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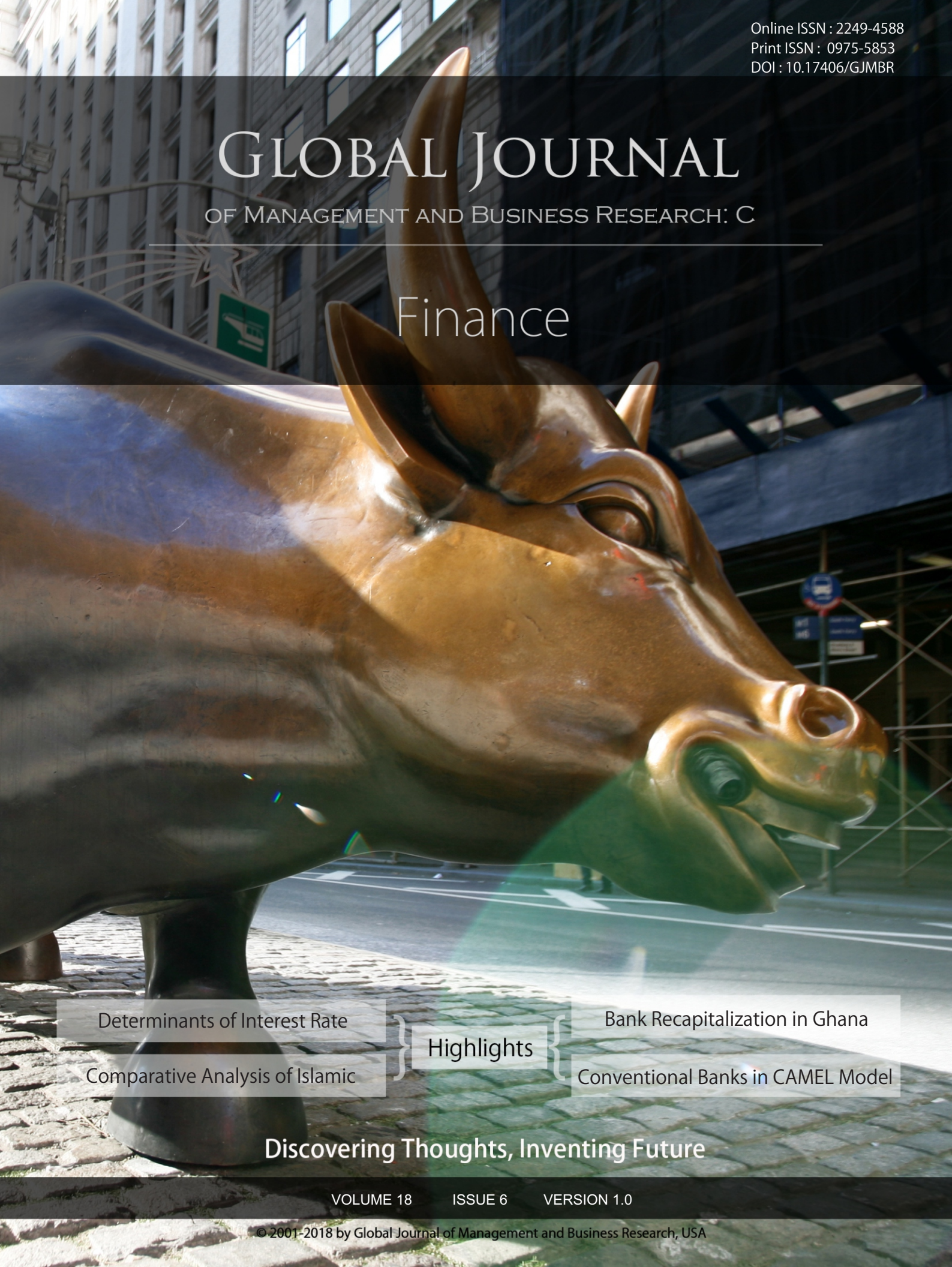

Determinants of Interest Rate

Comparative Analysis of Islamic

Highlights

Bank Recapitalization in Ghana

Conventional Banks in CAMEL Model

Discovering Thoughts, Inventing Future

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Bank Recapitalization in Ghana, Who Benefits the more?

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Abstract- *Purpose:* The study seeks to ascertain whether the impact of the 2012 recapitalization directive by the Bank of Ghana on bank performance differs between domestic and foreign banks.

Data/Methodology: We collected from annual reports of banks in Ghana from 2009 to 2015. We employ the paired sample t-test on three indicators of bank performance (i.e., return on assets (ROA), return on equity (ROE), and profit before tax (PBT) margin). We divided the data into periods before the 2012 recapitalization (i.e., 2009-2011) and those after the recapitalization (i.e., 2013-2015).

Findings: The study shows that the recapitalization policy by the BOG benefited foreign-owned banks the more. Indeed, foreign banks gained 2.47, 27.36, and 23.91 percentage points as against 1.46, 7.41, and 9.95 percentage points for domestic banks on ROA, ROE, and PBT margin respectively.

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Keywords: *banks, recapitalization, performance, bank of ghana.*

GJMBR-C Classification: *JEL Code: G20*

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Stephen Yalley [α], Hanania Djibom [σ], Eric Boachie-Yiadom [ρ] & Mark Edem Kunawotor [ω]

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I. Background of Study

Banks play an important role in the life of every country (Akinlo & Egbetunde, 2010; Lebe, 2016) because they help to channel funds from deficit spending units to surplus spending units (Ziramba, 2008). Banks can only do this function well, if they have adequate capital backing supported by deposit mobilization. Indeed, the global financial crisis that rocked the world in 2006/2007 was partly due to insufficient quality bank capital. The Bank of Ghana (BOG) ensures banks in Ghana have sufficient capital banking to prevent a similar occurrence by revising the minimum capital requirement from time to time[1]. This is paramount as capital might have impaired because of bad loans (Odonkor, Osei, Abor, & Adjasi, 2011), poor returns on other assets or both.

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[1] The BOG has implemented in recapitalization directives in 2003, 2009, and 2012. The BOG has set a new minimum capital requirement of GH¢400 million for banks. All banks in the country must meet this minimum capital requirement by the close of 31st December 2018.

The Bank of Ghana (2017a) reports that the capital adequacy ratio (CAR) of the banking industry declined by 2.1 percentage points between October 2016 and 2017 due to loan impairment. The recent wave of mergers and acquisitions[2] (Ablordeppey, 2015; Barnor & Adu-Twumwaah, 2015) and the take-over of two previously vibrant domestic banks, UT Bank and Capital Bank, by the GCB Bank (Bank of Ghana, 2017b) are vivid reminders of how under-capitalization could undermine the stability of the financial sector and the economy.

However, some scholars have criticized the practice of setting a minimum capital requirement for banks for exposing banks to undue liquidity crisis through increased funding costs and low profits (Ibrahim, Mohammed, & Gani, 2012; Okpara, 2011). Other scholars disagree (Adegbaju & Olokoyo, 2008; Dauda, Ibrahim, & Ganiyu, 2016). The debate about the impact of recapitalization on bank performance requires the BOG to find out the real effect of such a decision on banks in Ghana. Additionally, studies on bank capitalization and performance in Ghana have tended to focus on the relationship between capital and performance (Agyei, 2010; Awunyo-Vitor & Badu, 2012; Kumi, Amoamah, & Winful, 2013) and competition (Akomea & Adusei, 2013). Furthermore, none of these studies has investigated the impact of recapitalization on bank performance as in the fashion of Adegbaju and Olokoyo (2008), Ibrahim et al. (2012), Dauda et al. (2016), and Okpara (2011). We argue that the impact of new regulatory capital requirement on foreign banks is different from domestic banks.

The primary aim of this study is to compare the impact of the recapitalization directive by BOG on bank performance of foreign and domestic banks in Ghana. Section 2 reviews the relevant literature. Section 3 explains the statistical method used. Section 4 discusses the findings. Section 5 presents conclusions and recommendations.

II. Literature Review

a) Theoretical Review

Expected Bankruptcy Cost Hypothesis: This hypothesis derives from the Modigliani and Miller

[2] Between TTB Bank and Eco-bank Ghana Limited; Intercontinental Bank and Access Bank Ghana Limited; International Commercial Bank and FBN Bank; HFC Bank and Republic Bank of Trinidad and Tobago.

Proposition II or MM II (Modigliani & Miller, 1963). The MM II avers that firms can increase their value by borrowing and enjoying high tax benefits. However, leverage beyond a certain point erodes the tax benefits and exposes firms to financial distress and bankruptcy. Therefore, firms seek to find a balance between the appropriate levels of leverage which minimizes this risk. Hence, in times of high likelihood of bankruptcy, banks hold more equity to cushion them against possible financial distress and bankruptcy (Berger, 1995). This enables the bank to finance its assets at lower interest rates and thus increase profits while using the excess capital to as insurance against future adverse developments (Athanasoglou, Brissimis, & Delis, 2008). Therefore, an increase in bank capital may be an attempt to pre-empt a possible crisis associated with high leverage. So, an increase in banks' minimum capital requirement is anticipated to lead to an improvement in performance.

Signaling Theory: Ross (1977) popularized the signaling theory by arguing that firms would increase the amount of equity in their capital mix if they are optimistic about the future. Firms, therefore increase their equity holding to signal their optimistic expectations for the future to the public (Berger, 1995). When the central bank raises the minimum capital requirement, it gives an indication that banks that meet this requirement can now undertake more profitable investments ventures in the future. This assurance reduces the demand for bank deposit and lowers interest rates. The resultant low cost of borrowing leads to increased bank profitability.

Risk-Return Hypothesis: This hypothesis is grounded in the economic theory of the relation between risks and returns. Rational investors expect yields to be commensurate with the amount of risk taken. Thus increasing a firm's leverage (i.e., increased risk)should lead to higher earnings and vice versa (Dietrich & Wanzenried, 2011; Hoffmann, 2011). Hence, if banks expect increased returns, then they must take up more risk by increasing their leverage (i.e., reducing equity to asset ratio). This hypothesis predicts an inverse relationship between bank capital and performance. Thus, bank recapitalization hurts bank performance as it reduces the risk of investment.

b) Empirical Review

i. *Bank Capital and Performance*

Berger (1995) studied the impact of capital on bank profitability in the United States from 1983 to 1989 and found a favorable effect of bank capital on profitability. This effect was profound for risky banks because increasing the capital of such banks reduces expected bankruptcy costs, lowers interest rates, and improves profitability. Kosmidou, Tanna, and Pasiouras (2005)later confirmed this finding in the UK, but both studies failed to account for simultaneity bias. Subsequently, Berger and Di Patti (2006) sought to correct the possible simultaneity bias in the earlier study by Berger (1995). They found that increased bank capital improves performance, thus confirming the risk-return hypothesis. This finding, therefore, refutes the initial claim by Berger (1995).

Eriotis, Frangouli, and Ventoura-Neokosmides (2011) explored the effect of bank capitalization on profitability between 1995 and 1996 and found a negative association between the debt-to-equity ratio and bank profitability; thus reaffirming the claim that bank profitability increases with the injection of new equity capital into its operations whereas high leverage undermines bank performance.

Hutchison and Cox (2007) studied the causal relationship between bank capital and performance using the ROE as the measure of bank performance. Using two banking regulation regimes (i.e., less regulated from 1983 to 1989 and highly regulated from 1996 to 2002) in the United States, they found that increase in bank capital is detrimental to performance contrary to Berger (1995). They argued that the difference between their findings and Berger's is due to the presence of negative outliers in return on equity in the sample used by Berger (1995).

Al-Kayed, Zain, and Duasa (2014) attempted to explore the relationship between bank capital and performance among Islamic banks using the two-stage least squares estimation technique. The authors found that banks with high capital ratio perform better than those with lower capital ratio affirming the signaling theory. The study further showed that there is a U-shaped relationship between capital ratio and bank profitability. The U-shaped relationship suggests that a low level of the capital ratio undermines bank profitability and vice versa.

Olalekan and Adeyinka (2013) investigated the impact of capital adequacy on the profitability of Nigerian banks. The study employed two sets of data: primary (collected by administering questionnaires to 518 bank staff) and secondary (obtained from published annual reports of banks between 2006 and 2010). The evidence from the secondary data revealed that there is a positive link between bank capital and profitability whereas the primary data could not produce any statistically significant outcomes. The authors averred that bank capitalization and profitability are indicators of risk management efficiency and serve as a buffer against losses not covered by current earnings.

Sufian and Chong (2008) studied the causal effect of capitalization on bank profitability measured as the return on equity (ROE). The study covered banks operating in the Philippines from 1990 to 2005. The study found that bank capitalization has a favorable impact on profitability. According to the authors, this is particularly true for banks in developing countries because a strong capital structure enables them to be able to withstand financial crises and also provide better

assurance to depositors especially during bankruptcy and distress macroeconomic conditions.

Similarly, Boahene, Dasah, and Agyei (2012) examined the impact capitalization on bank profitability in Ghana using a sample of six commercial banks from 2005 to 2009 and concluded that capitalization has a strong statistical association with bank profitability.

Berger and Bouwman (2013) tested the hypotheses on the impact of capital on bank survival, profitability and market share in the USA. The found that capital improves the performance of small banks in all three dimensions during market crises and normal times as well, but the effects are less obvious.

Trujillo-Ponce (2013) examined the determinants of banks profitability for Spain and concluded that a higher level of capitalization had a positive impact on the ROA, but negative on the return on equity (ROE). Using the generalized method of moment (GMM) estimation technique, Hoffmann (2011) also found that capital ratio is negatively correlated with bank profitability in the USA.

In Switzerland, Dietrich and Wanzenried (2011) found a positive link between bank capital and performance confirming the expected bankruptcy cost hypothesis. Meanwhile, given the negative relationship between risk and return, banks with excessively high capital ratio may lose out on high returns. They surmised that in any situation, the impact of bank capital on performance depends on the interplay between the risk-return hypothesis and the expected bankruptcy cost hypothesis.

ii. *Bank Regulatory Capital and Performance*

In Nigeria, Adegbaju and Olokoyo (2008) considered the impact of increase bank regulatory capital in 2001 on performance in Nigeria with data spanning 1998 to 2004. Using the student t-test, they reported that indeed the upward revision of the minimum capital requirement was injurious to the performance of banks in the country. This assertion was later confirmed by other researchers (Ibrahim et al., 2012; Okpara, 2011). Ibrahim et al. (2012), using data from 2000 to 2009 and the independent t-test found that the increase in the minimum capital requirement resulted in significant increases in the funding cost of banks. The authors thus determined that the recapitalization policy by the Central Bank of Nigeria rather exposed banks in the country, particularly small banks, to a needless liquidity crisis. Likewise, Okpara (2011) determined the impact of bank reforms in Nigeria from 1970 to 2008 on bank performance using the one sample t-test and showed that banks were negatively affected by recapitalization policies-decline in bank liquidity, cash reserve ratio, and ROA.

Dauda et al. (2016) claim that bank recapitalization improved input efficiency but not output efficiency. This claim is not surprising because as noted by Ibrahim et al. (2012) when funding cost increases, banks tend to reduce operating expenses by adopting austere strategies to minimize cost.

iii. *Bank Ownership and Performance*

Some scholars argue that domestic banks outperform foreign banks in developed countries (Chang, Hasan, & Hunter, 1998; Kosmidou, Pasiouras, Doumpos, & Zopounidis, 2004); Whereas in emerging economies, foreign-owned banks record superior financial performance to domestic banks (Bonin, Hasan, & Wachtel, 2005; Fries & Taci, 2002). This assertion is contested by Ntow-Gyamfi and Laryea (2012) who claim that domestic banks are more profitable and efficient than foreign ones in Ghana. Conversely other studies (Barnor & Odonkor, 2013; Bokpin, 2013). Bokpin (2013) avers that foreign banks are more profitable whereas Barnor and Odonkor (2013) did not find any differences in the profitability of domestic and foreign banks. Clearly, the debate on whether domestic banks are more profitable than foreign banks lingers on.

III. Stylised Facts of Banking Industry in Ghana

This section provides some overview of the banking industry in Ghana between October 2016 and 2017. This discussion gives some perspective on the overall structure and performance of the banks in Ghana. As at July 2017, there were thirty-six (36) banks operating in Ghana. These banks comprised nineteen (19) banks with majority Ghanaian ownership whereas the remaining seventeen (17) are foreign-owned banks.

