the traditional underwriting market, investors can fail to distinguish underwriters based on reputation. As a result, free-riding on other's reputation may occur. Once free riding occurs, traditional underwriters will likely stop investing in their

[2] Calcaterra, Craig and Kaal, Wulf A. and Andrei, Vlad, Blockchain Infrastructure for Measuring Domain Specific Reputation in Autonomous Decentralized and Anonymous Systems (February 18, 2018). U of St. Thomas (Minnesota) Legal Studies Research Paper No. 18-11, Available at SSRN: https://ssrn.com/abstract=3125822 or http://dx.doi.org/10.2139/ssrn.3125822

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screening and insteadattempt to free ride on others. This creates what is known as a lemons problem in the law and economics literature. Moreover, individual agents within an underwriter may decide to sacrifice the underwriter's overall reputation for personal gain. For example, it is possible that an agent may put out a fraudulent offering on behalf of the underwriter for personal gain, such as additional business forthe agent etc.

The DAOIC's adoption of decentralized reputation staking governance mechanisms (Calcaterra & Kaal et al (2019)) addresses these shortcomings of traditional underwriting. In this theoretical model, the entire incentive design of decentralized governance aligns the interests of the individual with the interest of the group. In other words, the incentives of the principal, e.g. the group, and the individual are aligned so much that the agent cannot gain personally at the expense of the principal.

As the DAOIC reputation proliferates, in the model, the DAOIC may become the initial starting point for a public token offering. The DAOIC can, over time, provide essential services for token opportunity teams, including but not limited to: source of contact for large institutional investors, and as a source of financing, e.g. infirm commitment offerings.

In the DAOIC model, best efforts underwriting via RNFT staking can be distinguished from firm commitment underwriting via RNFT staking. Best efforts underwriting is synonymous with the smart contract accountability system in the DAOIC that allows each DAOIC member to make a given capital commitment that is encumbered in the smart contract as a deposit. Such deposit will only be released and directly transferred to the token opportunity when the RNFT staking pool has made a decision on the token opportunity. Funding only happens in the case of a majority upvote. Only then will the smart contract release the funds from the DAOIC member to the token opportunity.

This can be contrasted with DAOIC firm commitment underwriting. In a firm commitment RNFT staking engagement, the DAOIC does not commit any capital at all, except for the portion of the token opportunity that does not sell out to the public. In other words, the DAOIC has to be confident in its ability to translate its reputation in deal analysis, e.g. RNFT staking on a token opportunity, into a co-purchase engagement by the public. Should the public fail to purchase the capped amount of the token opportunity, the DAOIC will have to sacrifice its own liquidity and commit to buy the remaining part of the token opportunity sale.

Having to commit liquidity if the DAOIC's collective wisdom is wrong incentivizes the DAOIC community. After all, its "Reputation as Capital" mantra is largely motivated by the increased liquidity that is enabled by it. Getting the public commitment part on a firm underwriting engagement wrong would neutralize the prior gained liquidity from RNFT staking.

While firm commitment underwriting may be seen as antithetical to decentralization, it in fact further enhances the level of decentralization. A firm commitment underwriting by the DAOIC member collective provides the DAOIC more leverage to increase the decentralized governance in the token opportunity. Enhanced decentralized governance of token opportunities, in turn, improves the level of decentralization in the system overall. Moreover, in a firm commitment underwriting of a token opportunity DAOIC internal governance and the RNFT staking with the collectivewisdom of the DAOIC members enable an offset of the potentially liquidity lowering capital commitment that may result from a collective misassessment of the public's interest in a token opportunity.

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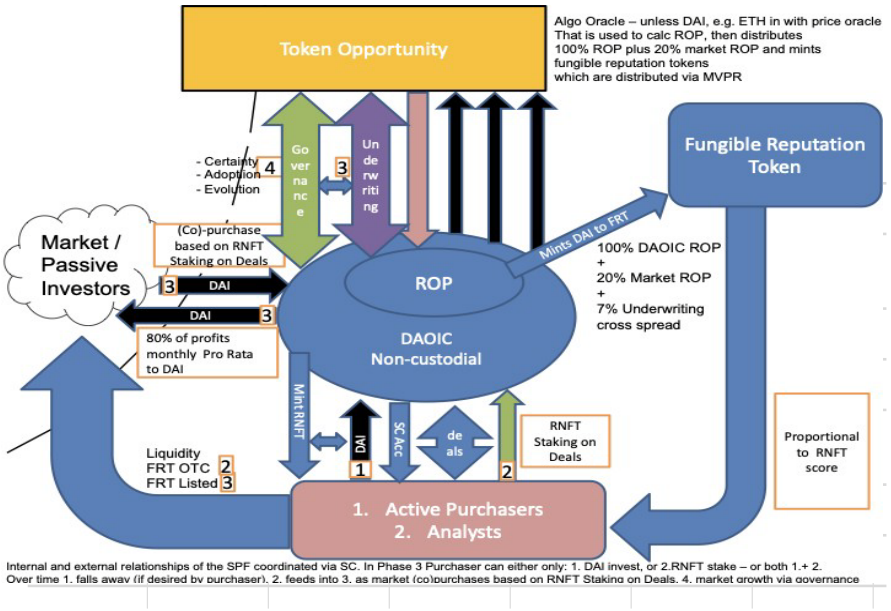


Figure 1: Non-Custodial DAOIC Model with Smart Contracts.

III. Toy Model

Figure 1 illustrates the non-custodial DAO Investment Club (DAOIC) model with smart contracts. In this model, the entirety ofthe ROP is minted into fungible reputation tokens that get paid as reputation salaries following the decentralized reputation staking governance mechanisms (Calcaterra & Kaal et al (2019)). This model provides enhanced incentive alignment for DAOIC memberswith the highest potential return for all involved.

Table 1: Roadmap & Overview – Minimum Viable protocol requirements (MVPR) Describes the Need for Instantiation of Decentralized Governance Designs.