Due to the revocation of the licenses of UT and Capital Bank Ltd in August 2017, the total number of banks reduced to thirty-four (34); this was made up of seventeen (17) foreign and domestic banks apiece. Hence, by the close of the year 2017, the competition in the banking industry was evenly divided between domestically-owned and foreign-owned banks as can be seen from Table 1.

Table 1: Distribution of Bank Ownership

Ownership	Jul-17	Oct-17
Domestic-owned	19	17
Foreign-owned	17	17
Total	36	34

Source: BOG (2017a)

From Table 2, the total asset size of the entire banking industry stood at GHS73.79 billion by October 2016 and GHS88.91 billion by October 2017 (an increase of GHS15.12 billion). Total credit declined from 16.90 percent to 12.00 percent. Total deposits collected by banks grew to GHS55.83 billion suggesting an improvement in deposit mobilization of banks in 2017.

Table 2: Summary of Key Indicator in Banking Industry

	Oct-17	Oct-16
Total Assets (GHS billion)	88.91	73.79
Growth in Credit (%)	12.00	16.90
Total Deposits (GHS billion)	55.83	47.22
Borrowing (GHS billion)	15.08	12.14
Paid-up Capital (GHS billion)	4.45	3.42
Shareholders' Fund (GHS billion)	11.60	13.55
Non-performing Loans (NPL) (GHS billion)	8.30	6.52
ROE (%)	14.40	20.20
ROA (%)	3.00	4.30

Source: BOG (2017a)

Non-performing loans (NPL) was 6.52 percent in 2016 and 8.30 percent in 2017 indicating a rise in loan default. This may be attributed to ineffective credit management strategies by some banks leading to an adverse effect on bank profitability. Shareholders' fund declined from 13.55 billion to 11.60 billion. This is not surprising because ROA and ROE both declined between 2016 and 2017 with ROA dropping from 4.30 percent to 3.00 percent while ROE plummeted from 20.20 percent to 14.40 percent. The decline in shareholders' fund may have forced some banks to increase paid-up capital and also increase external borrowing from GHS12.14 billion to GHS15.08 billion.

In summary, whereas bank total deposits, non-performing loans, borrowing, and paid-up capital increased between 2016 and 2017, profitability, the growth of credit, and shareholders' fund deteriorated during the same period.

IV. Data and Methodology

We collected data from the annual reports of twenty-two (22) commercial banks in Ghana over the period 2009-2015. For this study, the years before recapitalization are referred to as pre-recapitalization (i.e., 2009, 2010, and 2011) and those after that, post-recapitalization (i.e., 2013, 2014, and 2015). The year 2012 is excluded because it is the year in which recapitalization was enforced and hence we do not expect the actual impact of the policy to have taken full effect on banks. It thus fair to expect that by allowing for a one year lag, the effect of the recapitalization would have begun to kick in and evidence shown in the performance of banks.

After grouping the study period into pre- and post-recapitalization, we compared measures of bank performance during the pre-recapitalization years with those in the post-recapitalization years in line with a similar study conducted by Adegbaju and Olokoyo (2008) in Nigeria. The study also adopts the bank performance measures used by Adegbaju and Olokoyo (2008) which include: ROA, ROE, and profit before tax (PBT) margin. Table 3 displays the definition of each of these measures of bank performance:

Table 3: Measures of Bank Performance and Definitions

Variable	Description	Computation
Return on Assets	This ratio gives an indication of managerial efficiency. It shows how capable the management of the bank has been converting the bank's assets into net earnings.	Computed as the ratio of net income after tax to total assets.
Return on Equity	This refers to return on investment for shareholders or owners of the bank.	Calculated as the ratio of net income after tax to total equity provided by shareholders.
Profit Before Tax Margin	This measures the proportion of total income that translates into actual profit or returns for the bank.	Estimated as the profit before tax divided by total revenue.

Next, the average bank performance prior to recapitalization is compared with performance after recapitalization using the paired sample t-test to ascertain whether there is a statistical difference in performance of banks after the recapitalization policy took full effect.

The paired sample *t*-test is a statistical procedure used to test the effectiveness of a treatment by comparing performance before and after a treatment. In this particular case, our treatment is the imposition of a new minimum capital requirement on banks by the Bank of Ghana in the year 2012. Assuming the performance of a particular bank before the directive was x and its performance after the directive was y. Then the effect of the directive on the performance of the bank i would be $d_i = y_i - x_i$. We then go ahead and find the effect of the recapitalization directive on the performance of each bank in our sample (assuming we have n banks in our sample). Next, we find the average/mean effect or mean difference of the recapitalization directive on the performance of all banks in our sample as:

$$\bar{d} = \frac{\sum_{i=1}^{n}(y_i - x_i)}{n-1} = \frac{\sum_{i=1}^{n} d}{n-1} \quad (1)$$

We then calculate the standard deviation of the effect of the recapitalization directive on bank performance as follows:

$$sd_d = \sqrt{\frac{\sum_{i=1}^{n}(d_i - \bar{d})}{n-1}} \quad (2)$$

This standard deviation is used to compute the standard error (SE_d) of the effect of the directive on bank performance as:

$$SE_{\bar{d}} = \frac{sd_d}{\sqrt{n}} \quad (3)$$

With the mean difference and standard errors of the mean difference computed, the next stage is to calculate the t-statistic as follows:

$$t - statistic = \frac{\bar{d}}{SE_{\bar{d}}} \quad (4)$$

The *t*-statistic follows a *t*-distribution with $n-1$ degrees of freedom. Therefore, the value of the *t*-statistic is compared with the t_{n-1} distribution which gives the *p*-value of the paired sample *t*-test. The null hypothesis of the paired sample *t*-test is that the true mean difference is zero; against an alternative hypothesis that the true mean difference is not equal to zero. The null hypothesis is rejected when the *t*-statistic is greater than the t_{n-1} distribution or when the *p*-value is less than 0.05.

This procedure is employed in assessing the impact of bank recapitalization directive on the performance of banks in Ghana. The approach provides a simple and straightforward way of assessing the impact of recapitalization directive on bank performance. It is, however, important to emphasize that this approach attributes all differences in bank performance to the implementation of the recapitalization directive. This assumption may not be entirely true as other factors might also have contributed to the changes in bank performance. As a result, the outcome of this study must be interpreted with caution.

V. Discussion of Findings

In this section, we discuss three measures of bank performance before and after recapitalization under three samples: (1) overall sample of banks used in the studies referred to as 'Industry'; (2) only foreign banks; and (3) only domestic banks. The results from this analysis are shown in Table 5.1 whereby the average performance before recapitalization is captured under the column 'Pre-recap' and average performance after recapitalization is reported under the column 'Post-recap'.

Under the second column, we find the pre- and post-recapitalization performance for the entire banking industry. We observe from Table 4 that the average industry ROA stood at 1.54 percent before recapitalization but rose to 3.67 percent after recapitalization. Similarly, the ROA of foreign - owned banks increased from 1.60 percent during the period before recapitalization to 4.08 percent after recapitalization. Likewise, domestically-owned banks reported improvement in ROA of 1.43 percent and 2.90 percent before and after recapitalization respectively. This suggests that when it comes to managerial efficiency regarding the use of bank assets to generate income for the firm, performance post-recapitalization was superior to what prevailed during the period before recapitalization.

Table 4: Comparison of Average Performance Pre-and Post-recapitalization

Performance Indicators	Industry		Foreign		Domestic	
	Post-recap	Pre-recap	Post-recap	Pre-recap	Post-recap	Pre-recap
ROA (%)	3.67	1.54	4.08	1.60	2.90	1.43
ROE (%)	23.23	2.86	24.57	-2.78	20.73	13.32
PBT (%)	39.05	20.03	43.65	19.74	30.51	20.56

Source: Authors Computations (2018)

NB: Pre-recap=pre-recapitalization period; Post-recap=Post-recapitalization period

Next performance indicator is the return on equity (ROE) which measures how much shareholders earn per cedi of every capital they have invested in a bank. Overall, ROE for the banking industry improved from 2.86 percent to 23.23 percent before and after recapitalization respectively. Investors in foreign-owned banks, on the other, witnessed tremendous improvement in returns as ROE moved from -2.78 percent after recapitalization to 24.57 percent. Domestically-owned banks also recorded an ROE of 20.73 percent after recapitalization from 13.32 percent before recapitalization.

Profit before tax margin (PBT) recorded improvement from an average pre-recapitalization value of 20.03 percent to post-recapitalization rate of 39.05 percent for the entire banking industry. Likewise, banks with foreign ownership saw a rise in the PBT from 19.74 percent before recapitalization to 43.65 percent after recapitalization. Among domestic banks, average PBT increased from 20.56 percent pre-recapitalization to 30.51 percent post-recapitalization.

In summary, the recapitalization policy introduced in the year 2012 by the Bank of Ghana

seems to have improved bank performance on the three indicators of performance used for this study. In the next sections, we test the statistical significance of the improvements in bank performance post-recapitalization.

a) Test of Means of Bank Performance after recapitalization

The first research question is whether there is enough statistical evidence to conclude that bank performance has improved after the execution of the recapitalization policy by the Bank of Ghana. The results are displayed in Table 5 (See Appendix A.1 for the analogous nonparametric test):

As can be observed from Table 5, the mean ROA post-recapitalization was 2.12 percentage points higher than the pre-recapitalization rate. With a p-value of 0.00, we reject the null hypothesis that the true mean difference is equal to zero. It can, therefore, be concluded that the Bank of Ghana directive for banks to increase their minimum capital to GHS120 million has improved managerial efficiency as far as the use of bank assets is concerned.

Table 5: Test of Means on Bank Performance-Overall Industry

Performance Indicator	Mean Difference	t-statistic	p-value	95% Confidence Interval	
				Lower	Upper
ROA	2.12**	5.58	0.00	1.36	2.88
ROE	20.38**	2.48	0.02	3.93	36.82
PBT	19.02**	4.14	0.00	9.84	28.21
Number of Observations = 120 (i.e., 60 observation apiece before and after recapitalization) Null: The true mean difference is zero; Alternative: The true mean is not equal to zero					

Source: Author's Computation (2018)

*NB: ** signifies statistical significance at 5 percent*

This result is contradicts some studies (Adegbaju & Olokoyo, 2008; Hoffmann, 2011; Ibrahim et al., 2012; Okpara, 2011) but confirms with other empirical evidences (Al-Kayed et al., 2014; Berger & Bouwman, 2013; Berger & Di Patti, 2006; Dietrich & Wanzenried, 2011; Trujillo-Ponce, 2013). Providing empirical evidence from Spain, Trujillo-Ponce (2013) claimed that banks with a higher capitalization recorded higher ROA than their counterparts with lower capitalization; another evidence is provided by Dietrich and Wanzenried (2011) from Switzerland where the authors assert that ROA increases with an increase in bank capital; Al-Kayed et al. (2014) also confirm a positive linkage between bank capital and ROA among Islamic banks. However, Adegbaju and Olokoyo (2008) reported that ROA of banks in Nigeria deteriorated post-recapitalization suggesting that recapitalization is harmful to banks.

Similarly, the post-recapitalization ROE was 20.38 percentage points higher above the pre-recapitalization ROE. This also suggests that shareholders in banks saw their returns improve by over 20 percentage points after recapitalization. There capitalization of banks resulted in shareholders enjoying an extra GHS0.20 on every GHS1.00 invested. The findings reported here agrees with Sufian and Chong (2008), Berger (1995), and Al-Kayed et al. (2014) whom all found a positive association between bank capitalization and ROE. Sufian and Chong (2008) reported their findings from a study of Philippines banks. They established that banks that are well-capitalized reward equity holders better than those that are less-capitalized. Similarly, Berger (1995), in his pioneering study in the US, concluded that capitalization has a positive impact on ROE. Al-Kayed et al. (2014) also claim that bank capitalization has boosted returns on equity for shareholders even among Islamic banks who are less profit-oriented. Other studies that contradict this assertion include Berger and Di Patti (2006) and Hutchison and Cox (2007). Berger and Di Patti (2006) concluded that there is an inverse relationship between bank capitalization and ROE after controlling for endogeneity. Hutchison and Cox (2007), on their part refuted the assertion that capitalization is beneficial to equity holders arguing that the claim by Berger (1995) was due to the presence of outliers in the dataset; hence after removing the outliers, the evidence was in favor of the risk-return hypothesis which advocates for banks to reduce capitalization in order to improve ROE.

We contend that the positive relationship between recapitalization and bank performance, particularly profitability, emanates from the fact that the funding cost of banks in Ghana is relatively lower than what prevails elsewhere. For instance, most banks in Ghana pay little or no interest on savings whereas customers with current account high cost of transactions (COT). The relatively large pool of deposits available to banks in Ghana perhaps offsets the cost associated with raising fresh capital and thereby inures to the benefits of these banks. As noted by Ibrahim et al. (2012), the rise in funding cost after recapitalization is one of the key factors that erode potential gains from recapitalization. This stems from the fact that high funding cost exposes banks to liquidity challenges (Okpara, 2011).

After looking at the global impact of recapitalization on bank performance in the banking industry in Ghana, we examined who benefited the more from the recapitalization policy-foreign-owned banks or domestically-owned banks. We show the results in Table 6 below (See Appendix A.1 for the analogous non-parametric test):

Table 6: Comparison between Foreign and Domestic Banks

Performance Indicator	Foreign	Domestic
ROA	2.47** [4.86]	1.46** [2.82]
ROE	27.36** [2.20]	7.41** [2.05]
PBT	23.91** [3.63]	9.95** [2.30]
Number of Observations	78	42
Null: The true mean difference is zero; Alternative: The true mean is not equal to zero		

Source: Author's Computation (2018)

*NB: ** signifies statistical significance at 5 percent. The corresponding t-statistics are in square brackets [ ]*

As can be seen from Table 6, foreign-owned banks benefited the more form the 2012 recapitalization directive given by the Bank of Ghana. In fact, foreign-owned banks recorded the higher profitability gains on all the measures of performance. For instance, while domestically-owned banks realized 1.46 percentage points increment in ROA, foreign-owned banks enjoyed 2.47 percentage points. Likewise, shareholders of foreign-owned banks saw a 27.36 percentage point increase in their returns against a relatively moderate 7.41 percentage points for shareholders of domestically-owned banks. Again, with regards to PBT, foreign-owned banks recorded 23.91 percentage points increase whereas domestically-owned banks improved by only 9.95 percentage points.

It is easy to understand why foreign-owned banks benefited more from the recapitalization exercise. Indeed, most of the foreign-owned banks operating in Ghana are subsidiaries of large multinational banks that have numerous branches around the globe. Usually, these parent banks are highly capitalized and stand ready to support other subsidiaries who may be in need of additional capital whether as result of regulation or in the course of doing business. This makes it easy for foreign banks operating in Ghana to obtain funds at a comparatively cheaper cost compared with domestic banks that will have to raise additional capital through either private placement or the capital market. With a relatively cheaper cost of funding for foreign-owned banks it no surprise they tended to benefit more from the recent recapitalization.

VI. Conclusion and Recommendations

We conclude that the recapitalization of banks in the year 2012 resulted in improvement in bank performance. This is because the protection against potential financial distress and bankruptcy far out-weighed the risk of high funding costs usually associated with recapitalization (Dietrich & Wanzenried, 2011), particularly for domestic banks. Banks in Ghana pay literally nothing on customers' deposits (except for fixed-term deposits). This reduces their overall funding costs. Raising additional capital through equity, therefore, does not unduly exacerbate total funding costs to the point of causing liquidity crises for the banks (Ibrahim et al., 2012; Okpara, 2011). Second, most of the foreign banks operating in Ghana are subsidiaries of large multinational banks that have numerous branches around the globe. Usually, these parent banks are highly capitalized and stand ready to support their subsidiaries which may be in need of additional capital whether as result of regulation or in the normal course of doing business. This dispensation makes it easier for foreign to obtain funds at a relatively cheaper cost compared to domestic banks who will have to access additional capital through either private placement or the capital market. With a relatively cheaper cost of funding for foreign-owned banks it no surprise they tended to benefit more from the recent recapitalization.

Based on the outcome of the study, the researcher proposes some recommendations for policy, practice, and academic research. First, the study has shown that the recapitalization policy of the BOG enhanced the performance of banks foreign and domestic banks alike. However, foreign banks appear to have benefited more from the policy than domestic banks perhaps because of the support the former receive from their parent companies in the form of new capital injections during these times. The study, therefore, recommends that the BOG should come out with its long-term plan regarding bank recapitalization to enable domestic banks to plan on alternative sources of funding that will ensure that they optimize the benefits that accrue from recapitalization. Furthermore, this will help them compete favorably with their foreign colleagues.

Second, managers of banks (e.g., the board of directors and management) must make conscious efforts at voluntarily increasing their capital base from time to time and this must be incorporated into the banks' strategic plan. This will minimize the efforts required to meet the BOG's deadline for meeting new minimum capital requirements. Also, banks should continually improve their credit risk management practices to avoid capital depletion which usually arises from high non-performing loans and their provisions thereof. Finally, future studies could examine the effect of recapitalization on other indicators of performance including funding cost, net interest margin, bank efficiency (e.g., cost or profit efficiency), and stability or increase the sample size to improve the predictive power of the analysis.

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Appendix A

Results of Wilcoxon signed rank test

Performance Indicator	Industry	Foreign	Domestic
PBT	1,523.5** (0.00)	664.0** (0.00)	182.5** (0.02)
ROE	1,586.0** (0.00)	714.0** (0.00)	178.0** (0.03)
ROA	1,617.0** (0.00)	713.5** (0.00)	188.0** (0.01)

Source: Author's Computation (2018)

*NB: (1) The Wilcoxon signed rank test is the nonparametric equivalent of the paired sample t-test and is used when the sample is assumed to be taken from a population which is not normally distributed; (2) p-values are in parentheses; (3) ** signifies statistical significance at 5 percent.*

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Determinants of Interest Rate Spreads in Commercial Banks- A Case of Tanzania

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Abstract- The improvement of financial sector in Tanzania by the introduction of financial reforms was expected to improve the efficiency of the financial sector which includes lowering the Interest rate spread. Beyond the expectations of the reforms the interest rate spread is high with no sign of narrowing down. This study was set to analyse the determinants of Interest rate spread in Tanzania commercial banks focusing on the internal characteristics. Data from commercial banks incorporated before 2002 were extracted and analysed using SPSS 16 and regression model was established. The results indicate that operating costs, loan loss provisioning, and liquidity risk increases the interest rate spread. While factors of required reserve and non-interest income decrease the interest rate spread.

Keywords: *interest rate spread, commercial banks.*

GJMBR-C Classification: *JEL Code: G21*

Strictly as per the compliance and regulations of:

Determinants of Interest Rate Spreads in Commercial Banks- A Case of Tanzania

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Abstract- The improvement of financial sector in Tanzania by the introduction of financial reforms was expected to improve the efficiency of the financial sector which includes lowering the Interest rate spread. Beyond the expectations of the reforms the interest rate spread is high with no sign of narrowing down. This study was set to analyse the determinants of Interest rate spread in Tanzania commercial banks focusing on the internal characteristics. Data from commercial banks incorporated before 2002 were extracted and analysed using SPSS 16 and regression model was established. The results indicate that operating costs, loan loss provisioning, and liquidity risk increases the interest rate spread. While factors of required reserve and non-interest income decrease the interest rate spread.

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I. Introduction

A bank is a financial institution and a financial intermediary that accepts deposits and channels those deposits into lending activities, either directly or through capital markets Hoggson, (1926). A bank connects customers that have capital deficits (borrowers) to customers with capital surpluses (lenders).

The deposit at the bank will earn interest because the bank is paying for the use of the deposited funds. The Interest is compensation to the lender, for a) risk of principal loss, called credit risk; and b) forgoing other investments that could have been made with the loaned asset. To the bank this interest is known as the lending rate. Since the borrower then enjoys the benefit of using the assets ahead of the effort is required to pay for them in form of an interest known as a borrowing rate, while the lender enjoys the benefit of the fee paid by the borrower for the privilege.

As the bank act as the intermediary, the responsibility of setting the amount to be compensated to lenders (lending rate) and amount to be paid by borrowers (borrowing rate) fall into its hands. The margin between the lending rate and borrowing rate is the interest rate spread. This reflect amount of profit earned by banks as intermediaries. Recently studies conducted by Randall, (1998); Brock and Rojas-Suárez, (2000); Chirwa and Mlachila, (2004); Gelos, (2006); Crowley, (2007), have shown that the interest rate spread to be higher in African countries, followed by Latin America, and Caribbean countries than in OECD and other developing countries.

A wide lending-borrowing rate margin is not only the indicative of banking sector profitability it also reflects the banking sector ineffiency and level of development of financial sector Quaden (2004), Ndung'u and Ngugi (2000) Folawewo and Tennant (2009); Romero and Rodríguez (2011). Therefore, if the banking sector's interest rate spread is large it discourages potential savers due to low returns on deposits and thus limits financing for potential borrowers (Ndung'u and Ngugi, 2000).

Many studies have been attempted in Africa; these include that of Ndung'u and Ngugi, 2000, Collins and Wanjau (2011) in Kenya; Chirwa and Mlachila (2004) in Malawi: Crowley (2007) in English speaking countries in Africa, but few of them were done specifically in Tanzania. Ailkaeli et al (2011) analysed the factors for high IRS in Tanzania, with the focus on the external characteristics that is macroeconomics. But numerous debates and studies in developing countries have shown that there is a pervasive view that high interest rate spreads are caused by the internal characteristics of the banks themselves rather than the external characteristics (Folawewo and Tennant, 2009). In 2012 Madishetti and Kimeme analysed the reasons for high interest rate spread at CRDB basing sorely on the internal characteristics. Using an ex post method, they determine factors such as Loan loss reserves, high operating costs, mounting statutory noninterest bearing reserves, liquid assets and net worth contribute to high interest rate spread. As the study was conducted only at CRDB bank; there is a need to conduct further studies in this area using similar method but including numbers of banks of different size, source of income, amount of capital, market share and ownerships (see appendix 1) in generalising the Tanzania case and this study aim on doing so.

II. Background of Financial Sector in Tanzania

Starting in the mid-1970s and 80s Tanzanian economy, experienced a number of internal and external shocks that led to severe macroeconomic imbalances. The shocks include high prices of fuel, war with Iddi Amin, the breakup of East African Community, big government budget deficit, and shortage of foreign exchange. These shockwaves weakened the

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performance of the financial sector and therefore its involvement towards economic growth and development. Following these developments, Tanzania embarked in far reaching financial sector reforms in 1991 (BOT, 2009). The general situation of financial sector was considered and the reform has to go through a series of phases in order to attain best transformation. Recently two generations of financial reforms are in place. These are the first generation financial sector reforms (1990- 2002) and second generation financial sector reforms (2003-to date).

a) First Generation Financial Sector Reform

The first generation financial sector restructurings were commencing the early 1990s to 2002. The key objective of the reforms was to lay in place a conducive environment for the efficient provision of financial services in Tanzania based on free market principles. To achieve this objective some supporting objectives were introduced which were to liberalize the sector in order to improve the capacity of financial institutions to mobilize domestic savings, enhance the effectiveness of monetary policy instruments, and to promote competition among financial institutions in order to improve their efficiency. (BOT, 2012).

Having in place the reforms the financial sector benefited with the following

- Interest rates on deposit and lending have been liberalized with banks enjoying greater independence to determine their rates.
- New private banks have been set up and foreign banks permitted to operate in Tanzania, including through subsidiaries.
- Financial markets have been widened and deepened and new instruments and products have been introduced. (BOT 2012).
- The number of financial service providers and the range of financial services accessible to the citizens of Tanzania have increased significantly. (BOT 2012).
- Substantial progress in regulation and supervision of commercial banks. (BOT 2012).
- The establishment of Dar es Salaam Stock Exchange. (BOT, 2012).

b) Second Generation Financial Sector Reform

In the heart of the positive developments of the first generation financial sector reforms, an assessment of the status of the financial sector indicated that the sector still falls short of the needed dynamism, efficiency and depth of a full-fledged market based financial system. Access to financial services by the majority was inadequate and interest rates on loans remained relatively high. The financial markets, which, are expected to bridge the savings-investments gap were largely underdeveloped. To address the remaining challenges in the sector, it was consequently necessary to introduce the Second Generation Financial Sector reforms to be implemented over the medium and long term period. Among the areas that are to be covered in the second phase of reform include; long term financing, access to financial services, financial markets development, insurance and pension schemes, and regulatory and supervision of our financial sector. (BOT 2012).

The second generation of financial sector reforms, which started in 2003, designed at amalgamating the gains of the first phase of the reforms and addressing the remaining bottlenecks and challenges that exist in the financial system. (BOT 2012)

III. Literature Review

a) Interest Rate

Interest rate is the price a borrower pays for the use of money they borrow from a lender or financial institutions or fee paid on borrowed assets (Crowley, 2007). When money is borrowed from the financial institution, interest is normally paid to the lender as a percentage of the principal, the amount owed to the lender. The fraction of the principal that is paid as a charge over a certain period of time (typically one month or year) is called the interest rate.

Interest can be thought of as "rent of money". Interest rates are fundamental to a 'capitalist society' and are normally expressed as a percentage rate over the period of one year. Interest rate as a price of money reflects market information regarding expected change in the purchasing power of money or future inflation (Ngungi, 2001).

b) Interest Rate Spread

Financial institutions facilitate mobilization of savings, diversification and pooling of risks and allocation of resources. However, since the receipts for deposits and loans are not synchronized, intermediaries like banks incur certain costs (Ngugi, 2001). They charge a price for the intermediation services offered under uncertainty, and set the interest rate levels for deposits and loans. The difference between the gross costs of borrowing and the net return on lending defines the intermediary costs (information costs, transaction costs (administration and default costs and operational costs) (Rhyne, 2002).

Interest rate spread consists of several components: operating cost, profits, reserves and provisions for bad debts based on the accounting perspective (Perezi 2011). These components are a reflection of micro and macro variables which impact the spread, such as efficiency, type of ownership, concentration of market power and the regulatory framework under which banks operate. (Perezi 2011).

Interest rate spread can be defined by market microstructure features of the banking sector and the policy environment (Ngugi, 2001). The risk neutral banks

operates with larger spread than risk-averse banks since risk aversion increases the bank's optimal interest rate and reduces the amount of credit supplied (Emmanuelle, 2003).

The banking firm is anticipated to maximize either the expected utility of profits or the expected profits; this depends on the market structure and risk management. And, contingent on the assumed market structure, the interest rate spread components differ. Nevertheless with market influence in both markets, the interest rate spread can be defined as the difference between the lending rate and the deposit rate. The magnitude of interest rate spread, nevertheless, varies across the world. It is opposite to the degree of efficiency of the financial sector, which is an offshoot of a competitive environment. The difference in spread in countries across the world has been found to be a function of the nature and efficiency of the financial sectors. The intermediation costs which are involved in deposit mobilisation and channelling them into productive uses are much larger in economies with weak financial sectors (Jayaraman and Sharma, 2003).

c) Determinants of Interest Rate Spread

An examination of the literature delivers a wide list of variables that affect the spreads and groups these determinants into five main clusters: bank-specific variables, system-wide measures of market structure, regulatory environment, legal and institutional environment and macro-economic variables. (Perezi 2011).

i *Bank-specific variables*

Refers to the elements that characterise individual banks and affects the interest rate spreads accumulating to the corresponding institution. The classification comprises features such as credit risk levels, efficiency, bank profitability and excess liquidity. Higher interest rate spreads have been positively correlated with higher operational costs as banks rise mark up on loans to cover operating expenditure. Different scholar works supporting this relationship includes: an international cross-country assessment done by Organisation for Economic Co-operation and Development (OECD), emerging and transitioning economies by Demirguc-Kunt & Huizinga (1999); a regional study on the Caribbean by Craigwell and Moore (2002); and specific country analyses of the economy of Uganda by Beck and Hesse (2006). Additional, greater levels of inefficiency in the financial system of developing countries have been associated larger operating costs established by respective studies by Randall (1998) and Ngugi (2001) on the Organisation of Eastern Caribbean States (OECS) and Kenya. A recent study by the Inter-American Development Bank (IADB), (2010) establishes that high interest rate spreads in Belize are indicative of high operating costs or inefficiencies in financial intermediation.

Another factor which increases interest rate spreads was found to be increases in loan loss provisions since additional resources must be committed to dealing with bad loans (Randall 1998 and Craigwell and Moore 2002).

Moreover, country-specific studies conducted by Central Bank of Solomon Islands (2007) and Ghosh (2008) on India explains that the holdings of excess liquidity also pushes spreads upwards as higher levels of excess liquidity represents a greater penalty for idle funds on which banks must pay interest to depositors. Separate bank features can also explicate a substantial part of within-country variations in financial intermediation cost, an elevated net interest margins tend to be associated with (i) small banks, (ii) banks without substantial income from fee-based activity, (iii) banks that hold a low amount of capital and (iv) those with a large market share. (Demirguc-Kunt, Laeven & Levine 2003).

ii *System-wide measures of market structure*

Emphasize those qualities that describe the industry and which cause interest rates to change over time. These elements include market power and competition, the level of bank concentration, as well as the effect of foreign possession and state possession. The liaison between market structure and interest rate margins was re-visited in the late nineties, as the thrust for financial liberalization amongst several countries in the 1990s was unsuccessful to bring about the convergence of spreads between developing and industrial economies (Perezi 2011). Cross-national and regional studies were able to establish that the structure of the financial markets can affect variations in spreads. However, results produced were sometimes contradictory and differed across regions. (Perezi 2011).

A study conducted in Belize renowned that inefficient and uncompetitive financial intermediation processes in part contributed to the country's high cost of financing (Martin 2010).

In comparatively poor countries foreign ownership of banks is linked to higher interest rate spreads as foreign banks were repeatedly exempted from unfavourable domestic regulations and their use of superior banking techniques would allow them to earn higher margins than domestic owned banks (Demirguc-Kunt and Huizinga, 1999). In contrast, a study on Latin America determined that foreign banks were able to charge lower spreads relative to domestic banks and indirectly influence intermediation through lowering costs of operation (Martinez, Peria and Mody's 2004).

iii *Regulatory Environment*

Explicitly consist of both profit tax and implicit taxation via reserve requirements or explicit taxation via corporate income tax (Perezi 2011).

iv *The legal and institutional environment*

Refers to the primary code under which all national institutions operate. The philosophy affects the perception of risk specifically credit risk and loan loss provisioning. Commercial laws, adequate institutional enforcement, index of corruption and level of institutional development are variables studied under this category.

According to Tennant and Folawewo 2009 rises in reserve requirements are linked with growth in interest rate spreads since banks pass on the cost of holding unloanable funds to consumers via an increase in lending rates or a reduction in deposit rates. Nevertheless, reserve requirements relative to the magnitude of the spread were insignificant for the OECS accounting for less than 10% of the average spread between the period 1991 to 1996 (Randall1998). On another instance, it is estimated that 50% of the spread in Belize is attributable to reserve requirements, based on the zero-profit methodology (Martin 2010).

The level of country risk was another key factor that boosted spreads as severe socio-political instability in the Solomon Islands was a key factor behind commercial banks' high spreads (Central Bank of Solomon Islands 2007). Moreover, the accumulation of non-performing loans in Kenya is contributed by a weak legal system, which in turn pushed up lending rates and increased net interest margins (Ngugi, 2001).

v *Macro-Economic*

Aspects such as interest rates on alternative financial instruments, inflation, GDP growth and exchange rates were used as control variables across most studies such as Perez (2011) and Beck and Hesse (2006). Conversely, explicitly studied the effect of macroeconomic influences on nominal and real interest rate spreads in the Caribbean region. The study determined that differences in interest rate spreads across the region may be due to variations in economic cycles, inflation and liquidity conditions, though the differences in the exchange rate regime affected the magnitude of the spreads. The study also realised that countries with pegged exchange rates unveiled lower inflation rates and the highest real spreads. (Birchwood 2004).