Roadmap & Overview Legend

	DOIC Members	Deals	C/R Ratio	Returns	Liquidity	Growth	Risk Mitigation	Underwriting	Decentralization	Publicity	Transparency	Accountability	Governance	Reg Scrutiny
Phase 1 - Priming	N/A	N/A	N/A	Market/Dex in GT	Market/Dex in GT	Market/Dex in GT	N/A	N/A	GT Dex Listing	GT Dex Listing	GT Dex Listing	N/A	N/A	N/A
Phase 2 - Capital Allocation	<=5 Active Investors and Analysts	Quality: High Quantity: Low	100% Capital	DAOIC: ROP 80% Pro Rata to Capital 20% Pro Rata to RNFT as FRT. Public: N/A	100% Capital	Low	DAOIC collective decision making hedges agains purchase risk	N/A	SC coordinates, no custody, yet small DAOIC member group, less information from edge	N/A	N/A No DAOIC UI	Smart Contracts coalesce with MVPR DAOIC internally	MVPR Internally	N/A
Phase 3 - Reputation Building	>5, MVPR	Quality: High Quantity: Medium	50% Capital 50% Reputation	DAOIC: ROP 100% Pro Rata to RNFT as FRT Public: N/A	FRT OTC secondary market	Increasing	DAOIC Collective decision making hedges RFNT staking risk, MVPR reduce risk of loss	Best efforts underwriting - DAOIC RNFT staking - public visibility	increasing MVPR governance, more information from the edges, shift from capital to reputation	PR begins	DAOIC tightly coupled RNFT voting disclosed via UI	Smart Contracts coalesce with MVPR DAOIC internally	voluntary MVPR for token opportunity	Low
Phase 4 - Reputation as Capital	MVPR	Quality: High Quantity: Higher	DAOIC Member Discretion	DAOIC: ROP 100% Pro Rata to RNFT as FRT + 20% Public ROP to DAOIC as FRT + 7% cross spread as FRT	FRT Listed	Scaling through public access to deals - 20% Public ROP shared via FRT + 7% cross spread	DAOIC crowd wisdom for market participants, RNFT staking follows MVPR, token opportunities use MVPR	RNFT firm commitment underwriting - DAOIC capital covers missing public purchases - DAOIC underwriting fee 7% cross spread	Higher degree of reputation, RNFT staking offsets firm commitment of capital, DOIC underwriting increases leverage for MVPR governance of token opportunities	PR budget increase	DAOIC loosely coupled RNFT voting disclosed PLUS DAOIC tightly coupled RNFT voting	Smart Contracts coalesce with MVPR DAOIC internally and in Public portion of a capital commitment	Mandatory MVPR for token opportunity	Investigations
Phase 5 - Growth Through Market Evolution	MVPR	Quality: High Quantity: Scaling	DAOIC Member Discretion	DAOIC: ROP 100% Pro Rata to RNFT as FRT + >20% Public ROP to DAOIC as FRT + 7% cross spread as FRT	Mainstream adoption, Market proliferation	Governance increases: Certainty, Adoption, Evolution of Digital Assets	Self regulation via MVPR lowers risk for participating market segment	TBD - Market terms evolving as C/R ratio increases	High degree as market proliferates through decentralized governance	N/A	MVPR Protocols and Derivatives become part of public domain and proliferate	Smart Contracts enforce governance in Public Market via MVPR	Mandatory MVPR for token opportunities and entire markets/segments	N/A, Low - decentralized regulation more comprehensive

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Table 1 shows the life cycle of the DAOIC which involves different phases that serve different purposes in order to fulfil the ultimate purpose of the DAOIC. Each phase serves a particular purpose.

Four different phases can be distinguished with different purposes. Generally speaking phase 1 is concerned with priming the pump and institutional setups, phase 2 is concerned capital allocation, phase 3 is concerned with reputation building, phase 4 is concerned with reputation replacing the need for capital allocation, and finally phase 5 deals with market evolution.

Phase 5 is the growth phase that results from phases 1-3 and is further extended by mandating decentralized governance via decentralized reputation staking governance mechanisms (Calcaterra & Kaal et al (2019)) in digital asset market segments. Enhanced decentralized governance helps increase certainty in the digital asset market which enables increasing mainstream adoption and ultimately leads to market proliferation.

1. *Phase 1 - Priming the Pump*

Phase 1 is concerned with core functionality setup of operations in the DAOIC model. The DAO team has to make certain decision during phase, including but not limited to: determining the total supply of its governance token, listing the token on a DEX, open the token to short list of investors, ensuring the free flow of the token on the market, among several other core setup functions.

The Capital to Reputation ratio of the DAOIC is at 100% capital during phase 1 as this is the initiation phase and reputation capital has not been built yet. Using the decentralized reputation staking governance mechanisms (Calcaterra & Kaal et al (2019)), the DAOIC mints RNFT in proportion to the capital commitments. Capital commitments are flexible as both active purchasers and talented analysts are onboarded. RNFT tokens get minted proportional to capital commitment, e.g. US$2 million equals 200 RNFTs, or to another metric for talented analysts.

The DAOIC members share returns on purchases (ROP) 80% pro rata to capital commitment and 20% pro rata to RNFT score. The 20% of ROP is minted into a fungible reputation token (FRT). The FRT is not liquid in phase 1. The FRT is not listed and cannot be sold in the OTC secondary market. Accordingly, liquidity facilitated to DAOIC is low as 100% of capital is committed and DAOIC members have no liquidity in the FRT salary as the FRT is not OTC traded and not listed. The overall growth is low in the initial startup phase 1.

The degree of decentralization is still low in phase 1. Smart contracts coordinate the DAOIC purchases and interaction with the token opportunity directly for each DAOIC member. Individual smart contract engagements remove the need for institutional custody and associated points of centralization. However, because the group of DAOIC members is still small, less information comes from the edges of the system. The DAOIC member group is also presumably homogenous, dissent will be small in the RFNT-based decision-making processes. Accordingly, the benefits from decentralization are still relatively small in phase 1.

During phase 1 risk mitigation for DAOIC members is minimal because reputation has only marginally entered the system. Yet, the DAOIC members hedge their individual purchase risk and risk of loss of capital through the decentralized governance-driven collective reasoning process. During the loosely coupled voting (staked RFNT vote does not count but is set back to 0 afterwards) on proposed deals, DAOIC members can see each other's reasoning and engage in an open deliberation process to come to the best choice for each DAOIC member. Yet, no DAOIC user interface (UI) is available during phase 1 to help coordinate the voting. It is possible to clone the decentralized reputation staking governance mechanisms (Calcaterra & Kaal et al (2019)). UI during phase 1 which may help the DAOIC members to internally coordinate. However, the UI should not be publicly visible and only serves the DAOIC members's internal matters. Publicity and PR expenses are not needed during Phase 1. However, DAOIC members should start evaluating what level of publicity is desirable in phase 2 and prepare their outgoing communications for phase 2.

Transparency is very low during phase 1. DAOIC token purchases are not publicly visible as the DAOIC is still in the internal coordination phase. However, accountability for DAOIC members is high because smart contracts coalesce the decentralized reputation staking governance mechanisms (Calcaterra & Kaal et al (2019)) RNFT staking with the respective token capital allocation. Accordingly, internal accountability is facilitated through smart contracting.

DAOIC internal governance during phase 1 is facilitated through cloning the decentralized reputation staking governance mechanisms (Calcaterra & Kaal et al (2019)), which ensures optimal incentivization and internal policing. Regulatory scrutiny during phase 1 is low because token purchases are facilitated directly from the purchaser to the token opportunity via smart contract. The smart contract releases the deposit automatically to the token opportunity after the DAOIC upvote on the purchase proposal.

2. *Phase 2 - Capital Allocation*

Capital allocation is the primary objective in phase 2. In the DAOIC design, capital allocation to token opportunities in phase 2 also sets up the DAOICs "reputation as governance" mantra. It is also during phase 2 that capital allocation is used for reputation non-fungible token (RNFT) minting. RNFTs, in turn, establish the internal governance of the DAOIC.

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Overall, Phase 2 is the governance setup phase where the DAOIC establishes its own internal governance, forms the founders group, identifies potential token opportunities internally, and starts proposing deals. Phase 2 is also the phase where new members are being introduced and onboarded with their respective deal proposals via decentralized reputation staking governance mechanisms (Calcaterra & Kaal et al (2019)).

In phase 2 of the model, the DAOIC brings in members with their deals and mints RNFT in proportion to incoming capital. The number of DAOIC members is presumably below 5 but could be higher and is subject to the onboarding procedures in the decentralized reputation staking governance mechanisms (Calcaterra & Kaal et al (2019)). The quality of deals brought in by new members or the DAOIC is high but the quantity remains low as only the most select and most promising decentralized infrastructure projects will be selected. Token opportunity selection follows the voting procedures of the decentralized reputation staking governance mechanisms (Calcaterra & Kaal et al (2019)). All DAOIC members stake RNFT tokens on identified token opportunities, either up or down.

In phase 2, the DAOIC member group increases as more people start appreciating the benefits of "Reputation as Capital" and its instantiation in the DAOIC. The incoming deal quality remains high because all DAOIC members are incentivized via decentralized governance to scrutinize incoming deal proposals. The quantity of incoming deals is increasing in phase 2 as compared to phase 1.

Importantly, in phase 2 the ratio of capital commitment to reputation (RNFT) commitment (C/R ratio) starts shifting from 100% capital (phase 1) to less than 100% capital. Phase 2 makes it possible to incrementally move the C/R ratio to around 50/50, depending on DAOIC individual member preferences.

In light of the shifting C/R ratio, the DAOIC policy for the ROP to FRT minting ratio is adjusted to move from phase 1 (ROP 80% pro rata to capital, e.g. ROP to DAI, and 20% pro rata to RNFT as FRT, e.g. ROP to FRT) to phase 2 (ROP100% pro rata to RNFT as FRT, e.g. ROP to FRT). The effect of this change in policy is significant. All ROP is minted into FRT which, in turn, is paid out proportional to RNFT holdings. This instantiates the important shift from capital to reputation and shifts the incentives away from capital to reputation and can be seen as a form of best efforts underwriting on a token opportunity.

The shift away from capital to reputation starts incrementally. DAOIC members may still need to commit capital in phases 1 and 2 However, the move away from capital commitments is already possible. For example, in phases 1 and 2, if the market co-purchases at 50% of capital commitment of a given deal and 20% of the corresponding ROP on such deal is allocated to the fungible reputation token minting pool, which is shared only by the DAOIC members, then the DAOIC members would in the aggregate be better off keeping their own ROP at 100% (which is proportional to their capital commitment) combined with the 20% of ROP from public/market capital commitments in the fungible reputation token, which is paid out proportionally to RNFT score. This is especially true considering that the fungible reputation token is itself an investment proposition that amplifies the DAOIC members' initial capital commitment.

Liquidity of DAOIC members receives a major boost in phase 2 because of the shift from capital to reputation. The liquidity enhancement is arguably directly proportional to the changes in the C/R ratio. Liquidity is further significantly enhanced because the FRT can be traded OTC in a secondary market. This allows the DAOIC members to use the fungible reputation token for their own liquidity needs. However, full liquidity is not yet achieved in the FRT as it is not yet traded on public exchanges.

Risk mitigation is enhanced during phase 2 because the DAOIC collective decision making on incoming deal proposals hedges against counterparty risk, RNFT staking risk, and risk of capital loss.

The degree of decentralization is increasing in phase 2 as reputation is being built by DAOIC members. The cloning of decentralized reputation staking governance mechanisms (Calcaterra & Kaal et al (2019)) provides a key point of decentralization to the DAOIC. Decentralized governance allows the DAOIC to coordinate its internal governance in a fully decentralized and incentive optimized fashion. As the DAOIC membership grows, information flow becomes more diverse and more information enters the system from the edges. Key increase in the level of decentralization is possible because 100% of the ROP gets minted into FRT which, in turn, enables a shift in focus from capital to reputation. Increased liquidity in phase 2 supports the expansion of decentralization as DAOIC members can increasingly make diverse decisions in the system.

Transparency and public awareness and interest in the DAOIC increases during phase 2 as publicity is increased and public relations begin. Transparency is significantly advanced during phase 2 largely because of the user interface (UI) goes online. The UI is the public registry of the DAOIC deal priorities, updated monthly. The UI also publishes the RNFT staking outcomes. While phase 3 enables full transparency, e.g. the loosely coupled votes and the tightly coupled votes are disclosed as well as all incoming deal proposals, in phase 2, the UI does not disclose the reasoning process and the discourse during loosely coupled votes. In phase 2, the UI only discloses the outcomes of the RNFT staking pools, e.g. the final results of the collective reasoning process of the DAOIC on a given deal. This incomplete transparency is needed

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during phase 2to ensure the DAOIC can experiment with policy adjustmentswithout fear of public market impact.

Accountability during phase 2, as in phase 1, is ensured through smart contract coordination of individual DAOIC member's purchase commitments. The smart contract does not release encumbered deposits, intended for a particular token opportunity, until the RNFT staking pool has decided on the funding of a token opportunity. Assets are not pooled but purchases take place individually through each individual DAOIC member via smart contract with the token opportunity.

Governance of the DAOIC in phase 2 still revolves around the decentralized reputation staking governance mechanisms (Calcaterra & Kaal et al (2019)) and is used for the DAOIC internal governance. Yet, in phase 2 the DAOIC may start to offer the benefits of decentralized governance to token opportunities.

Regulatory scrutiny in phase 2 is low because the DAOIC engages in very little publicity and still does mostly internally generated deals which are governed by smart contracts entirely.

3. *Phase 3 - Reputation Building*

"Reputation Building" summarizes the core function of phase 3 which is a core necessity for the "Reputation as Capital" mantra that will be introduced in phase 4. Reputation building begins for each DAOIC member and incoming DAOIC members by staking RNFTon incoming deals.

Reputation staking in phase 3 serves multiple purposes. First, it establishes the need to gain and maintain reputation to be able to participate financially in the DAOIC. This is largely an educational function because reputation as capital has not been possible via token economics before and takes a period of education and adjustment for many individuals. Second, reputation staking establishes the governance metrics that enable the DAOIC to create superior returns for the DAOIC community while at the same timepolicing itself. Third, reputation staking instills the notion that reputation in the long-term is more important and more valuable than capital. It also establishes the notion that one can benefit individually while at the same time benefiting the group of DAOICmembers.

The C/R ratio, the key indicator of reputation replacing capital in the DAOIC, shifts higher in phase 3. It is in phase 3 that DAOIC members can exercise their discretion as to whether they wish to participate in an undertaking, other than a firm commitment undertaking that did not result in a fully subscribed public deal (see more details under firm commitment underwriting).

Phase 3 is also a major growth phase for the DAOIC. In phase 3, the DAOIC engages in a form of RNFT firm commitment underwriting. Should the public not purchase the entire token commitment, only then the DAOIC is liable to commit capital for the outstanding portion of the public sale. That firm commitment underwriting allows a fee of 7% of the cross spread for the given token opportunity.

While phase 3 enables full transparency, e.g. the loosely coupled votes and the tightly coupled votes are disclosed as well as all incoming deal proposals.

4. *Phase 4 - Reputation as Capital*

Phase 4 is key for the DAOIC as it is during phase 4 that the majority of the benefits of the DAOIC design materialize. DAOIC members are onboarded following decentralized reputation staking governance mechanisms (Calcaterra & Kaal et al (2019)) only for new members who bring in deals that benefit the DAOIC ecosystem. Deal quality is consistently high to protect the RNFT scores of the existing members. Yet, because of the increasing publicity of the benefits of the DAOIC model the on boarding of new members with high quality deals increases and the quantity of deals increases accordingly.

Phase 4 enables a consolidation of the shift away from capital. In phase 3, if the market purchases 100% of capital commitment of a given deal, based on DAOIC member staking on the deal, and 20% of the corresponding ROP on such deal is allocated to the fungible reputation token minting pool, which is shared only by the DAO investment club members, then the DAOIC members would in the aggregate be better off keeping their own ROP at 100% (which is proportional to their capital commitment) combined with the 20% of ROP from public/market capital commitments in the fungible reputation token, which is paid out proportionally to RNFT score. DAOIC can still invest on the public side if they so choose.