IV. Methodology

Annual data of commercial banks with more than ten (10) years in Tanzania market, for the period from 2002 to 2009 are used in this study. All data were extracted from the annual reports of the specific banks. The following table shows the proxies of the hypothesized determinants of commercial banks ex-post interest rate spreads:

Table 1: Key Variables and the Expected Impact on Interest Rate Spread

Variable	Proxy	Predicted coefficient Sign	Rationale
Opportunity cost of non- interest bearing reserves	RR: non-interest bearing reserves	Positive	RR↑⇒ Opportunity cost↑⇒ Spread↑
Liquidity risk	LIQ: Liquid assets Total assets	Negative	LIQ↑⇒Liquidity risk↓⇒ Spread↓
Operating Cost	OC: Operating costs Total earning assets	Positive	OC↑⇒Operating efficiency↓⇒Spread↑
Provision for loan losses	PROV: Provision for Loan loss Total earning assets	Positive	PL↑⇒ Cost of bad debts write offs↑⇒Spread↑
Non-interest income	NII: Non interest income Total Earning Assets	Negative	NII↑⇒ Earning capability ↑⇒ Spread↓

Source: Grenade (2007) "Determinants of Commercial Banks Interest Rate Spreads: Some Empirical Evidence from the Eastern Caribbean Currency Union"

a) Dependent Variables

i *Interest Rate Spread*

In the literature, there are alternative ways of measuring the dependent variable, IRS. In this paper, we start with two rather broad definitions of interest rate spreads the ex ante and ex post. In the ex ante interest rate spread (IRS1) is calculated by drawing an inference from the difference between the quoted rates on loans and on deposits. The second definition ex post (IRS2) takes it as a difference between two ratios: (i) ratio of interest received and all interest bearing assets; and (ii) ratio of interest paid and all interest earning liabilities.

Thus

IRS1 (ex ante) = Interest on loans - Interest on deposits

IRS2 (ex post) = (Interest Received/Interest Bearing Assets) - (Interest Paid/Interest earning Liabilities)

The ex ante measures of spread are biased to the extent that differences in perceived risks are reflected in the ex ante yields. Since bearing of risk is an important dimension of banking services, any differences in the risks faced by bankers will tend to distort spread comparisons. An additional problem with using ex ante spread measures is that data are generally available at the aggregate industry level and are put together from a variety of different sources and thus are not completely consistent. For these reasons, we focus on ex post interest spreads in this study.

b) Independent Variables

i *Regulatory Variable-The reserve requirement*

Commercial banks are required to maintain a certain percentage of total deposits and other similar liabilities to which reserve ratios are made applicable, as the Monetary Council may determine from time to time. Whereas reserve requirements are used as monetary policy instruments to ensure the safety and soundness of the banking system, these non-interest bearing reserves in essence impose an implicit financial tax on banks thereby reducing commercial banks revenues. Banks can either pass on this loss of revenue to depositors, who will receive lower interest rates on deposits, or they can pass it on to borrowers who will face higher interest rates on loans, thereby increasing the spread between the two rates. However, because the reserve ratio is applied to total loans at a point in time, the shilling amount that each bank holds with the Central Bank would be different, thus allowing for some variation in the empirical estimations. A positive correlation between such reserves and IRS is expected, as high liquidity reserve requirements act as an implicit financial tax by keeping interest rates high. Chirwa and Mlachila (2004) explain by noting that, 'the opportunity cost of holding reserves at the central bank, where they earn no or little interest, increases the economic cost of funds above the recorded interest expenses that banks tend to shift to customers.' They further argue that the large pool of resources created by high reserve requirements allow for the financing of high fiscal deficits, and thereby creates an environment of high inflation and persistently high intermediation margins. Because data on required reserves are not widely available, actual reserves of commercial banks are used as a proxy.

ii *Liquidity Risk*

Where there is excess liquidity in the banking system, banks' exposures to liquidity risks is low and this should contribute to lowering spreads. Liquidity risk is proxied by the total liquid assets kept in the bank to meet contingency of payments. Such assets usually earn no returns as they are balance kept in the bank. Brock and Franken (2002) found that bank liquidity was associated with lower spreads in Chile. The expected sign is negative.

iii *Operating Costs*

Operating costs arise in processing loans and the servicing of deposits. International standards normally identify 3.6 per cent as an average. In this research this variable is taken as total non- interest expenditure as reported in annual financial statements of the bank. A positive relationship between operating costs and bank spreads is expected.

iv *Loan Loss Provisioning*

For the aggregate banking system, on average, the ratio of provision for loan losses to total earning assets is below 2 percent. Higher percentage may be attributed to the elevated provision for loan losses following the en-mass crop failures and business losses and natural calamities. A positive relationship is expected between this variable and bank spreads reflecting the notion that banks tend to push the cost of nonperforming loans to customers. For this study the provision for loan losses is used as the proxy for quality of loans.

v *Non-Interest Income*

After economic liberalization banks are increasingly resorting to providing intermediary functions like transfer of funds in different forms, electronic based services by charging fees and commission, leading to substantial increase in non-interest income. This should help bank for cross subsidization and in turn reduce the interest rate spreads. A negative relationship is expected between non-interest income and interest rate spread. In this study non-interest income derived from foreign exchange, fees and commission are taken as proxy.

V. Estimation Technique

The following multiple regression equation is used for identifying the determinants of interest rate spread.

$$Iit = \beta o + \beta 1RRit + \beta 2OCit + \beta 3PROVit + \beta 4NIIit + \beta 5LQit + \varepsilon$$

Where Iit is the ex-post spread for bank i at time t. RRit is the required reserve of bank i at time t, OCit is the operating cost of bank i at time t, PROVit is the provision for loan losses of bank i at time t, NIIit is Non interest income of bank i at time t and LQit is the ratio of liquid assets to total assets of bank i at time t, and ε is error term.

This study includes a total of seven commercial banks in Tanzania as a sample during the period of 2002, 2004-2009. A total of 56 observations were recorded. The regression model was made using SPSS 16.

VI. Discussion of Results

Mean and standard deviation of the six variables of the study are presented in table 2 below.

Table 2: Descriptive Statistics

	Mean	Std. Deviation	N
IRS	0.116053242	0.0638765796	56
OC	0.207387984	0.3028717122	56
PROV	0.015173348	0.0260214750	56
RR	0.943884165	0.0929188781	56
LIQ	0.033502603	0.0171572608	56
NII	0.138629125	0.2524317772	56

Source: Surveyed data of commercial banks in Tanzania 2002, 2004 - 2009

The descriptive statistics from the above table provides valuable information about the normality of the data. The dependent variable IRS which is 11.61% has deviated from the mean by 3.39%. With the exception of Operating cost (OC) and Non-Interest Income (NII) which have a higher standard deviation, the rest independent variables had lower deviation from the mean. This implies that most commercial banks have more or less the same ratio in terms of Provision for Loan Loss (PROV), required reserve (RR) and Liquidity (LIQ).

a) Correlation Matrix

Karl Pearson's coefficient of correlation was performed to determine linear relationship between dependent and independent variable and between independent variables. The results are shown on table 3 below.

Table 3: Correlation

		IRS	OC	PROV	RR	LIQ	NII
Pearson Correlation	IRS	1.000					
	OC	0.495	1.000				
	PROV	0.426	0.235	1.000			
	RR	0.235	0.167	0.076	1.000		
	LIQ	0.306	0.232	0.029	0.409	1.000	
	NII	0.304	0.962	0.120	0.079	0.153	1.000

Source: Surveyed Data of Commercial Banks in Tanzania 2002, 2004-2009

According to Pearson +1 coefficient represent a perfect positive relationship while -1 represent a perfect negative relationship and 0 represent a zero (no) correlation (Kothari, 2004). From the results of table 3 all independent factors showed a positive relationship with IRS although the relationship is not much of significant (below +0.5). Similar results are obtained on correlation between the independent variables with exception between NII and OC which showed a strong positive relationship of 0.962. In general, small correlation coefficients between independent variables showed that the problem of multicollinearity was avoided.

b) Regression Analysis

Table 4 shows model fit results; the coefficient of determination (R^2) stand at 0.655 showing 65.5% of the variability of IRS are explained by factors of NII, RR, PROV, LIQ and OC. When adding other variables in the model still the IRS prediction stood high at 62%.

Table 4: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	0.809[a]	0.655	0.620	0.0393722589	0.655	18.953	5	50	0.000	1.085

a. Predictors: (Constant), NII, RR, PROV, LIQ, OC, b. Dependent Variable: IRS

Source: Surveyed Data of Commercial Banks in Tanzania 2002, 2004-2009

The Durban Watson statistic range from 0 to 4. Value near 2 indicates non autocorrelation; value towards 0 indicates positive autocorrelation; value towards 4 indicates negative autocorrelation. In this study the Durban Watson statistic range is 1.085, this indicates there is no autocorrelation between variables and the model clearly represent that IRS in commercial of Tanzania are determined by factors of required reserve, operation costs, liquidity risk, provisional for loan loss and non-interest income.

Table 5: Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
(Constant)	0.104	0.058		1.800	0.078	-0.012	0.219					
OC	0.542	0.078	2.570	6.944	0.000	0.385	0.699	0.495	0.701	0.577	0.050	19.832
PROV	0.215	0.232	0.088	0.929	0.357	-0.250	0.680	0.426	0.130	0.077	0.776	1.288
RR	-0.037	0.065	-0.054	-0.570	0.571	-0.166	0.093	0.235	-0.080	-0.047	0.784	1.276
LIQ	0.245	0.352	0.066	0.695	0.490	-0.463	0.952	0.306	0.098	0.058	0.772	1.296
NII	-0.553	0.090	-2.185	-6.140	0.000	-0.734	-0.372	0.304	-0.656	-0.510	0.055	18.334
Variable: IRS												

Source: Surveyed Data of Commercial Banks in Tanzania 2002, 2004-2009

From the results on table 5 the operating cost showed a positive relationship with IRS at a significant level of 5 percent. With a coefficient of 2.57 points it showed in aggregate the commercial banks use the operating costs as an important factor when setting IRS. This reflects that IRS will increase by 25.7% for every 100% increase in operating costs. An increase of that much in interest rate spread must by any means bring a significant impact on magnitude of interest rate spread in a specific bank. The results are supported by other findings like: an international cross-country comparison of OECD, developing and transitioning economies by Demirguc-Kunt & Huizinga (1999); a regional study on the Caribbean by Craigwell and Moore (2002); and individual country analyses of the Ugandan economy by Beck and Hesse (2006) and Central Bank of Solomon Islands (2007).

As expected provision for loan loss has a positively relationship with IRS; with a coefficient of 0.088 points becomes the second contributor in increasing the IRS. This shows that for every 100% increase in provision for loan loss results to an increase of 8.8% in in IRS. This is due to the additional resources that must be committed to dealing with bad loans which most banks pass the burden to the last customer. Though at 5 percent level this factor significance was not yet well established. Barajas, Steiner and Salazar (1998) had the same observation.

With a positive coefficient of 0.066, means that for every 100% increase in liquid assets results to 6.6% increase in IRS. In this study liquidity risk is measured by taking the ratio of liquid assets over total assets. The increase in liquid assets will result to the decrease in liquid risks and therefore, according to this study the decrease in liquid risk will result to the increase in IRS. Banks decrease their liquidity risks by increasing the amount of cash. This as results increases the interest rate spread. Contrary to expectation and other study finding like that of Brock and Franken (2000) who observe a negative relationship.

Against the expectations of having a positive influence to IRS required reserve showed a significant negative relationship with the IRS, with coefficient of -0.054 for required reserve. This is contrary to the findings by Demigurc-Kunt and Huizinga 1999, Demigruc-Kunt, Laeven and Levine 2003 and Tennant and Folawewo 2009 where they found that an increases in reserve requirements are associated with a growth in interest rate spreads since banks pass on the cost of holding unloanable funds to consumers via an increase in lending rates or a reduction in deposit rates.

NII as per prediction showed a significant negative relationship with IRS. A banks increases NII increases their income and this result to decrease in IRS. With a coefficient of -2.185 points NII prove to be the most significant factor in reducing the IRS at a 5 percent significant level.

VII. Conclusion and Recommendations

In this paper we have attempted to analyse the determinants of Interest Rate Spread in Tanzania from internal characteristics view point. Using a linear regression analysis and data covering 7 commercial banks over a period of eight years; the results obtained from the paper shows factors such as operating cost, provision for loan loss, tax expenses, liquidity risk, and profitability play a major role in increasing the interest rate spread while on the other hand factors of required reserve, administration expenses and non interest income decrease the interest rate spread.

The results support the need for the banks to find the optimum level for the operating costs, increase the level of operational efficiency and effectiveness. This can be achieved by ensuring proper motivation and treatment of human capital and providing good management packages. The increase will help to increase the Human resources efficiency thereby minimising loan defaults and operating costs. None the less the bank should be innovative enough to develop enough product lines which will help to raise the amount of non interest income in order to minimise the burden brought to customers.

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Appendix 1: Selected Commercial Bank's Profile as 31st December 2011

Bank	Profile				
	Year	Size (Total Assets) Amount in Tshs Millions	Capital Amount in Tshs Billions	Market Share *	Ownership
Akiba Commercial Bank Limited	1997	103,064	12.00	0.57%	Foreign
Azania Bancorp	1995	188,840	24.10	1.05%	Local
Citibank Tanzania Ltd	1995	746,138	09.66	4.15%	Foreign
CRDB Plc	1996	2,722,712	54.40	15.13%	Local
NMB Plc	1997	2,155,800	20.00	11.98%	Local
NBC ltd	2000	1,479,116	12.00	8.22%	Foreign
Stan Bic Bank Tanzania ltd	1995	788,496	04.98	4.38%	Foreign
Standard Charter Bank	1992	1,240,082	22.50	6.89%	Foreign

$* Market\ Share = \frac{Individual\ Bank\ Assets}{Total\ Banks\ Assets}$

Source: Tanzania Banking Survey 2012

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Comparative Analysis of Islamic and Conventional Banks in Camel Model: In Case of Malaysia

By Khasanjon Dodoev

Abstract- This comparative analysis aims to analyze the performance of Islamic banks and conventional banks in case of Malaysia during the period of 2006-2016. The financial performance will be measured through applying CAMEL ratio analysis. Additionally, two tailed t-test was also conducted via MS Excel in order to examine the difference in each components of CAMEL ratios between Islamic and Conventional banks. Overall, CAMEL model disclosed that there is not a significant difference in the financial performance between Islamic and Conventional banks. However, Islamic banks performed better and outstanding in terms of each component of CAMEL model compared with conventional banks. The secondary data which was collected from the financial statements of selected banking institutions. Indeed, this comparative research analysis compared the financial performance of Malaysian Islamic and Conventional banks with selected banks as samples during the study period.

GJMBR-C Classification: *JEL Code: E58*

Strictly as per the compliance and regulations of:

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I. Introduction

In this contemporary world, banks play a significant role in the daily life of society since it is the primary agency of making transaction between individuals and financial institutions. It is the fact that the economic and financial stability of each country will depend on the performance of its banking sector. In the last decades, demand for the Islamic banking is increasing dramatically since its interest free and profit and loss sharing features between depositors and creditors. Currently, Islamic banking mainly operates in Muslim countries, namely UAE, Pakistan, Singapore, Malaysia and Indonesia. In fact, Malaysia is known as the first nation which successfully implemented the dual banking system and the both Islamic and Conventional banks operates simultaneously. The broad aim of this research is to conduct a comparative study between Islamic and conventional banking systems in case of Southeast Asian county, namely Malaysia and empirically analyzing the financial performance of those banks within the period of 2006 and 2016. The primary objective of the research is divided to the specific dual objective. Firstly, to compare Islamic banks and Conventional banks in term of profitability through applying CAMEL (Capital Adequacy, Asset Quality, Management Quality, Earning Quality and Liquidity) framework and find out which type of banking system performed outstanding in terms of profitability. Secondly, through applying two tailed t-test analyses in order to find out whether, there is a significant difference or not between Islamic and Conventional banking in terms of CAMEL components.