In the model, key for phase 4 is the returns for DAOIC members increase to 100% ROP + 20% ROP from the public market + 7% cross spread from firm commitment RNFT underwriting of token opportunities. In other words, through the move from capital to reputation in phase 3, the DAOIC is able to amplify its returns on both the public purchase side but also on the token opportunity side of the deals. During phase 3, the public co-purchases deals based on the RNFT staking on deals by the DAOIC members. The public receives their ROP pro rata to capital commitment in DAI.

It is during phase 4 that the full breadth of liquidity that is generated by the DAOIC design materializes. Most importantly, the FRT is listed on a public exchange. This gives DAOIC not only a strong profitability opportunity but also liquidity in public markets. It should be assumed that demand for FRT is strong (see further under FRT economics). The fungible reputation token may only be a public secondary market. E.g. the fungible reputation token is available only to DAOIC members who may sell the token on a public exchange if they so choose to create liquidity.

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5. *Phase 5 – Growth Through Market Evolution*

Phase 5 introduces the long-term effects of the DAOIC model on the overall market. During phase 5, the DAOIC model suggests that the DOIC may have the opportunity to help token projects incorporate decentralized governance for the greater good of the overall ecosystem. Phase 5 also marks the period when the "reputation as capital" mantra of the model may prove to truly unfold as more and more capital heavy businesses may start to appreciate the benefits of reputation as capital. This, in turn, may result in increasing adoption of the DAOIC model in different implementations. During phase 5, the DAOIC may be engaging in long-term policy optimization. The policy considerations are furtherdiscussed below.

IV. Policy Considerations

The DAOIC design has the potential to upgrade financial structures and financial designs. Given this potential, several long-term policy implications seem inevitable. The DAOIC has the potential to provide standards for governance in finance, using its influence forgood, and increase accountability in finance.

a) Standard Setting

Proper governance enables long-term growth. The DAOIC can use its market power for good. The DAOIC is internally governed by decentralized reputation staking governance mechanisms (Calcaterra & Kaal et al (2019)). The decentralized reputationstaking governance mechanisms (Calcaterra & Kaal et al (2019)) ensure incentive optimized fully transparent internal governance. Moreover, through the use of decentralized governance, the DAOIC can help improve the governance of the digital asset market.

It is conceivable that the DAOIC, over time, once its position in the market has been solidified, mandates the adoption of decentralized governance mechanisms (Calcaterra & Kaal et al (2019) for the governance of each token opportunity, before it begins the RNFT staking process on a given token opportunity. At a minimum, it is conceivable that the DAOIC encourages s the incorporation of decentralized governance mechanisms for purposes of the particular token opportunity purchase, both for the DAOIC RNFT staking portion and the following market purchase of the token opportunity.In essence, the DAOIC would use its market power for good by mandating governance reform for DAOIC RNFT staking in a given token opportunity. This enhancement of decentralized governance provides long-term benefits for the DAOIC as its own oversight of its investments is becoming easier across different marketsegments.

The decentralized reputation staking governance mechanisms (Calcaterra & Kaal et al (2019)) provide a higher form of decentralized governance than most legal standards in a given jurisdiction. Using the decentralized governance for self-governance instills the highest forms of ethics in the token opportunity which over time can reform the market into a fully decentralized form of ethics and governance. It is possible that the DAOIC may be perceived as using its influence to inappropriately force governance solutions on token opportunities. Yet, the use of decentralized governance will help the digital asset space mature quicker.

As an advocate for digital asset standards, the DAOIC helps upgrade the digital asset space to become ready for mass adoption.Without standards for digital assets, it will be very difficult to increase regulatory certainty in the digital asset space and coordinate market activity. Without regulatory certainty the marketfor digital assets is less likely to evolve.

In addition to the commercial benefits of being perceived as a standard setter and governance optimizer for the digital asset space, the DAOIC advocacy for digital asset governance and standards of governance could make it a beacon of self-regulatory upgrades for the digital asset space.

Creating a self-regulated protective environment for digital asset markets participants may be seen by regulators as favorable which, in turn, could help the DAOIC to cooperate with regulators. Cooperation with regulators is in the long-term interest of the DAOIC and the self-regulated digital asset space.

The DAOIC smart contract and reputation engine (following decentralized reputation staking governance mechanisms (Calcaterra & Kaal et al (2019)) provides enhanced transparency and accountability. A basic smart contract coordinates the deposits of DAOIC purchases and the release of such deposits after a DAOIC RNFT staked upvote on a token opportunity. Said smart contract will likely be fully transparent, even without the access to the Casper network via a specific user interface.

In order to facilitate public access and review of the DAOIC RNFTstaking, a workable UI may be needed. The UI creates the needed level of transparency but is also potentially a legal liability (needs to be further evaluated with lawyers).

It is conceivable that the public will already begin to react with interest to a token purchase opportunity after observing the loosely coupled vote of the DAOIC. One would need to consider what level of publicity the smart contract should entail in order to protect the public and minimize legal risk. Perhaps a workable compromise could involve only putting the final DAOIC RNFT staking vote on a given deal in the tightly coupled format on the UI/webpage.

Transparency of the RNFT staking by DAOIC members also ensures the adequate management of potential conflicts of interest. For example, DAOIC members who stake RNFT on a given deal but also participate in the public portion of the purchase

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commitment may have a conflict of interest in the sense that they may be perceived by the market as having prior knowledge of a particular deal and could potentially use that to their advantage, by approaching the token opportunity team in advance, among other nefarious practices. However, such practices are rather limited because of the transparent nature of the loosely coupled RNFT voting on a particular deal and the transition to tightly coupled voting. The public may not see the debate about deal priorities before they are published but the public will see the particular loosely coupled voting on a particular deal that is at issue. Accordingly, potential DAOIC member conflicts of interest deriving from participation on the public side of a deal commitmentare minimized.

b) Accountability

In the DAOIC model, the smart contract transparency is accompanied by enhanced accountability. Each transaction and purchase after a RNFT staked upvote can be easily tracked. Each DAOIC member transaction can be traced via wallets. This accountability in combination with enhanced transparency of the smart contract transactions increases overall counterparty risk reporting, if any.

Because the smart contracts automate the purchase of the token opportunity by each DAOIC member and coordinates the payouts to the token opportunity, both parties are entirely accountable to each other. Funds do not get released until there is an upvote by the DAOIC members. Timing of the upvote follows the decentralized reputation staking governance mechanisms (Calcaterra & Kaal et al (2019)) and is thus also entirely public and transparent.

Similarly, a smart contract can coordinate how the ROP can be minted into fungible reputation tokens. The ratio of ROP to fungiblereputation token minting can be adjusted over time. This process is also entirely transparent to the DAOIC members.

c) Market Power

The relationship between the token opportunity, aka investment project, and the DAOIC has several dimensions that have long-term policy implications. It is conceivable that the DAOIC could gain substantial influence over the deal terms with token opportunities. This influence brings responsibility to the DAOIC members.

In order to protect the DAOIC interests, it is conceivable to make ita condition for DAOIC purchases to bifurcate the DAOIC investment portion and co-purchase of the public market for each deal. In other words, the DAOIC would only purchase a token opportunity if the token opportunity team agrees to some of the terms below. Moreover, the DAOIC may have a reasonable expectation that the token opportunity creates favorable conditions for the DAOIC because the DAOIC RNFT staking sets the token opportunity up for success in the public sale portion of their token sale, both in the DAOIC portion of the public sale and any public sales thereafter. Accordingly, it may be reasonable to consider someof the following terms:

1. The total amount of DAOIC purchase commitment. Token opportunity should agree to give DAOIC a percentage of the token opportunity as a right of first refusal before the public market gets access to said token opportunity
2. The corresponding public market portion of the DAOIC engagement
3. The timing of other public market purchases that materialize after the DAOIC purchase.
4. Token opportunity should give the DAOIC most favorable terms for token purchases among any purchasers, e.g. timing, price, caps etc.
5. Because the DAOIC creates a public market backlog effect because of its transparency, the token opportunity may be required to give the DAOIC preferred terms over any other early round with another VC fund/institutional investor.