Comparison between Islamic and Conventional banking system

Comparison the profitability between Islamic and conventional banks is extremely significant to look at the characteristics and features of both banking systems. Undoubtedly, the primary objective of conventional banks is profit maximizing and thus conventional banks concentrate more on increasing their profit rather than increasing the well-being of society. Regarding Islamic banking sector, Islamic banks possess two types of goals; initially, Islamic banks focus more on maximizing welfare as well as living standards of each society rather than maximizing its profit. Please refer to Appendix One to obtain more information regarding the various features between Islamic and Conventional banks.

II. Literature Review

So far, a number of researches and studies have been investigated on the comparison of financial performance between Islamic and Conventional banks by various researchers in terms of profitability through utilizing capital adequacy, asset quality, management quality, earnings efficiency, and liquidity ratios.

Jaffar and Manavri[1] made an analysis on the performance of Islamic and Conventional banks in Pakistan during the time period of 2005 and 2009. They implemented capital adequacy, management quality, asset quality, earning quality, and liquidity ratios of five selected Islamic and conventional banks among all banks in Pakistan. According to the result of Jaffar and Manavri's research, Islamic banks are investing their assets more on equity rather than debts. Lower loan to asset ratio in Pakistani Islamic banks compared with Pakistani conventional banks indicated that Islamic banks are more liquidity position rather than conventional banks in Pakistan. In addition, Siraj and

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[1] Jaffar M., Manavri I. (2011). Performance comparison of Islamic and Conventional banks in Pakistan. Global Journal of Management and Business Research (11). pdf.

Pillari[2] analyzed six Islamic and six conventional banks in Arab League countries during 2005-2010. In their research, operating expenses, profit, assets, deposits and total equities are utilized as determinants of the bank's performance in order to evaluate and compare the profitability of these two types of banking system. In fact, according to the results of ANOVA tests in their research, Islamic banks acquired higher returns on the assets and equities compared with conventional banks which is the consistent with the result of previous study. Viverita[3] analyzed the performance of conventional banks compared with the performance of Islamic banks in Indonesia. Indeed, CAMEL framework was applied by Viverita during his comparative analysis. The empirical results showed that Islamic banking system acquired lower cost efficiency ratio compared with conventional counterparts, in addition, revenue and profit ratios were higher in Islamic banks rather than interest-based conventional banks.

III. Data, Variables and Research Methodology

The principal goal of this research analysis is to conduct comparative financial performance analysis between Islamic and Conventional banks in Malaysia. In order to make an appropriate comparative analysis, specific four Islamic banks, namely RHB Bank Berhad, Public Bank Berhad, CIMB Islamic Berhad, May bank Islamic Berhad as well as four conventional banks, specifically, Bankok Bank Berhad, Deutsche Bank Berhad, Citibank Berhad, HCBC Bank Berhad were selected as a sample from Malaysian banking sector. Indeed, in order to obtain substantiated results, the bank-specific variables such as profits, assets, loans and net interest margin were obtained from the annual financial statements such as financial balance sheets as well as income statements were collected from the official website of the respective banks and the collected secondary data which was derived from the financial statements is transformed into percentages and ratios in order to make a proper comparison between Islamic and conventional banks over the period of 11 years from 2006 to 2009. In this comparative study, CAMEL framework will be applied in order to evaluate the performance of both Malaysian Islamic and conventional banks in terms of profitability. Based on CAMEL model, there are five major categories of variables which are capital adequacy, asset quality, management capability, earning quality and liquidity.

Table 1: The CAMEL model of this comparative analysis as follows

Variable	Measurement
Capital Adequacy Ratio	Total Equity/Total assets
Asset Quality Ratio	Total Credit, Advances and Financing/ Total Loans
Management Quality Ratio	Total Loans/Total Deposits
Earning Quality Ratio	Total expenses/Total revenue
Liquidity Ratio	Net loans/Total Assets

IV. Empirical Analysis

a) Capital Adequacy Ratio

Capital adequacy is also known as Capital to Risk (Weighted) Asset Ratio. Capital Adequacy measures the capability of a bank to meet different types of shocks and unexpected losses during the period of risk (Hamedian)[4]. The capital adequacy ratio plays an essential role in decision making in order to ensure that banks can withstand a reasonable level of losses occurred because of operational losses and evaluate the capacity of the bank in meeting the losses. Thus, higher capital adequacy ratio highlights better bank's financial performance.

[2] Siraj K., Pillari S. (2012). Comparative study on performance of Islamic banks and conventional banks in GCC region, Journal of Applied Finance & Banking, vol. 2, no.3, 2012, pp.123-161.
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Table 2: Two tailed T-test on Capital Adequacy of IBs and CBs

	Islamic Bank's CAR	Conventional Bank's CAR
Mean	0.166181818	0.119033703
Variance	0.000112964	0.000217391
Observations	11	11
Pearson Correlation	-0.246650153	
Hypothesized Mean Difference	0	
df	10	
t Stat	7.744835386	
P(T<=t) two-tail	0.0374584	
t Critical two-tail	2.228138852	

Source: Authors calculation based on the Stata program

Table 2 illustrates that the sample t-value is 7.545 while the p-value is 0.0374. Since the sample t-value is greater than 2.228(the t-critical value) and the p-value is less than 0.05 (the critical p-value), the null hypothesis will be rejected and it indentifies that there is a significant difference between the capital adequacy of Islamic banks and Conventional banks in Malaysia during 2006 - 2016.

b) Asset Quality Ratio

Significant part of banks' assets is accounted for loans and indeed, providing loan is considered as the principal source for banks to generate additional profit. Asset Quality ratio indicates how much percentage of bank's asset is occupied by loans and mainly AQR is utilizes as an indicator or proxy measurement for evaluating the value of loans and the creditworthiness of the banks (Table 3).

Table 3 defines that the sample t-value is 10.444 while the p-value is 0.044. Since the sample t-value is greater than 2.228 (the t-critical value) and the p-value is lower than 0.05 (the critical p-value), then, the null hypothesis will be rejected. Rejection of null hypothesis underlines the acceptance of alternative hypothesis which states that there is a significant difference between the asset quality of Islamic banks and Conventional banks in Malaysia.

Table 3: Two tailed T-test on Asset Quality of IBs and CBs

	Islamic Bank's AQR	Conventional Bank's AQR
Mean	0.705832666	0.501896776
Variance	0.00376645	0.002217918
Observations	11	11
Pearson Correlation	0.309715442	
Hypothesized Mean Difference	0	
df	10	
t Stat	10.44415959	
P(T<=t) two-tail	0.04371495	
t Critical two-tail	2.228138852	

Source: Authors calculation based on the Stata program

c) Management Quality Ratio

Management quality points out how the bank management is performing in receiving deposits and providing loans. According to Fayzullayev[5] clarifies that management quality measures the productivity and efficiency of bank's performance in getting more deposits from financially strong as well as trustworthy lenders and reducing defaults of borrowers through providing loans to creditworthy creditors. Total Expense to Total Income ratio which is used as a proxy measurement in order to measure the level of efficiency of the bank in our comparative financial performance analysis of Islamic and conventional banks (Table 4).

Table 4 emphasizes that the sample absolute t-value is 11.439 while the p-value is 0.028. Since the sample absolute t-value is greater than 2.228 (the t-critical value) and the p-value is less than 0.05 (the critical p-value), then, the null hypothesis is rejected and alternative hypothesis will be accepted. Acceptance of alternative hypothesis highlights that there is a significant difference between the Management efficiency of Islamic banks and Conventional banks during 2006 - 2016 in Malaysia.

[5] Fayzullayev A. (2011). Comparative Analysis between Islamic Banking and Conventional Banking Firms in terms of Profitability. 2009.

Table 4: Two tailed T-test on Management Quality of IBs and CBs

	Islamic Bank's MQR	Conventional Bank's MQR
Mean	1.068803233	1.198583468
Variance	0.000740525	0.001521597
Observations	11	11
Pearson Correlation	0.398650434	
Hypothesized Mean Difference	0	
df	10	
t Stat	-11.43946851	
P(T<=t) two-tail	0.0276589	
t Critical two-tail	2.228138852	

Source: Authors calculation based on the Stata program

d) Earning Quality Ratio

Earning quality measures the efficiency of bank in terms of controlling its expenses and costs; indeed, earning quality will help to examine the capability of banks to control the costs, the productivity in performance, and achieving ultimate goal which is earning more and more profit. More specific definition of earning quality ratio is the cost incurred by bank in order to earn every dollar of income. Therefore, the lower earning quality ratio underlines the lower cost and expense is occurred by banks and to generate additional income (Table 5).

Table 5 states that the sample absolute t-value is 1.76896 while the p-value is 0.10733. Since the sample absolute t-value is less than 3.182 (the t-critical value) and the p-value is greater than 0.05 (the critical p-value), the null hypothesis is accepted i.e. there is no significant difference between the Earning Quality of Islamic banks and Conventional banks in Malaysia between the period of 2006-2016.

Table 5: Two tailed T-test on Earning Quality of IBs and CBs

	Islamic Bank's EQR	Conventional Bank's EQR
Mean	0.715818445	0.739965777
Variance	0.001958596	0.000356687
Observations	11	11
Pearson Correlation	0.158857338	
Hypothesized Mean Difference	0	
df	10	
t Stat	-1.768957283	
P(T<=t) two-tail	0.107333848	
t Critical two-tail	2.228138852	

Source: Authors calculation based on the Stata program

e) Liquidity Ratio

Liquidity ratio is one of the most significant indicators which represent the ability of bank to withstand compensating all deposits of lenders during the unexpected situations and failure in repaying deposits for depositors in those circumstances might lead to solvency and bankruptcy. If the liquidity ratio is high, there is not any risk for banks since banks acquires sufficient amount of liquid assets such as cash to repay to its depositors in any situation Molyneux and Thorton[6]. Due to keeping majority part of money or deposits on itself, banks will generate lower amount of profit (Table 6).

Table 6: Two tailed T-test on Liquidity of IBs and CBs

	Islamic Bank's LQR	Conventional Bank's LQR
Mean	0.576925822	0.388760208
Variance	0.000630529	0.006561265
Observations	11	11
Pearson Correlation	0.024414439	
Hypothesized Mean Difference	0	
Df	10	
t Stat	7.41033154	
P(T<=t) two-tail	0.03673247	
t Critical two-tail	2.228138852	

Source: Authors calculation based on the Stata program

[6] Molyneux P., Thorton J. (1992). Determinants of European Bank Profitability: A Note, Journal of Banking and Finance. Vol. 16, No. 6, pp. 1173-1178.

Table 6 states that the sample t-value is 7.4103 while the p-value is 0.036732. Since the sample t-value is greater than 2.228 (the t-critical value) and the p-value is less than 0.05 (the critical p-value), then the null hypothesis is rejected and alternative hypothesis will be accepted, while alternative hypothesis underlines that there is a significant difference between the Liquidity ratio of Islamic banks and Conventional banks.

V. Overall Financial Performance

In order to evaluate the overall financial performance of Islamic and conventional banking system, average ratios of Capital adequacy, Asset quality, Management quality, Earnings quality, and Liquidity ratios were calculated, based on their relationship to performance, for each banking categories and results are presented in table below:

Table 7: Two tailed T-test on all CAMEL variables of IBs and CBs

	Islamic Bank	Conventional Bank
Mean	0.219263831	0.110284318
Variance	0.568283451	0.585156383
Observations	5	5
Pearson Correlation	0.992029471	
Hypothesized Mean Difference	0	
df	4	
t Stat	2.524736474	
P(T<=t) two-tail	0.065027903	
t Critical two-tail	2.776445105	

Source: Authors calculation based on the Stata program

Table 7 summaries that the sample t-value is 2.5247 while the p-value is 0.065. Since the sample absolute t-value is less than 2.776 (the t-critical value) and the p-value is greater than 0.05 (the critical p-value), the null hypothesis our research analysis will be accepted and the null hypothesis of our research analysis defines that there is no significant difference between the overall financial performance of Islamic banks and Conventional banks in Malaysia during 2006-2016.

VI. Conclusion

In this section of our research analysis, all main point of our research analysis will be restated. Especially, the outcome of empirical analysis and result section will be concluded in this part. First of all, the background information and distinctive characteristics of both Islamic and Conventional bank was provided. Indeed, Islamic banks conduct its operation based on Sharia law and earning interest (Riba) is prohibited in Sharia law thus all profits and losses will be equally divided into both parties in Islamic banking. Regarding conventional interest-based banking system, conventional banks are benefited from earning interest between depositors and creditors and, in fact, conventional banks follow constitutional law, not Sharia law. Furthermore, CAMEL model implemented in order to examine the financial performance between Malaysian Islamic and Conventional banks for the period 2006-2016. The five components of CAMEL model which are Capital Adequacy, Asset Quality, Management Quality, Earning Quality, Liquidity ratios of both Islamic and Conventional banks has been evaluated and compared individually with T-test in the empirical analysis section of our comparative analysis.

The findings and outcomes of our analysis shows that there is not significant difference between Islamic and Conventional banks in terms of overall financial performance based on CAMEL model.

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Innovation and Performance during the Financial Crisis: The Case of French Firms

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Abstract- This research is a contribution to establish an empirical background on the capacity for innovation in French firms listed on the SBF 120 covering the period before and after the financial crisis. The purpose of this research paper is to analyze the factors that influence the capacity for innovation and to prove the existence of a possible relationship between the innovation capacity and the performance. Firstly, the study reveals that research and development expenditure has a negative impact on the financial performance of SBF 120 firms during the period from 2004 to 2016. Secondly, this negative relationship between performance and innovation persists during the pre and post financial crisis period.

Keywords: innovation, performance, research and development, plurality functions of manager.

GJMBR-C Classification: JEL Code: B26, C23, C58, G01, G32, L25, O16, O39

Strictly as per the compliance and regulations of:

Innovation and Performance during the Financial Crisis: The Case of French Firms

Amira Houaneb [α] & Rim Benhassen [σ]

Abstract- This research is a contribution to establish an empirical background on the capacity for innovation in French firms listed on the SBF 120 covering the period before and after the financial crisis. The purpose of this research paper is to analyze the factors that influence the capacity for innovation and to prove the existence of a possible relationship between the innovation capacity and the performance. Firstly, the study reveals that research and development expenditure has a negative impact on the financial performance of SBF 120 firms during the period from 2004 to 2016. Secondly, this negative relationship between performance and innovation persists during the pre and post financial crisis period.

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I. Introduction

The relationship between financial innovations, which are often associated with liberalized and deregulated markets, and macroeconomic stability has become a very controversial economic issue. The financial crisis of 2007/2008 brought to the fore the inquiry about the positive role of the evolution of financial markets in the economic stability.

So far there have been many investigations on the impact of innovation on firms' financial performance, which come out with mixed results. This study examines the possibility that business innovation improves financial performance by allowing the firm to be distinguishable.

Studying the SBF 120 firms' innovation has not received enough attention through academic research. Recently, a considerable effort to conceptualize the scope of the strategy has been provided for the first time by Hoskisson et al. (2000). Four conceptual perspectives- transaction cost theory, agency theory, and institutional theory - were analyzed by these authors in 64 countries. Using the same analytical approach, other more targeted research focused on countries in Asia and Central Eastern Europe (Peng et al., 2001; Meyer and Peng, 2005). One of the main purposes of this research is to assess whether the theories and methodologies used to study this strategy in the developed countries are appropriate for the diverse socio-economic contexts and different firms of given characteristics.

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For several years, there has been some fascination for innovation, both at the theoretical and practical levels. Indeed, Berrone et al. (2013) highlight its current popularity in the business community. This study reveals that over 90% of senior managers believe that innovation is fundamental to achieving their strategic and financial goals. However, only half of the main innovations and the strategies that were improved met the hoped-for objectives on the market side as well as on the of the firm side. This ascertainment might lead to many conflicts within the agency. As a matter of fact, for nearly two decades, French firms have undergone some of changes, the most important of which is the growing importance of innovations in the process of value creation. This advancement questions the need for a renewed conception of the corporate governance.

Several authors (Wang and Ahmed, 2004; Button, 2002; Brown and Petersen, 2009) focus on the benefits of continuous development of new studies and up growth research and development investments for organizations. Even today, the failure rate of new investment decisions remains high (Genus and Coles, 2008). We find that many studies agree that on the one hand innovation is an interesting source of competitive advantage (Straska and Waller, 2010). On the other hand, firms can only take full advantage of progress when all functional activities support innovation. The latter is generally related to the terms research and development. Also, modernization includes the process of driving the new technology into use (Brown et al., 2009). Achieving this essential activity for the organization improves and maintains its position in the market.

According to Bhagat and Garg (2008), research is about developing new knowledge while development is about applying knowledge and increasing the application possibilities. All managers testify to the crucial role of research and development activities. More specifically, it is a strategic function (Munari, 2002). Indeed, research and development is the very heart of a firm's innovation capacity. Respectively, investment in research and development has risen in recent years. Technological evolutions, competition and financial benefits are at the origin of an important industrial event, led by firms: The race for innovation is increasingly based on the firm's specialized resources (Hatch and Dyer, 2004; Tsai and Wang, 2009).

Besides, all developed and emerging countries have been affected by the financial crises. These crises

have taken very different forms: banking, stock market, and real estate crises. If we look at the statistics, there is about one crisis every two years, that is to say, a financial shock that results in falling stock prices or bankruptcies chain banks. According to Orléans (2009) in the World between 1970 and 2007, there were no less than 124 banking crises, 208 currency crises, and 64 sovereign debt crises. The crisis "subprime," which hit the sector subprime mortgages is a crisis of enormous severity: all economists agree that it is the most serious regarding importance and depth since the crisis of 1929.

What follows is an enumeration of the major causes behind a crisis. There are three fundamental causes. First, financial globalization process makes global economies more interdependent. Second, the policies of economic liberalization give a great freedom of action to the financial actors. Indeed, the freedom of activity granted to the financial actors favors the international circulation of capital and contributes to globalizing crises. Third, a wave of unprecedented financial innovations that have weakened the international financial system and whose role has been underestimated, yet historical experience shows that they are at the very heart of crises.

Entrepreneurial innovations are supposed to be one of the key sources of economic growth and competition is seen as an incentive to innovate. Schumpeter (1947) points out that perfect competitiveness from textbooks through the hypotheses ad hoc on the atomicity of agents. The homogeneity of goods and services contradicts the intuition one might have about the role of incentives to innovate. The same objection can be considered about the financial sector. Bluntly, Minsky (1986) identifies the issue of the evolution of financial systems regarding productive activities as a principal problem in a monetary market economy. When the focus of financial innovations is on speculative profitability strategies, the financial fragility is endogenously increased and reflects the incapacity of micro-prudential regulatory schemes to meet the assumptions of efficient markets. Macroeconomic stability then calls for a redefinition of regulatory mechanisms

We contribute by this article to the literature related to the performance of firms by studying the impact of research and development expenditure on the performance of the firm in the French context. Few studies have previously discussed the relationship that may exist between these expenditures and performance on the French setting. Also, our study is one of the first studies that analyze the effect of the financial crisis of 2008 on the relationship between innovation and the firm's performance. We also contribute by studying the plurality of the functions of the manager on the firm's performance.

The object of this study is to define the impact of research and development expenditures on firms' performance for the case of French firms and the effect of the Subprimes crisis on this relation. Therefore, this paper is structured as follows: The first section reviews the relevant literature and hypothesis development. The second section presents our methodology, while the third section focus on the results obtained. In the last one, we make a conclusion.

II. Literature Review and Hypothesis Development

The theoretical foundation of this work lies primarily on the concept of innovation developed in 1939 by the economist Joseph Schumpeter, who gave a prime role to innovation activities for the evolution of capitalist societies.

In this respect, several theorists (Lau, 2009; Czarnitzki and Kraft, 2003) have indicated that economic growth is endogenous to innovation. There is an increase in the level of knowledge and intellectual capital of innovative firms thanks to innovation. Thus, it varies in importance from one firm to another which is explained by the preferences of those responsible for investment decisions, who possess discretionary decision as to the prominence and choice of innovative activities.

Some authors consider that the competitive advantage that a firm has is possible through continuous innovation (Huang et al., 2010). Henceforth, firms may orient their efforts to creating value and creating organizational knowledge. Modernization, resulting from research and development activities, can be considered as a transformation of skills into economic activity. Following the globalization of markets, firms are facing international competition. These firms must, therefore, be innovative to survive in changing environments (Ding and Stolowy, 2003).

Therefore, and according to Charreaux and Desbrières (2001) firms, adopting innovation strategies, have the power to increase or maintain their market shares, while leading a competitive advantage over other firms. The strategic decision to undertake innovative activities, hence, leads to the economic growth of the markets and the long-term profitability of the firms (Azadegan, 2011).

There are many studies on the impact of innovation on the long-term performance of firms. Some research has found a positive relationship between innovation and the value of societies (Hill and Snell, 1988). In their study analyzing the effect of organizational control on innovation decisions, Yang et al. (2010) find a positive relationship between innovation and corporate profitability. Thus, Gunduz (2013) analyzes the interdependence of investments and the value of

firms and finds that capital investment positively affects the worth of firms.

The positive relationship between innovation and performance could also be interpreted by the importance of the control measures used in firms adopting innovation strategies. Research indicates that firms assuming such procedures use strategic control measures (Gurhan et al., 2011; Yang, 2010), while firms following other strategies, such as diversification, and apply performance-based controls.

Guan et al. (2009) examine how innovation affects firm performance. They argue that the relationship between investment and sales differs significantly from firm to firm. Firms that invest heavily are more competent to be the best to increase their income and profits. Through a sample of manufacturing firms, Yam et al. (2011) observed that sales, the growth of innovation and the return on assets (ROA) are very high for firms which pay extensively compared to the firms which spend less on innovation. According to North et al. (2001), the innovation strategy is a source of competitive advantage, for it signals to investors and other stakeholders that their business is growing. Thus, executive managers are launching a signal based on increased research and development spending. So it is by capturing this announcement that the financial market reacts positively. These analysts point out that such projects contribute in particular to productivity and value creation. Henceforth, there is a positive correlation between business performance and innovation investments.

Dechow and Schrand (2010) note that research and development investments vary according to the discretion and preferences of senior management. Consequently, the second theoretical foundation is rooted in the agency theory developed by Jensen and Meckling (1976), which states that the ownership structure and the board of directors are mutually determined as well by the nature of the firm's activities. They also show that these governance mechanisms interact with each other and subsequently influence the firm's performance.

Obvious enough, by linking the concept of innovation to agency theory, we can evoke the underlying assumption of our study, which predicts the existence of an interaction between innovation choice, governance structure, and performance of the firm. This interaction leads to two types of relationship to be investigated, namely the factors that may explain the adoption of innovation projects and their consequences. It should be noted that we use research and development investments as a measure of innovation.

Zheng (2014) shows the existence of a direct and positive correlation between innovation investment, economic growth, and firm's earnings. As for Gunday et al. (2011), they believe that innovation is synonymous to better growth opportunities, which impact the firm's performance positively.

To magnify the value of the firm, the manager is required to take many advantageous measures. The manager is required to undertake investments for many reasons. First, investments allow him to increase the consumption of the assets. Second, it permit him to be more interested in the cash flow that can be realized during the period of his mandate to increase his remuneration and consequently the firm's value. He must also seek some invested shares to invest in the firm. Not only must he to take into account the effect of research and development projects on the hoped-sales, but he must also guarantee a liquidity return as a dividend when unprofitable investments are not available and also achieve investments whose revenues manage to cover their costs. These above mentioned-measures illustrate that innovation has a tremendous impact on performance.

Based on the previously mentioned theoretical and empirical foundations, our supposition can be deduced such:

Hypothesis 1: Performance positively affects innovation.

III. Methodology

a) *Sample Selection and Data*

On the whole, our sample is made up of French listed firms. The study depicts the period extending from the year 2004 until the year 2016. The data related to the duality of the functions of the manager were collected manually from the financial reports while the other data relating to the characteristics of the firms were collected from multiple resources such as straight forward data, World scope database, Data stream, as well as the Guru Focus database. The selected firms belong to ten sectors. We adopt the global industry standard classification system, Industry Classification Benchmark (ICB) adopted by Euro next to classify the listed firms into homogeneous business segments. We took the ICB, which divides firms into ten major groups. The table 1 shows the distribution of French firms by industry and then by the super sector.

Table 1: Distribution of French firms by industry and super sector

Industry	Super Sectors
Oil and Gas	Oil and Gas
Basic materials	Chemistry, Raw materials
Industries	Industries
Consumer goods	Automobiles and equipment manufacturers, agri-food and beverages, household and personal care products.
Health	Health
Consumer Services	Distributions, Media, Travel and Leisure
Telecommunication	Telecommunication
Community Services	Community Services
Financial corporations	Banks, Insurance, Real Estate, Financial Services, Investment Instruments.
Technology	Technology

Also, we excluded missing data from our observations and we winsorised data at 2% of each end of our data distribution.

b) Econometric Modeling

To assess the hypothesis that we have suggested to study the impact of innovation on the performance of the French firms, the following model has been established:

$$ROA_{i,t} = \alpha_1 + \alpha_1 Innovation_{i,t} + \alpha_2 Beta_{i,t} + \alpha_3 Risk_{i,t} + \alpha_4 Growth_{i,t} + \alpha_5 CAPEX_{i,t} + \alpha_6 Liquidity_{i,t} + \alpha_7 Size_{i,t} + \alpha_8 Leverage_{i,t} + \alpha_9 MTB_{i,t} + \alpha_{10} Cumul_{i,t} + \varepsilon_{i,t}$$

With:

ROA: The firm's performance measured by the ratio between earnings before interest and taxes and total assets.

Innovation: The natural logarithm of total research and development.

Beta: The market risk of the firm measured by the volatility of the securities of the firmi at the moment t.

Risk: The operational risk of the firm measured by earnings before interest and taxes divided by income after interest and taxes.

Growth: The growth of the firm measured by the growth rate of sales between year t and t-1.

Liquidity: The ratio of general liquidity measured by the ratio between current assets and current liabilities.

Size: The size of the firm measured by the natural logarithm of total assets.

CAPEX: Ability of investment of the firm measured by the ratio of new capital asset acquisitions to total assets.

Leverage: The debt ratio firm measured by the ratio between total debt and total assets.

MTB: The market to book ratio measured by market capitalization on the total assets of the firm.

Cumul: Is a dichotomous variable which takes the value of 1 if the general direction of the firm and the presidency of the board of directors is ensured by the same person and 0 otherwise.

IV. Results and Discussion

a) Descriptive Statistics

What follows present the descriptive statistics and the correlation analysis of all the variables used in our study.

Table 2 presents the descriptive statistics of all dependent and independent continuous variables. The average performance of the firms in the study sample is 0.031 with a variance of 0.080. The average value of innovation expenditures is 18.70 for a 1.69 of standard deviation, and 75% of the firms in our sample have spent on research less than or equal to 20,022 development. Regarding the risk variables, we note that the average beta is 0.982 and a standard deviation of 0.219, so the market varies by 10%, the firms' shares move 9.82%. Regarding operational risk, we find out that the average is 2.013 and the variance is equal to 7.530, reaching a maximum value of 134.121, which indicates the diversity of our sample. The average growth of the firms in the study sample is 7.4% and a maximum value of 7.008. The average investment capacity is 20,646 with a variance of 14.04, so we can once again assert the diversity of our sample and that firms do not have the same capital expenditures. The average value of liquidity ratio is 1,484 which allow us to conclude that firms finance their current debts by their current assets and 75% of the firms in our sample have a liquidity ratio lower than or equal to 1,628. The debt variable has an average value of 0.153 and a variance of 0.105,

so the debts of the firms in our sample represent 10.5% of the total assets, we have to also mention that our sample contains firms in debt and those that are not indebted.

Table 2: Descriptive Statistics

	Average	Std.	Minimum	Median	Q1	Q3	Max
ROA	0031	0080	-0658	0042	0015	0066	0224
Innovation	18708	1690	12.190	18,800	17619	20,022	22,363
Beta	0981	0219	0490	0998	0940	1,000	1,770
Risk	2.013	7.530	38315	1,570	1364	1829	134121
Growth	0074	0441	1000	0045	-0.010	0109	7008
CAPEX	20646	14401	0087	18247	9643	28328	62694
Liquidity	1484	1.195	0403	1267	0989	1628	14737
Size	22825	1689	17742	22793	21666	24131	26358
Leverage	0153	0105	0	0146	0079	0204	0609
MTB	0973	0.861	0029	0725	0414	1272	9507

Table 3 displays the correlation coefficients of Pearson and Spearman between the different variables in our study. According to the Pearson and Spearman coefficients, we noticed that there is not a problem of correlation between the variables and for that we can resort to the estimation of our model. For this, we opt for Thompson's double clusters method (2009) which takes into account the correction of the heteroscedasticity problem.

Table 3: Correlation Analysis

	ROA	Innovation	Beta	Risk	Growth	CAPEX	Liquidity	Size	Leverage	MTB	Cumul
ROA	1.00	0.03	-0.01	0.0005	-0.12 ***	0.01	-0.31 ***	0.13 ***	-0.08 *	0.22 ***	-0.11 ***
Innovation	-0.04	1.00	0004	-0.06	-0.10 *	-0.13 ***	-0.16 ***	0.63 ***	-0.13 ***	-0.22 ***	-0.12 ***
Beta	-0.12 ***	-0.06	1.00	-0.01	-0.0001	-0.12 ***	-0.22 ***	0.08 *	0.09 **	-0.13 ***	-0.03
Risk	0.07	-0.09 **	0002	1.00	-0006	-0.03	-0.01	-0.03	-0.01	-0.00008	0.02
Growth	0.36 ***	-0.09 **	-0.03	0.13 ***	1.00	-0.09 **	0.30 ***	-0.18 ***	-0.05	0.15 ***	0.04
CAPEX	-0.01	-0.06	-0.00 9	0.21 ***	-0.06	1.00	-0.07 *	0.17 ***	0.19 ***	-0.05	-0.11 ***
Liquidity	0.21 ***	-0.20 ***	-0.20 ***	-0.01	0.10 **	0.01	1.00	-0.40 ***	-0.20 ***	0.27 ***	0.11 ***
size	-0.14 ***	0.69 ***	0.06	0.10 **	-0.15 ***	0.17 ***	-0.39 ***	1.00	0.08 *	-0.45 ***	-0.13 ***
Leverage	-0.21 ***	-0.08 **	0.17 ***	0.26 ***	-0.05	0.18 ***	-0.15 ***	0.10 **	1.0 0	-0.25 ***	-0.05
MTB	0.69 ***	-0.23 ***	-0.22 ***	-0.03	0.39 ***	-0.11 ***	0.37 ***	-0.41 ***	-0.25 ***	1.00	0.01
Cumul	-0.11 ***	-0.21 ***	0.02	0.01	0.03	-0.13 ***	0.11 ***	-0.17 ***	-0.05	0009	1.00

The coefficients that are located above the diagonal are those of Pearson and those of Spearman are below the diagonal.

b) Results of Explanatory Analyzes

Table 4 presents the results of the model estimates, which highlight the potential relationship between innovation and business performance. The coefficient of innovation is negative and significative at the 1%. This result suggests that spending on research and development negatively affect the performance of the French firm. Indeed, new technologies from research and development are not necessarily translated into better accomplishments. Hsu et al. (2013) suggested that research and development processes are tainted by uncertainties and do not meet the estimated expectations. Also, newly designed products may encounter unexpected manufacturing problems or may not be commercially viable. Besides, profits from new products cannot justify the expense of research and development required to develop such products and research and development expenses is becoming a very costly procedure. Thus, research and development expenses have a negative impact on the current performance of the firm. Nevertheless, the accumulation of experience in research and development could improve the future performance of the firm.

The cumulative function of the manager (Cumul) has a negative and significant effect on the performance of the French firm. The agency's theory suggests that the separation of director and board chair positions facilitates more the direction and the control of the executive and that firms, which fail, maybe underperforming those that separate the first two positions (Rechner and Dalton, 1991). In fact, the manager chairs the board of directors, who evaluates his work, goes against the goal of having a board of directors. Because the duality of the manager points out that there is no separation between decision management and decision control (Fama and Jensen, 1983), and the board will not be able to monitor and to evaluate the manager effectively. Indeed, the manager is

more likely to use his power as Chairman to select the directors, who are not expected to challenge his decisions (Westphal and Zajac, 1995). As a result, a board that is officially controlled by the firm's manager may lack independence and vigilance, which leads to more agency problems and subsequently poor performance by the firm (Pi and Timme, 1993; Rechner and Dalton, 1991).