Contrasting the above evaluation as to the relationship between the DAOIC and the token opportunity, it is also conceivable that the token opportunity should treat the DAOIC and the market the same and the DAOIC should insist on equal terms for the DAOIC and theoverall market.

Several arguments in favor of market neutrality could justify this approach:

1. The DAOIC should not take a position that in any way can be seen or construed as moving or manipulating the marketin a token opportunity. It is in the long-term interest of the DAOIC to be a market neutral player in digital assets. Market neutrality ensures long-term independence and lessens regulatory pressure. An overall DAOIC policy of market neutrality could help ensure that the DAOIC is, onceit proliferates, not perceived as a bad actor by the market, counterparties, and regulators. Should the DAOIC be perceived as having a market impact, it could significantly increase corruptive influences coming from other market players. This, in turn, increases the likelihood of regulatory interventions.
2. The DAOIC may insist that the token opportunity randomize its purchaser selection criteria post RNFT staking by the DAOIC on said token opportunity. Randomization can help ensure neutrality.
3. The DAOIC may insist that the token opportunity anonymize its purchaser selection criteria post RNFT staking by the DAOIC on said token opportunity. This may run afoul of AML and KYC compliance requirements in several jurisdictions. Yet, it would instill market confidence into a fair allocation of token purchase opportunities, which

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would in the long run help the DAOIC because it makes it more likely for the DAOIC to be perceived as a neutral market oracle.

d) Decentralized Coordination

The DAOIC presents a core form of decentralized management. It does not feature any centralized form of management in the traditional sense. It is a true investment club in the sense that all decisions are made via RNFT staking, following the decentralized reputation staking governance mechanisms (Calcaterra & Kaal et al (2019)). All decisions are made independently by each DAOIC investor individually and without coordination. The smart contract only holds the purchase amount as a deposit until the RNFT validation pool has approved an investment. Once the investment has been approved by the validation pool, the smart contract releases the deposit directly to the project. No pooling of assets takes place.

The ROP from each deal is also not pooled but rather paid out pro rata to the DAOIC members in proportion to their RNFT holdings.

For the 20% of ROP that is coming in from the public and minted into fungible reputation tokens, pooling here only pertains to the portion that is considered an "access to information fee." In other words, the 20% of ROP coming from the public is paid as a fee to the DAOIC in exchange for the ability to find out about the DAOIC deals that are upvoted via RNFT staking by DAOIC members.

The key difference from the traditional VC model is that even for the co-purchases through the market, the DAOIC only makes their investment choices public. The co-purchases by the public are entirely voluntary, the DAOIC never provides investment analysis etc. All that is visible is that the DAOIC members approved for the DAOIC members' smart contract to release the deposit for a purchase of the token opportunity. If the public trades along, that has arguable only a tentative connection to the DAOIC. It is similar to a VC fund disclosing publicly where they are investing and the public having direct access to also invest in such projects.

V. Governance Adjustments

Governance metrics in decentralized designs are subject to dynamic upgrade processes over time. The DAOIC governance design is subject to such governance upgrade requirements in a dynamic evolutionary process. The following ratios can be adjusted during different phases of the DAOIC. Ratio adjustments provide a key tool for strategic increases in profitability and overall DAOIC policy. Ratio adjustments should be subject to DAOIC member vote following the decentralized reputation staking governance mechanisms (Calcaterra & Kaal et al (2019)).

a) Minting Ratio of Capital Commitment to RNFT

DAOIC may start in the priming the pump phase 1 by keeping capital commitments to $2 mil for each incoming purchaser which is minted into 200 RNFT. This incentivizes people to commit capital to keep their spot. For simplicity, in phases 2 and 3, the DAOIC follows the baseline minting ratio of RNFT for an upvote proposal as specified in the decentralized reputation staking governance mechanisms (Calcaterra & Kaal et al (2019)).

b) Ratio of Capital Commitment to RNFT Staking

The ratio of capital commitment on a given deal to RNFT staking commitment on such deal illustrates how reliant the DAOIC is on incoming and committed capital. The ratio measures the degree of reputation usage as a proxy for capital. The DAOIC may mandate a minimum commitment in phases 1 and 2 but in phase 3 may wean off the ratio and, thus, enable an increasing reliance on RNFT staking and fungible reputation token revenue to DAOIC members. This ratio adjustment makes it possible to move away from capital to increase the community benefits of reputation as capital.

c) Minting Ratio of ROP to Fungible Reputation Token

The minting ratio of ROP on a funded deal to fungible reputation token measures the speed of capital conversion into fungible reputation tokens. Arguably, it should be a 1 to 1 ratio based on the ROP dollar equivalent value through phases 1-3, regardless if it is from the 20% of ROP from public purchases or the ROP from DAOIC purchases.

During phase 3 it seems possible to consider an increase in the minting ratio as reputation increasingly replaces capital. This could have a significant impact on the scaling of the system and the returns of the DAOIC members. It may be defensible to adjust the ratio in phase 3 in an effort to scale the DAOIC publicly listed fungible reputation tokens and increase their value proposition. The counterargument here suggests that an increase in the ratio would increase supply which destroys demand. Yet, this may not be entirely true, it is theoretically possible that the demand for the reputation token is so significant that the ratio adjustment becomes a much welcomed policy tool to adjust pricing. Of course, there are potential legal issues associated with using the ratio adjustment as a policy tool.

Arguably during phases 1-2, the minting ratio of the ROP to fungible reputation tokens as it pertains to the ROP from DAOIC member investments can be adjusted. The rationale for this adjustment is associated with the need for increased fungible reputation tokens during phases 1-2.

During phase 3, the 20% of the public ROP portion is increasing the proportional ROP minting into fungible reputation tokens. Therefore, the need for a

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higher minting ratio from DAOIC ROP to fungible reputation token is removed over time.

d) Ratio of Market to DAOIC Capital Commitments

The ratio of market purchases to DAOIC purchases on a given deal is subject to many factors. This ratio is certainly affected by a cap on the total amount of potential purchases in a token opportunity. For example, some token opportunities may not at all be open to thepublic market because the token opportunity team decides it does not want public market exposure. Conversely, some token opportunity teams may decide to use the DAOIC purchase publicly to create a market frency in their token. It may be up to the DAOIC to determine what is in their best interest to maintain their collective reputation in the market and ensure ethical business practices and corresponding longevity of the DAOIC.

It seems possible to use several measures pertaining to this ratio in an effort to adjust policy. For example, a predetermined cap on the ratio, e.g. 50/50 has effects on the market demand and profitability as well as on the ROP to fungible reputation minting ratio.

e) Minting Ratio of Market Purchases to Fungible Reputation Tokens

The ratio of market purchases to DAOIC purchases for a given dealas it relates to minting of new fungible reputation tokens is a measure for how much the market relies on and trusts the reputation-driven DAOIC.

A higher proportion of market purchases to DAOIC purchases (assuming a fully transparent and efficient market) could justify higher minting of fungible reputation tokens because the higher proportion of market purchases to DAOIC purchases is testimony to the fact that the market increasingly adopts the reputation-driven opportunities that derive from RNFT staking by DAOIC members.