As far as risk is concerned, the market risk ratio (BETA) is negative and significant at the 10% threshold, while operational risk has no significant impact on the performance of French firms. The market risk generates an instability of results and cash flow and consequently deterioration of the firm's performance (Dhaniniet al., 2007; Goldberg and Drogt, 2008; Ammon, 1998).

Operational risk (Risk), which represents the uncertainty associated with the operating environment of the organization and reflected in the changes in the operating result, has a negative impact on the performance of the firm. By taking the risk, a firm can benefit from exceptional short-term profitability by accepting high levels of risk, but it is not able to cope with long-term negative industrial conditions which results in a low level of performance, leading to poor financial performance for the firm (Liargovas and Skandalis, 2010).

Regarding the relationship between liquid assets (Liquidity) and the performance of the firm, it is negative and significant at the 1% threshold, proving that firms with important liquid assets are the best performers. By holding back money, managers do not distribute dividends even if they do not have captivating investment opportunities (Blanchard et al., 1994). Moreover, managers may spend money to improve their utility, but do not necessarily increase the value of the business (Jensen, 1986). These firms, holding liquid assets, invest in projects that subsequently fail and have a negative impact on the firm's performance (Evans and Jovanovic, 1989; Hvide and Moen, 2007).

We also noticed that the leverage factor (Leverage) is negative and significant at the 10% level. This result stipulates that profitable, and high-performing firms are more dependent on equity as the principal financing option, while those that are not performing are dependent on external financing (Shubita and Alsawalhah, 2012).

The size of the firm (Size) has a positive and significant impact at the 1% level. Large firms are the most successful firms since they own more resources, better risk diversification and better management of expenses. Large firms are apt to have more resources and opportunities when using the capital market (Gupta, 1969). Worth noting is that firms can achieve better performance through more reasonable economies of scale, more promotion opportunities, improved asset efficiency, capital, technology management, and other operational synergies.

The market to book (MTB) coefficient is positive and significant at the 1% level. The relationship between growth opportunities and performance is positive. Firms with weighty investment opportunities have good performance. Indeed, the long-term value creation and assumption of Chemmanur and Jiao (2012) predicted that for firms with a more talented manager and the stronger croissant options have better performance (Cox et al., 2017).

Table 4: Impact of Innovation on Performance

	Coefficient	Student's T
Constant	-0089	(- 0.92)
Cumul	-0.009 **	(-2.34)
Innovation	-0006 ***	(-3.22)
Beta	-0021 *	(-1.68)
Risk	-0.00007	(-0.55)
Growth	-0.010	(-0.81)
CAPEX	-0.0003	(-1.14)
Liquidity	-0023 ***	(-4.13)
Size	0012 ***	(2.70)
Leverage	-0.060 *	(-1.88)
MTB	0036 ***	(3.00)
N	544	
R^2 Adjusted	0.2382	
Fisher	10.64 ***	

Table 5 shows the results relating to the impact of the subprime financial crisis on the association between innovation and corporate performance. We observed that the crisis (Crisis) has a positive and significant effect on this relationship, which led us to study the relationship between innovation and firm performance during the pre-crisis period and the post-crisis period. The results are shown in Table 5. As far as the duality of the duties of the executive (Cumul) is concerned, it keeps its negative and significant sign highlighting the adverse effect of the combined management of the firm and the board of directors on the performance and this result persist during both pre-crisis and post-crisis periods.

Table 5: Impact of the Subprime Crisis on the Relationship between Performance and Innovation

	Coefficient	Student's T
Constant	-0086	(-0.87)
Cumul	-0.008 **	(-2.22)
Innovation	-0.006 ***	(-3.17)
Beta	-0.024 *	(-1.88)
Risk	-0.0001	(-0.91)
Growth	-0011	(-0.89)
CAPEX	-0.0003	(-1.14)
Liquidity	-0.023 ***	(-4.04)
Size	0.012 ***	(2.66)
Leverage	-0.065 **	(-2.00)
MTB	0.035 ***	(2.83)
Crisis	0.011 **	(2.33)
N	544	
R^2 Adjusted	0.2410	
Fisher	11.62 ***	

The results of analysis of the period pre-crisis and post-crisis are in Table 6. For innovation (Innovation), we find that its negative relationship with performance persists in both periods. This negative relationship is explained by the fact that the process of research and development are subject to uncertainty and does not achieve expectations and new products innovation are not necessarily translated into better performance.

Market risk (Beta) keeps its negative and significant effect on performance during both periods, while the firm's operational risk loses its significance during the post-crisis period. The explaination of this finding is that the financial risk is more essential for the survival of the firm during this period of credit and it is this risk that must be managed as quickly as possible so as not to affect the performance of the firm.

Moreover, growth opportunities (MTB) remain positive and significant during the post-crisis period and liquid assets (Liquidity) also maintain their negative relationship with performance during the pre- and post-crisis period. This finding suggests that managers hold the money to satisfy their own interests and invest even more during this period of crisis in unprofitable projects, which affects the performance of the firm. Leverage maintains its negative and significant effect on performance during the pre-crisis period but loses its significance during the post-crisis period. Farthermore, the firm's size (Size) has a positive but not significant effect during the pre-crisis period. However, it regains its significance during the post-crisis period as large firms are the ones that survive during crisis given the diversification of their activities.

Table 6: Analysis of the relationship between Performance and Innovation during the Pre- and Post-Crisis Periods of Subprimes

	Pre-Crisis	Post-Crisis
Constant	0.259 (1.49)	-0.182 * (-1.93)
Cumul	-0.014 ** (-2.33)	-0.008 * (-1.81)
Innovation	-0.008 * (-1.99)	-0006 *** (-2.87)
Beta	-0.031 * (-1.71)	-0027 * (-1.89)
Risk	-0.0004 *** (-2.94)	0.0001 (0.35)
Growth	-0.083 ** (-2.60)	-0.004 (-0.29)
CAPEX	0.0008 (1.41)	-0.0006 * (-1.80)
Liquidity	-0.019 ** (-2.53)	-0.022 *** (-3.42)
Size	0.001 (0.20)	0016 *** (3.18)
Leverage	-0.084 ** (-2.18)	-0043 (-1.16)
MTB	0010 (0.58)	0052 *** (8.70)
N R^2 Adjusted Fisher	145 0.2743 11.86 ***	399 0.2877 22.10 ***

V. Conclusion

In this article, we have examined the relationship between innovation and business performance. The idea is that research and development expenditures allow the firm to develop new products and whether these new products are able to improve its performance. On the other hand, this article also examines the impact of the subprime crisis on this relationship that may exist between innovation and performance. The sample of the study is made up of French firms during the period between 2004 and 2016, and we found that research and development expenses negatively affect the financial performance of the firm. This negative relationship is explained by the uncertain criterion of this innovation and the importance of the costs of research and development that may exceed the revenues generated by these investments. We have also found that this negative relationship persists during the periods before and after subprime crises. The measure of innovation used can be improved in future research by taking into account the different types of research

and development expenditures separately to identify which of the research and development components have effect on the performance of the firm.

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Performance Evaluation of Equity Linked Saving Schemes: An Evidence from India

By Dr. Khalid Ashraf Chisti & Mr. Amir Rahman
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Keywords: mutual funds, ELSS, sharpe ratio, treynors ratio, jensen alpha, india.

GJMBR-C Classification: JEL Code: G01, G21, G23.

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Dr. Khalid Ashraf Chisti [α] & Mr. Amir Rahman [σ]

Abstract- This paper tries to evaluate the performance of top 10 tax saving mutual fund schemes operating in India for a period of 10 years which ranges from 1-04-07 to 31-03-17. Performance has been evaluated on the basis of annual returns and compared to benchmark index of NIFTY-50, various tools like average return, beta, Sharpe ratio, Treynors ratio and Jensen alpha have been used for the study. The study concludes that all ELSS funds have outperformed the market index in terms of average return and are risky except a few schemes; all the funds except Aditya Birla sunlife tax relief 96 have performed more consistently than benchmark index. Also, axis fund is the most reliable scheme in market; moreover, all the funds have aggressive relationship with market.

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I. Introduction

Saving is that part of total income which is sacrificed today for some future reward. The investment of saving becomes part of capital formation of a country which is an important indicator of sustained economic development of an economy. One may invest his/her savings into safer modes of investment like Bank Deposits, Government Securities etc. carrying a low return while as one may invest in stocks of companies where risk is high return's too are comparatively high. Meanwhile, there is another class of investor who invest primarily to save a part of their taxable income along with other objectives like Liquidity, Return etc. Therefore, every year Assesses consult tax professionals and portfolio managers to plan their income in most productive manner. But to average investors such services are Luxury to afford. These investors have now found a good abode under mutual fund tax saving schemes. Sec80(c) of income tax act 1961 provides an assessee deduction from his/her taxable income of 1,50,000 by investing in various tax savings instruments like Public Provident Fund (PPF), National Saving Certificates (NSE) in bank deposits and tax savings, Mutual funds popularly known as "ELSS" (Equity Linked Saving Scheme) compared to other, ELSS has a shortest lock in period of 3 years while its 15 years for Public Provident Funds (PPF) and 6 years for National Saving Certificates (NSC). ELSS invest majority of corpus in Equity market therefore is an "Indirect" route for investors to participate in stocks of High performing companies and certainty can provide better returns for longer period compared other forms of tax savings instruments. The special benefits which a person gets is Mutual fund company does not invest" All Eggs in one Basket" i.e they don't invest in single scrip rather ensures diversification which reduces the riskiness of investment. Moreover, Mutual funds are managed by Professional managers giving a feel of Relax or safety to the average investors. At the Same time, investing through the Mutual is less expensive as the benefits of economies of scale are passed on to the investor.

Therefore, ELSS is a Mutual funds Tax Saving scheme which invests. Its major amounts of portion in equity shares of a company. Thus, allowing investors to trade in stock market without facing complexities. But Mutual funds do not give assured returns, their return are usually dependent upon the performance of the companies. If a company is doing well they get good return. if investments has been made in small cap companies or companies which are not doing well then certainty investors will get hick ups in their rational. If there is sudden new regulations in the industry that too will affect its returns and expose them to different and expose them to different risks like fund risk market risk etc. In this project, an attempt has been made to evaluate the performance of ELSS with respect to benchmark index of nifty 50.

II. Review of the Literature

Early work done on mutual fund includes the studies of Treynors (1965) who used the expected rate of return to measure the performance of fund to that of suitable average. Sharpe (1966) evaluated the performance of mutual funds capital market model substituting the concept of expected returns. Jensen (1968) measured the performance of mutual fund with a model that that statistically measured the fund performance relative to benchmark. The studies of Sharpe & Jensen evaluated that mutual funds underperformed market indexes & suggest that the returns weren't sufficient to compensate investors for the diverse mutual fund charges. Further, an attempt has been made here to present the review of various studies pertaining to my project. Literature review can be broadly divided into two aspects:

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a) Studies Relating to Growth of Mutual Funds

Panagrahi (1996) Assessed the growth of mutual fund industry from 1964-65 to 1994-1995 by using tools like average growth rate, company wise and scheme wise distribution of investable funds, pattern of investment of public sector mutual funds and income and expenses of public sector mutual funds. The study concluded that Mutual fund collections as a proportion of aggregate bank deposits constantly rose from meagre 8.78 per cent in 1991-92 to 15.91 per cent in 1994-95 and Expenses as a portion of income generated also rose from 2.27 per cent to 4.25 per cent during the study period. The study further concluded that there is significant presence of institutional investors in it notwithstanding the fact that around 60 to 70 % of middle class households in INDIA are the owners of mutual fund units. The corresponding figures in US are at 72 per cent. An analysis of the distribution of household's financial assets in INDIA and USA for 1992 shows that while 38 per cent of total financial assets of total households in us goes to mutual fund, 17.8 per cent of gross savings in financial assets of Indian households find deployment in units of unit trust of India (UTI) and shares and debentures.

Ms Archana (2014) studied the growth of mutual fund industry in India using various tools like assets under management (AUM), resource mobilized and the transactions done by the mutual fund industry in the stock market for the period of 7 years from 1-4-07 to 31-07-2014. The study concluded that The total assets under management of mutual fund show a gradual increase in 2007 and in 2008 but in 2009 there is a decrease of 83%, again the year 2010 showed a increase, followed by a decrease in 2011 and 2012, but the market boomed in the year 2013 and 2014 which showed a positive sign. It was further found that majority of the resources mobilized by mutual funds are through income debt schemes which indicates more efforts have to be made by mutual funds to create awareness regarding the earning potential of the equity/growth schemes. Moreover, it was suggested that mutual fund companies should come up with innovative schemes to meet the demand of retail investors.

Chauhan & Adhav (2015) analysed the latest trends in mutual fund industry in India and also compared the mutual fund industry in India with global mutual fund industry for the period of 10 years from 2002-03 to 2012-2013 by using tools like foreign institutional investors (FII) investment for portfolio investment, growth in no of schemes and worldwide net assets of mutual funds. The study concluded that the European mutual fund market with $8.23 trillion in AUM accounted for 31% of the mutual fund assets worldwide at the end of the year 2012 while Africa and Asia/pacific manages only 13% with $3.4 trillion AUM and of these India only has 0.43% share in mutual fund market. The Indian mutual fund industry is in its growth phase and possesses a tremendous scope for development which is evident for the international comparison. They concluded that the main reasons for poor growth of mutual fund industry in India are the lack of awareness for mutual funds and lack of trust on mutual fund companies and policy makers in investors. Further, it was suggested that strong regulatory framework, greater transparency, increased innovations, better services to the investors, liquidity and higher returns could make mutual fund schemes more popular and investor friendly in India.

Poonam Gautam Sharma (2016) Presented the attributes of mutual fund industry in India, its development since inception with UTI, entry of public sector, private sector and foreign enterprises and various schemes offered by companies especially started to meet small investors needs for a period from 01- 04-1965 to 31-03-2016 by using the tools like assets under management (AUM), AUM to gross domestic product (GDP) ratio, share of MFS in household gross financial savings, cumulative growth in no of schemes and asset management companies (AMC). The study concluded that the mutual fund industry in India is expected a tremendous growth in the years to come. The security exchange board of India (SEBI) regulatory framework contributed a lot in Indian mutual fund industry but still there are some matters to work on disclosure and insolvency. Further it was concluded that mutual funds aren't recognized as preferable investment in investor's communities. Overall; it was concluded that mutual fund industry has to make efforts towards the stable growth and sustained profit rather than short term growth.

b) Studies Relating to Performance of Equity Linked Saving Schemes (ELSS)

Suminder & Smiti (2011) Evaluated the performance of 5 growth oriented mutual funds based on asset management companies (AMC) who have maintained highest level of AUM throughout the study period from2000 to 2010. 5 schemes comprises of 2 public sector mutual funds, 2 private sector mutual funds and 1 purely private sector mutual fund. The study concluded that growth schemes have seen a progress & open ended growth schemes are popular than those close ended schemes, this may be because quick bucks by investing in them & exit from market. Further, private sector has performed to its counterparts in case of annual net asset value (NAV), growth percentage, total return, beta, risk adjusted CAGR while public sector has performed better in case of standard deviation, Sharpe's ratio, expense ratio & Treynors ratio.

Santhi & Gurunath (2012) Analysed the performance of 32 growth oriented open ended equity linked schemes using CNX nifty as benchmark index. The study used risk adjusted performance measure of Sharpe, Treynor & Jensen. The study related to the

period from 2006-07 to 2011-2012. From these measures it was found that there are certain schemes which underperform the benchmark index that show a strong negative risk-return relation while there are certain schemes which outperform then the benchmark index with positive risk-return relationship. it further concluded that all the tax saving mutual funds is having volatility but not all the schemes volatility is less then benchmark CNX nifty.