VI. Conclusion

The replacement of capital with reputation has several core benefits above and beyond traditional finance. Decentralized systems can take the removal of investment capital from deals to the next level. Replacing capital with reputation increases liquidity. When reputation takes over part of the role of capital it frees up otherwise locked capital that cannot fully be utilized. Decentralized investment vehicles are able to deploy capital more effectively because reputation staking on deals does not require the deployment of capital.

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Financial

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Preferred Author Guidelines

We accept the manuscript submissions in any standard (generic) format.

We typeset manuscripts using advanced typesetting tools like Adobe In Design, CorelDraw, TeXnicCenter, and TeXStudio. We usually recommend authors submit their research using any standard format they are comfortable with, and let Global Journals do the rest.

Alternatively, you can download our basic template from https://globaljournals.org/Template.zip

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Acknowledgments

Contributors to the research other than authors credited should be mentioned in Acknowledgments. The source of funding for the research can be included. Suppliers of resources may be mentioned along with their addresses.

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Preparing your Manuscript

Authors can submit papers and articles in an acceptable file format: MS Word (doc, docx), LaTeX (.tex, .zip or .rar including all of your files), Adobe PDF (.pdf), rich text format (.rtf), simple text document (.txt), Open Document Text (.odt), and Apple Pages (.pages). Our professional layout editors will format the entire paper according to our official guidelines. This is one of the highlights of publishing with Global Journals—authors should not be concerned about the formatting of their paper. Global Journals accepts articles and manuscripts in every major language, be it Spanish, Chinese, Japanese, Portuguese, Russian, French, German, Dutch, Italian, Greek, or any other national language, but the title, subtitle, and abstract should be in English. This will facilitate indexing and the pre-peer review process.

The following is the official style and template developed for publication of a research paper. Authors are not required to follow this style during the submission of the paper. It is just for reference purposes.

Manuscript Style Instruction (Optional)

- Microsoft Word Document Setting Instructions.
- Font type of all text should be Swis721 Lt BT.
- Page size: 8.27" x 11'", left margin: 0.65, right margin: 0.65, bottom margin: 0.75.
- Paper title should be in one column of font size 24.
- Author name in font size of 11 in one column.
- Abstract: font size 9 with the word "Abstract" in bold italics.
- Main text: font size 10 with two justified columns.
- Two columns with equal column width of 3.38 and spacing of 0.2.
- First character must be three lines drop-capped.
- The paragraph before spacing of 1 pt and after of 0 pt.
- Line spacing of 1 pt.
- Large images must be in one column.
- The names of first main headings (Heading 1) must be in Roman font, capital letters, and font size of 10.
- The names of second main headings (Heading 2) must not include numbers and must be in italics with a font size of 10.

Structure and Format of Manuscript

The recommended size of an original research paper is under 15,000 words and review papers under 7,000 words. Research articles should be less than 10,000 words. Research papers are usually longer than review papers. Review papers are reports of significant research (typically less than 7,000 words, including tables, figures, and references)

A research paper must include:

a) A title which should be relevant to the theme of the paper.
b) A summary, known as an abstract (less than 150 words), containing the major results and conclusions.
c) Up to 10 keywords that precisely identify the paper's subject, purpose, and focus.
d) An introduction, giving fundamental background objectives.
e) Resources and techniques with sufficient complete experimental details (wherever possible by reference) to permit repetition, sources of information must be given, and numerical methods must be specified by reference.
f) Results which should be presented concisely by well-designed tables and figures.
g) Suitable statistical data should also be given.
h) All data must have been gathered with attention to numerical detail in the planning stage.

Design has been recognized to be essential to experiments for a considerable time, and the editor has decided that any paper that appears not to have adequate numerical treatments of the data will be returned unrefereed.

i) Discussion should cover implications and consequences and not just recapitulate the results; conclusions should also be summarized.
j) There should be brief acknowledgments.
k) There ought to be references in the conventional format. Global Journals recommends APA format.

Authors should carefully consider the preparation of papers to ensure that they communicate effectively. Papers are much more likely to be accepted if they are carefully designed and laid out, contain few or no errors, are summarizing, and follow instructions. They will also be published with much fewer delays than those that require much technical and editorial correction.

The Editorial Board reserves the right to make literary corrections and suggestions to improve brevity.



Format Structure

It is necessary that authors take care in submitting a manuscript that is written in simple language and adheres to published guidelines.

All manuscripts submitted to Global Journals should include:

Title

The title page must carry an informative title that reflects the content, a running title (less than 45 characters together with spaces), names of the authors and co-authors, and the place(s) where the work was carried out.

Author details

The full postal address of any related author(s) must be specified.

Abstract

The abstract is the foundation of the research paper. It should be clear and concise and must contain the objective of the paper and inferences drawn. It is advised to not include big mathematical equations or complicated jargon.

Many researchers searching for information online will use search engines such as Google, Yahoo or others. By optimizing your paper for search engines, you will amplify the chance of someone finding it. In turn, this will make it more likely to be viewed and cited in further works. Global Journals has compiled these guidelines to facilitate you to maximize the web-friendliness of the most public part of your paper.

Keywords

A major lynchpin of research work for the writing of research papers is the keyword search, which one will employ to find both library and internet resources. Up to eleven keywords or very brief phrases have to be given to help data retrieval, mining, and indexing.

One must be persistent and creative in using keywords. An effective keyword search requires a strategy: planning of a list of possible keywords and phrases to try.

Choice of the main keywords is the first tool of writing a research paper. Research paper writing is an art. Keyword search should be as strategic as possible.

One should start brainstorming lists of potential keywords before even beginning searching. Think about the most important concepts related to research work. Ask, “What words would a source have to include to be truly valuable in a research paper?” Then consider synonyms for the important words.

It may take the discovery of only one important paper to steer in the right keyword direction because, in most databases, the keywords under which a research paper is abstracted are listed with the paper.

Numerical Methods

Numerical methods used should be transparent and, where appropriate, supported by references.

Abbreviations

Authors must list all the abbreviations used in the paper at the end of the paper or in a separate table before using them.

Formulas and equations

Authors are advised to submit any mathematical equation using either MathJax, KaTeX, or LaTeX, or in a very high-quality image.

Tables, Figures, and Figure Legends

Tables: Tables should be cautiously designed, uncrowned, and include only essential data. Each must have an Arabic number, e.g., Table 4, a self-explanatory caption, and be on a separate sheet. Authors must submit tables in an editable format and not as images. References to these tables (if any) must be mentioned accurately.

Figures

Figures are supposed to be submitted as separate files. Always include a citation in the text for each figure using Arabic numbers, e.g., Fig. 4. Artwork must be submitted online in vector electronic form or by emailing it.

Preparation of Eletronic Figures for Publication

Although low-quality images are sufficient for review purposes, print publication requires high-quality images to prevent the final product being blurred or fuzzy. Submit (possibly by e-mail) EPS (line art) or TIFF (halftone/ photographs) files only. MS PowerPoint and Word Graphics are unsuitable for printed pictures. Avoid using pixel-oriented software. Scans (TIFF only) should have a resolution of at least 350 dpi (halftone) or 700 to 1100 dpi (line drawings). Please give the data for figures in black and white or submit a Color Work Agreement form. EPS files must be saved with fonts embedded (and with a TIFF preview, if possible).

For scanned images, the scanning resolution at final image size ought to be as follows to ensure good reproduction: line art: >650 dpi; halftones (including gel photographs): >350 dpi; figures containing both halftone and line images: >650 dpi.

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Tips for writing a good quality Management Research Paper

Techniques for writing a good quality management and business research paper:

1. Choosing the topic: In most cases, the topic is selected by the interests of the author, but it can also be suggested by the guides. You can have several topics, and then judge which you are most comfortable with. This may be done by asking several questions of yourself, like "Will I be able to carry out a search in this area? Will I find all necessary resources to accomplish the search? Will I be able to find all information in this field area?" If the answer to this type of question is "yes," then you ought to choose that topic. In most cases, you may have to conduct surveys and visit several places. Also, you might have to do a lot of work to find all the rises and falls of the various data on that subject. Sometimes, detailed information plays a vital role, instead of short information. Evaluators are human: The first thing to remember is that evaluators are also human beings. They are not only meant for rejecting a paper. They are here to evaluate your paper. So present your best aspect.

2. Think like evaluators: If you are in confusion or getting demotivated because your paper may not be accepted by the evaluators, then think, and try to evaluate your paper like an evaluator. Try to understand what an evaluator wants in your research paper, and you will automatically have your answer. Make blueprints of paper: The outline is the plan or framework that will help you to arrange your thoughts. It will make your paper logical. But remember that all points of your outline must be related to the topic you have chosen.

3. Ask your guides: If you are having any difficulty with your research, then do not hesitate to share your difficulty with your guide (if you have one). They will surely help you out and resolve your doubts. If you can't clarify what exactly you require for your work, then ask your supervisor to help you with an alternative. He or she might also provide you with a list of essential readings.

4. Use of computer is recommended: As you are doing research in the field of management and business then this point is quite obvious. Use right software: Always use good quality software packages. If you are not capable of judging good software, then you can lose the quality of your paper unknowingly. There are various programs available to help you which you can get through the internet.

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6. Bookmarks are useful: When you read any book or magazine, you generally use bookmarks, right? It is a good habit which helps to not lose your continuity. You should always use bookmarks while searching on the internet also, which will make your search easier.

7. Revise what you wrote: When you write anything, always read it, summarize it, and then finalize it.

8. Make every effort: Make every effort to mention what you are going to write in your paper. That means always have a good start. Try to mention everything in the introduction—what is the need for a particular research paper. Polish your work with good writing skills and always give an evaluator what he wants. Make backups: When you are going to do any important thing like making a research paper, you should always have backup copies of it either on your computer or on paper. This protects you from losing any portion of your important data.

9. Produce good diagrams of your own: Always try to include good charts or diagrams in your paper to improve quality. Using several unnecessary diagrams will degrade the quality of your paper by creating a hodgepodge. So always try to include diagrams which were made by you to improve the readability of your paper. Use of direct quotes: When you do research relevant to literature, history, or current affairs, then use of quotes becomes essential, but if the study is relevant to science, use of quotes is not preferable.

10. Use proper verb tense: Use proper verb tenses in your paper. Use past tense to present those events that have happened. Use present tense to indicate events that are going on. Use future tense to indicate events that will happen in the future. Use of wrong tenses will confuse the evaluator. Avoid sentences that are incomplete.

11. Pick a good study spot: Always try to pick a spot for your research which is quiet. Not every spot is good for studying.

12. Know what you know: Always try to know what you know by making objectives, otherwise you will be confused and unable to achieve your target.

13. Use good grammar: Always use good grammar and words that will have a positive impact on the evaluator; use of good vocabulary does not mean using tough words which the evaluator has to find in a dictionary. Do not fragment sentences. Eliminate one-word sentences. Do not ever use a big word when a smaller one would suffice.
Verbs have to be in agreement with their subjects. In a research paper, do not start sentences with conjunctions or finish them with prepositions. When writing formally, it is advisable to never split an infinitive because someone will (wrongly) complain. Avoid clichés like a disease. Always shun irritating alliteration. Use language which is simple and straightforward. Put together a neat summary.

14. Arrangement of information: Each section of the main body should start with an opening sentence, and there should be a changeover at the end of the section. Give only valid and powerful arguments for your topic. You may also maintain your arguments with records.

15. Never start at the last minute: Always allow enough time for research work. Leaving everything to the last minute will degrade your paper and spoil your work.

16. Multitasking in research is not good: Doing several things at the same time is a bad habit in the case of research activity. Research is an area where everything has a particular time slot. Divide your research work into parts, and do a particular part in a particular time slot.

17. Never copy others' work: Never copy others' work and give it your name because if the evaluator has seen it anywhere, you will be in trouble. Take proper rest and food: No matter how many hours you spend on your research activity, if you are not taking care of your health, then all your efforts will have been in vain. For quality research, take proper rest and food.

18. Go to seminars: Attend seminars if the topic is relevant to your research area. Utilize all your resources.

19. Refresh your mind after intervals: Try to give your mind a rest by listening to soft music or sleeping in intervals. This will also improve your memory. Acquire colleagues: Always try to acquire colleagues. No matter how sharp you are, if you acquire colleagues, they can give you ideas which will be helpful to your research.

20. Think technically: Always think technically. If anything happens, search for its reasons, benefits, and demerits. Think and then print: When you go to print your paper, check that tables are not split, headings are not detached from their descriptions, and page sequence is maintained.

21. Adding unnecessary information: Do not add unnecessary information like "I have used MS Excel to draw graphs." Irrelevant and inappropriate material is superfluous. Foreign terminology and phrases are not apropos. One should never take a broad view. Analogy is like feathers on a snake. Use words properly, regardless of how others use them. Remove quotations. Puns are for kids, not grunt readers. Never oversimplify: When adding material to your research paper, never go for oversimplification; this will definitely irritate the evaluator. Be specific. Never use rhythmic redundancies. Contractions shouldn't be used in a research paper. Comparisons are as terrible as clichés. Give up ampersands, abbreviations, and so on. Remove commas that are not necessary. Parenthetical words should be between brackets or commas. Understatement is always the best way to put forward earth-shaking thoughts. Give a detailed literary review.

22. Report concluded results: Use concluded results. From raw data, filter the results, and then conclude your studies based on measurements and observations taken. An appropriate number of decimal places should be used. Parenthetical remarks are prohibited here. Proofread carefully at the final stage. At the end, give an outline to your arguments. Spot perspectives of further study of the subject. Justify your conclusion at the bottom sufficiently, which will probably include examples.

23. Upon conclusion: Once you have concluded your research, the next most important step is to present your findings. Presentation is extremely important as it is the definite medium though which your research is going to be in print for the rest of the crowd. Care should be taken to categorize your thoughts well and present them in a logical and neat manner. A good quality research paper format is essential because it serves to highlight your research paper and bring to light all necessary aspects of your research.

Informal Guidelines of Research Paper Writing

Key points to remember:

- Submit all work in its final form.
- Write your paper in the form which is presented in the guidelines using the template.
- Please note the criteria peer reviewers will use for grading the final paper.

Final points:

One purpose of organizing a research paper is to let people interpret your efforts selectively. The journal requires the following sections, submitted in the order listed, with each section starting on a new page:

The introduction: This will be compiled from reference matter and reflect the design processes or outline of basis that directed you to make a study. As you carry out the process of study, the method and process section will be constructed like that. The results segment will show related statistics in nearly sequential order and direct reviewers to similar intellectual paths throughout the data that you gathered to carry out your study.

The discussion section:

This will provide understanding of the data and projections as to the implications of the results. The use of good quality references throughout the paper will give the effort trustworthiness by representing an alertness to prior workings.

Writing a research paper is not an easy job, no matter how trouble-free the actual research or concept. Practice, excellent preparation, and controlled record-keeping are the only means to make straightforward progression.

General style:

Specific editorial column necessities for compliance of a manuscript will always take over from directions in these general guidelines.

To make a paper clear: Adhere to recommended page limits.

Mistakes to avoid:

- Insertion of a title at the foot of a page with subsequent text on the next page.
- Separating a table, chart, or figure—confine each to a single page.
- Submitting a manuscript with pages out of sequence.
- In every section of your document, use standard writing style, including articles ("a" and "the").
- Keep paying attention to the topic of the paper.



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- Use paragraphs to split each significant point (excluding the abstract).
- Align the primary line of each section.
- Present your points in sound order.
- Use present tense to report well-accepted matters.
- Use past tense to describe specific results.
- Do not use familiar wording; don't address the reviewer directly. Don't use slang or superlatives.
- Avoid use of extra pictures—include only those figures essential to presenting results.

Title page:

Choose a revealing title. It should be short and include the name(s) and address(es) of all authors. It should not have acronyms or abbreviations or exceed two printed lines.

Abstract: This summary should be two hundred words or less. It should clearly and briefly explain the key findings reported in the manuscript and must have precise statistics. It should not have acronyms or abbreviations. It should be logical in itself. Do not cite references at this point.

An abstract is a brief, distinct paragraph summary of finished work or work in development. In a minute or less, a reviewer can be taught the foundation behind the study, common approaches to the problem, relevant results, and significant conclusions or new questions.

Write your summary when your paper is completed because how can you write the summary of anything which is not yet written? Wealth of terminology is very essential in abstract. Use comprehensive sentences, and do not sacrifice readability for brevity; you can maintain it succinctly by phrasing sentences so that they provide more than a lone rationale. The author can at this moment go straight to shortening the outcome. Sum up the study with the subsequent elements in any summary. Try to limit the initial two items to no more than one line each.

Reason for writing the article—theory, overall issue, purpose.

- Fundamental goal.
- To-the-point depiction of the research.
- Consequences, including definite statistics—if the consequences are quantitative in nature, account for this; results of any numerical analysis should be reported. Significant conclusions or questions that emerge from the research.

Approach:

- Single section and succinct.
- An outline of the job done is always written in past tense.
- Concentrate on shortening results—limit background information to a verdict or two.
- Exact spelling, clarity of sentences and phrases, and appropriate reporting of quantities (proper units, important statistics) are just as significant in an abstract as they are anywhere else.

Introduction:

The introduction should "introduce" the manuscript. The reviewer should be presented with sufficient background information to be capable of comprehending and calculating the purpose of your study without having to refer to other works. The basis for the study should be offered. Give the most important references, but avoid making a comprehensive appraisal of the topic. Describe the problem visibly. If the problem is not acknowledged in a logical, reasonable way, the reviewer will give no attention to your results. Speak in common terms about techniques used to explain the problem, if needed, but do not present any particulars about the protocols here.

The following approach can create a valuable beginning:

- Explain the value (significance) of the study.
- Defend the model—why did you employ this particular system or method? What is its compensation? Remark upon its appropriateness from an abstract point of view as well as pointing out sensible reasons for using it.
- Present a justification. State your particular theory(-ies) or aim(s), and describe the logic that led you to choose them.
- Briefly explain the study's tentative purpose and how it meets the declared objectives.

Approach:

Use past tense except for when referring to recognized facts. After all, the manuscript will be submitted after the entire job is done. Sort out your thoughts; manufacture one key point for every section. If you make the four points listed above, you will need at least four paragraphs. Present surrounding information only when it is necessary to support a situation. The reviewer does not desire to read everything you know about a topic. Shape the theory specifically—do not take a broad view.

As always, give awareness to spelling, simplicity, and correctness of sentences and phrases.

Procedures (methods and materials):

This part is supposed to be the easiest to carve if you have good skills. A soundly written procedures segment allows a capable scientist to replicate your results. Present precise information about your supplies. The suppliers and clarity of reagents can be helpful bits of information. Present methods in sequential order, but linked methodologies can be grouped as a segment. Be concise when relating the protocols. Attempt to give the least amount of information that would permit another capable scientist to replicate your outcome, but be cautious that vital information is integrated. The use of subheadings is suggested and ought to be synchronized with the results section.

When a technique is used that has been well-described in another section, mention the specific item describing the way, but draw the basic principle while stating the situation. The purpose is to show all particular resources and broad procedures so that another person may use some or all of the methods in one more study or referee the scientific value of your work. It is not to be a step-by-step report of the whole thing you did, nor is a methods section a set of orders.

Materials:

Materials may be reported in part of a section or else they may be recognized along with your measures.

Methods:

- Report the method and not the particulars of each process that engaged the same methodology.
- Describe the method entirely.
- To be succinct, present methods under headings dedicated to specific dealings or groups of measures.
- Simplify—detail how procedures were completed, not how they were performed on a particular day.
- If well-known procedures were used, account for the procedure by name, possibly with a reference, and that's all.

Approach:

It is embarrassing to use vigorous voice when documenting methods without using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result, when writing up the methods, most authors use third person passive voice.

Use standard style in this and every other part of the paper—avoid familiar lists, and use full sentences.

What to keep away from:

- Resources and methods are not a set of information.
- Skip all descriptive information and surroundings—save it for the argument.
- Leave out information that is immaterial to a third party.

Results:

The principle of a results segment is to present and demonstrate your conclusion. Create this part as entirely objective details of the outcome, and save all understanding for the discussion.

The page length of this segment is set by the sum and types of data to be reported. Use statistics and tables, if suitable, to present consequences most efficiently.

You must clearly differentiate material which would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matters should not be submitted at all except if requested by the instructor.



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Content:

- Sum up your conclusions in text and demonstrate them, if suitable, with figures and tables.
- In the manuscript, explain each of your consequences, and point the reader to remarks that are most appropriate.
- Present a background, such as by describing the question that was addressed by creation of an exacting study.
- Explain results of control experiments and give remarks that are not accessible in a prescribed figure or table, if appropriate.
- Examine your data, then prepare the analyzed (transformed) data in the form of a figure (graph), table, or manuscript.

What to stay away from:

- Do not discuss or infer your outcome, report surrounding information, or try to explain anything.
- Do not include raw data or intermediate calculations in a research manuscript.
- Do not present similar data more than once.
- A manuscript should complement any figures or tables, not duplicate information.
- Never confuse figures with tables—there is a difference.

Approach:

As always, use past tense when you submit your results, and put the whole thing in a reasonable order.

Put figures and tables, appropriately numbered, in order at the end of the report.

If you desire, you may place your figures and tables properly within the text of your results section.

Figures and tables:

If you put figures and tables at the end of some details, make certain that they are visibly distinguished from any attached appendix materials, such as raw facts. Whatever the position, each table must be titled, numbered one after the other, and include a heading. All figures and tables must be divided from the text.

Discussion:

The discussion is expected to be the trickiest segment to write. A lot of papers submitted to the journal are discarded based on problems with the discussion. There is no rule for how long an argument should be.

Position your understanding of the outcome visibly to lead the reviewer through your conclusions, and then finish the paper with a summing up of the implications of the study. The purpose here is to offer an understanding of your results and support all of your conclusions, using facts from your research and generally accepted information, if suitable. The implication of results should be fully described.

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- You may propose future guidelines, such as how an experiment might be personalized to accomplish a new idea.
- Give details of all of your remarks as much as possible, focusing on mechanisms.
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- Recommendations for detailed papers will offer supplementary suggestions.

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References	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring

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