Rajib - Deb (2013) Analysed the performance of 5 tax saving mutual fund schemes of 5 different companies for a period from 1-07-07 to 01-07-11. Only tax gain growth type schemes have been selected, dividend types aren't considered for study so as to help investors to know which tax gain scheme is performing well from the comparative analysis of the scheme. From the study it is evident that all funds are not performing well in Mutual Fund industry in the last 5(five) years. moreover, the study found that HDFC long term advantage (G) is best performing & ranked at 1(one) in Sharpe's index whereas UTI equity tax saving plan (G) is worst in performing and ranked at 5 (five). In between these 2 (two) schemes, Canara Robeco Equity Tax Saver (G), Franklin India Shield(G) and SBI Magnum Tax Gain Scheme(G) are ranked at no. 2(two), 3(three), and 4(four) respectively. It shows the comparative performance scheme. So investors should give his preference in the above sequence for investments in any fund.

Dr. Namita Srivastava (2014) Evaluated 9 ELSS funds against 5 variables like risk free rate of return, total risk inherent to the individual funds, beta of the funds, market return and market risk for a period from 1993 to 2012. The study concluded that sample ELSS funds are able to provide better return than any return on risk free securities but unable to outperform the benchmark portfolio in terms of average return. There is significant relationship between fund return, fund risk and market return through analysis of variance (ANOVA) test justify the fact that returns and risk are co - related with each other. The results suggest that all the explanatory variables have their impact on the fund return and fund performance is affected by changes in these variables. The study further confirms that efficient management and diversification of fund investment as well as stock market trend and moment plays an important role in defining ELSS Fund performance.

Jitender & Aanindra (2015) Evaluated 5 tax saving mutual fund schemes (LIC nomura mutual fund tax plan, ICICI pro tax plan, HDFC tax saver, SBI magnum tax gain and Franklin India tax shield) reflecting the representation of 2 from public sector and 3 from private sector for a period of 10 years from 2004-05 to 2013-14 . It was concluded that private sector tax saving mutual fund schemes outperformed compared to its market returns while the performance of public sector tax saving mutual fund schemes wasn't satisfactory. In terms of risk, HDFC Tax Saver fund return is more volatile compared to the market return. In the public sector, LIC Nomura MF Tax Plan and SBI Magnum Tax Gain are less volatile then the market risk in terms of relative performance by using Sharpe's index, treynors index and Jensen index, it was observed private sector performed well in mutual industry. Whereas, public sector couldn't perform well.. Further, in examining the relationship between fund return and market return, it is observed that there is no linear relationship between fund return and market return. This indicates that fund returns are not statistically significant compare to market return.

Mohanasundari, Vetrival & Levanya (2016) Analysed various tax saving mutual fund investment avenues available to investors. The study found that past performance of the funds doesn't get reflected in future. Further, the study shows all the tax saving mutual funds is having volatility but not all schemes volatility is less than benchmark S&P CNX nifty. Moreover it revealed that ELSS funds over more than 20 years of its existence had not been very popular with the retail investors as a tax saving investment option. It was concluded that mutual fund industry is in its growth phase and possesses a tremendous scope for development. The main reasons for poor growth of mutual fund industry in India are the lack of awareness for mutual funds and lack of trust on mutual fund companies and policy makers. The fluctuations in the economy and uncertainty in the financial market worldwide has intensified the competition and created a lot of pressure on the mutual fund industry to perform.

Aashish Jain (2017) made an attempt to analyse the performance of a few selected private sector Growth schemes selected on the basis of their NAVs and returns recorded for the period of three years starting from 1 April 2014 to 31 march 2017. the study used Treynors ratio, Sharpe and Jensen ratios for evaluating the performance of selected schemes like Kotak tax saver (g), reliance tax saver (g), dsp-br tax fund ,axis long term equity fund and Franklin India tax shield. The study concluded that reliance tax saver (g) gave highest return while dsp - br tax saver fund (g) gave excess return with respect to total portfolio and it's also less risky amongst the selected schemes. overall, dsp-br tax fund was the best tax saving mutual fund scheme among the all.

III. Objective and Research Methodology

After reviewing the relevant literature following objectives were framed for the current study.

a) Objectives

1. To evaluate and compare the various Elss.
2. To examine the relative performance of ELSS with benchmark index of nifty 50.

b) Hypothesis

H_0: There is no statistical significant difference between ELSS and NSE index returns.

H_1: There is statistical significant difference between ELSS and NSE index returns.

IV. Research Methodology

a) Sample of Study

The total population consists of 64 tax saving mutual fund schemes (Elss) offered by various mutual fund companies, out of which following top 10 Elss schemes have been selected for this study based on their assets under management (AUM) as on 1st January 2018:

Table I

Ranking	Schemes	Aum (Cr)
1	Axis Long Term Equity Fund	15408.41
2	Reliance Tax Saver Fund	10156.98
3	HDFC Tax Saver Fund	7123.63
4	SBI Magnum Tax Gain Scheme-93	6270.42
5	ICICI Prudential Long Term Equity Fund	4840.96
6	Aditya Birla Sunlife Tax Relief 96	4349.48
7	DSP Blackrock Tax Saver Fund	3571.29
8	Franklin India Tax Shield	3416.58
9	L&T Tax Advantage Fund	2762.38
10	Sundaram Diversified Equity Fund	2391.4

Source: Mutual fund India

b) Data Source

This study is based on secondary data. The returns of funds have been collected from factsheets, reports and websites. For benchmark nifty 50 has been selected and its returns have been collected from national stock exchange (NSE) of India. Also, a risk free rate of return of 7% has been selected of post office fixed deposits and same has been collected from post office of India.

c) Periodicity of Study

This study is spread over the period of ten (10) years from 1st April 2007 to 31st March 2017.

d) Tools used

Standard Deviation: Standard measures how volatile or risky the investment is .Standard deviation of a fund indicates how much the actual returns of a fund have deviated from the expected return. A fund with a high value of standard deviation indicates greater volatility than a fund with low value of standard deviation. It can be calculated as:

$$\sigma = \sqrt{\frac{\sum x - \bar{x}^2}{n}}$$

Where,

X = Returns generated throughout the year.

$\bar{x}$ = Average return.

N = No. of years.

Coefficient of Variation: it's a relative measure of dispersion which is used for studying dispersion in more than one series (companies). A series or company which has a high coefficient of variation (C.V.) would have greater dispersion than the one which has lower C.V. in other words, when C.V is high, the series or company is less consistent or more variable and when its low the series or company is more consistent or less variable .it can be calculated as:

$$C.V. = \sigma \div x$$

x= Mean

BETA: Beta establishes the relationship between market or index return and fund return. It predicts the performance of a fund in correlation with market. Beta of the market is determined at 1 .this could be interpreted as if the beta of stock is more than 1, it means fund will rise more than market and also fall more than market .It can be calculated as:

$$\beta = \text{covariance (RP *RM)} \div \text{variance of RM}$$

RP = Return of Portfolio

RM = Return of Market

Sharpe Ratio: Sharpe ratio is the risk adjusted return ratio which represents the return earned over the risk free rate of return, per unit of risk taken. Standard deviation is used as measurement of total risk. Standard takes into account both systematic and unsystematic risk i.e. it takes into account all possible risks. Return earned on treasury bills, Gilt securities or bank saving deposits is used as risk free rate of return. It can be calculated as:

$$RP - RF \div \sigma$$

RF= Risk free rate of return

Treynors Ratio: Also known as reward to volatility ratio is again an indicator of risk adjusted return. It uses Beta not the standard deviation as measurement of risk. It's generally believed that diversification of securities eliminates the company or unsystematic risk. Therefore, Beta is used to measure the systematic market risk. Higher the treynors ratio better the investment is. It can be calculated as:

$$RP - RF \div \beta$$

Jensen Alpha: it is the risk adjusted performance ratio of a portfolio which indicates whether the portfolio has earned the excess return over the benchmark return predicted via Beta. Alpha ratio can be both positive as well as negative, a positive alpha means fund has provided excess return than its benchmark while as, a negative alpha means fund has provided less returns then its benchmark. It can be calculated as:

$$(\alpha) = RP - [RF + \beta (RM - RF)]$$

β = Beta

T- TEST: Since the sample of the study is less than 30 and population standard deviation is unknown, a two-tailed T-test has been used to test the hypothesis of the study at a 5% level of significance.

V. Results and Discussion

In the table below selected ELSS funds have been numbered from 1 to 10 based on their ranking done as per AUM.

Table II: Comparison of selected ELSS funds with nifty 50 indexes by average return

Schemes	Average Return
Nifty 50	12.64%
Axis Long Term Equity Fund	19.57%
Reliance Tax Saver Fund	19.80
HDFC Tax Saver Fund	18.35
SBI Magnum Tax Gain Scheme-93	15.58
ICICI Prudential Long Term Equity Fund	20.04
Aditya Birla Sunlife Tax Relief 96	18.21
DSP Blackrock Tax Saver Fund	20.14
Franklin India Tax Shield	18.75
L&T Tax Advantage Fund	17.90
Sundaram Diversified Equity Fund	16.24

Source: MS Excel

As per table II, The market index has shown an average return of 12.64%, among the various selected Elss schemes the highest average return is shown by Dsp black rock which is 20.14% and lowest average return is shown by SBI magnum at 15.58%, therefore, all the ELSS funds have beaten the market and provided the average return well above the market return.

Table III: Comparison of selected ELSS funds with nifty 50 indexes by standard deviation

Schemes	Standard Deviation
Nifty 50	28.75%
Axis Long Term Equity Fund	23%
Reliance Tax Saver Fund	37%
HDFC Tax Saver Fund	40%
SBI Magnum Tax Gain Scheme-93	32%
ICICI Prudential Long Term Equity Fund	42%
Aditya Birla Sunlife Tax Relief 96	44%
a Blackrock Tax Saver Fund	37%
Franklin India Tax Shield	33%
L&T Tax Advantage Fund	32%
Sundaram Diversified Equity Fund	31%

Source: MS Excel

Table III presents the standard deviation of selected ELSS schemes and of market returns. Standard deviation measures how risky or volatile the investment is and it was found that the market returns have shown a standard deviation of 28.75% among the ELSS funds Aditya Birla has the highest standard deviation which is 44%, therefore, is the most risky scheme. While as Axis fund has a lowest standard deviation which is 23% and is the most reliable scheme among the sample organizations

Table IV: Comparison of selected ELSS funds with nifty 50 indexes by coefficient of variation

Schemes	Coefficient of Variation
Nifty 50	227.51%
Axis Long Term Equity Fund	120%
Reliance Tax Saver Fund	189%
HDFC Tax Saver Fund	215%
SBI Magnum Tax Gain Scheme-93	203%
ICICI Prudential Long Term Equity Fund	210%
Aditya Birla Sunlife Tax Relief 96	241%
DSP Blackrock Tax Saver Fund	183%
Franklin India Tax Shield	176%
L&T Tax Advantage Fund	181%
Sundaram Diversified Equity Fund	188%

Source: MS Excel

Table IV depicts coefficient of variation which is a measurement of dispersion. A fund which has a high value of coefficient of variation is least consistent or more variable while as; a low value shows a company is more consistent or less variable. The results show market has shown coefficient of variation at 227.51%, among the ELSS funds Aditya Birla has been performing least consistently as it carries a highest coefficient of variation which is 241% while as; axis fund is the most consistent performer with least value of coefficient of variation which is 120%. Further a closer look at the table shows that only Aditya Birla has more C.V than

market returns meaning thereby rest all funds have been performing more consistently than market index.

Table V: Comparison of selected ELSS funds with nifty 50 indexes by Beta

Schemes	Beta
Nifty 50	1
Axis Long Term Equity Fund	1.48
Reliance Tax Saver Fund	1.14
HDFC Tax Saver Fund	1.30
SBI Magnum Tax Gain Scheme-93	1.12
ICICI Prudential Long Term Equity Fund	1.38
Aditya Birla Sunlife Tax Relief 96	1.43
DSP Blackrock Tax Saver Fund	1.25
Franklin India Tax Shield	1.09
L&T Tax Advantage Fund	1.09
Sundaram Diversified Equity Fund	1.03

Source: MS Excel

Table V presents the beta value analysis of selected ELSS. As Beta predicts the performance of a fund in correlation with market, beta of a market is determined at 1 which means if the beta of stock is more than 1, funds will raise more than market and also fall more than market whereas, if the beta of a stock is less than one funds will raise less than market and also fall less than market.

The analysis shows that axis fund has the highest beta which is 1.48%this can be interpreted as, 1% change (increase or decrease) in the market index return causes 1.48% change (increase or decrease) in the axis fund return and the lowest beta is of Sundaram which is 1.03% further the table depicts that all funds have a beta value more than 1 which means all funds are aggressive in relationship with market index.

Table VI: Evaluates and compares selected ELSS funds by Sharpe's value

Schemes	Sharpe's Value
Axis Long Term Equity Fund	0.54
Reliance Tax Saver Fund	0.34
HDFC Tax Saver Fund	0.28
SBI Magnum Tax Gain Scheme-93	0.26
ICICI Prudential Long Term Equity Fund	0.31
Aditya Birla Sunlife Tax Relief 96	0.25
DSP Blackrock Tax Saver Fund	0.35
Franklin India Tax Shield	0.35
L&T Tax Advantage Fund	0.31
Sundaram Diversified Equity Fund	0.29

Source: MS Excel

Table VI Depicts the Sharpe ratio, a risk adjusted return ratio which measures the return earned over the risk free rate of return with standard deviation as the measurement of total risk. The analysis reveals that axis fund has a highest Sharpe ratio which is 0.54 which means it gives highest excess return over the risk free rate of return or gives the best risk adjusted return among the selected schemes.

Table VII: Evaluates and compares selected ELSS funds by treynors value

Schemes	Treynors Value
Axis Long Term Equity Fund	8.49
Reliance Tax Saver Fund	11.22
HDFC Tax Saver Fund	8.73
SBI Magnum Tax Gain Scheme-93	6.97
ICICI Prudential Long Term Equity Fund	9.44
Aditya Birla Sunlife Tax Relief 96	7.83
DSP Blackrock Tax Saver Fund	10.51
Franklin India Tax Shield	10.77
L&T Tax Advantage Fund	10
Sundaram Diversified Equity Fund	8.47

Source: MS Excel

Table VII presents treynors ratio which is another risk adjusted return ratio but it uses Beta (systematic) for risk measurement. The data analysis shows that the reliance tax saver fund has a highest treynors ratio which is 11.22% which means it gives best risk adjusted return whereas, SBI magnum has a lowest treynors ratio which is 6.97%.

Table VIII: Evaluates and compares selected ELSS funds by Jensen alpha

Schemes	Jensen Alpha
Axis Long Term Equity Fund	4.22
Reliance Tax Saver Fund	6.37
HDFC Tax Saver Fund	4.01
SBI Magnum Tax Gain Scheme-93	1.64
ICICI Prudential Long Term Equity Fund	5.25
Aditya Birla Sunlife Tax Relief 96	3.14
DSP Blackrock Tax Saver Fund	6.09
Franklin India Tax Shield	5.6
L&T Tax Advantage Fund	4.75
Sundaram Diversified Equity Fund	3.47

Source: MS Excel

Table VIII presents Jensen alpha which indicates whether the portfolio has earned excess return over the benchmark return predicted via beta, higher the value of beta better its. The data analysis shows that reliance tax saver has the highest Jensen alpha of 6.37 while as SBI magnum has a lowest alpha which is 1.64. A closer look at the table shows that all the selected schemes have a positive alpha which means they provide excess return over the expected return.

For testing hypothesis t - test has been used. The value of t or probability that null hypothesis is true is 0.68 which is more than .050, therefore, null hypothesis has been accepted hence concluded that there is no significant difference between fund return and market return of the sample organizations under study.

VI. Conclusions

The present study has evaluated the performance of selected ELSS funds spread over the period of 10 years which ranges from 1st April 2007 to 31st March 2017. The following conclusions have been made during this study.

The highest average return is shown by Dsp blackrock which is 20.14% and lowest average return is shown by SBI magnum at 15.58% moreover, all the ELSS funds have beaten the market index and provided the average return well above the market return which is 12.64%.

Aditya Birla has the highest standard deviation which is 44%, therefore, is the most risky scheme. While as Axis fund has a lowest standard deviation which is 23% and is the most reliable scheme among the sample organizations. Moreover, axis fund is the only fund which has less standard deviation than market standard deviation which is 28.75% which means this scheme is most reliable or least risky in market over the period of the study.

Aditya Birla has been performing least consistently as it carries a highest coefficient of variation which is 241% while as; axis fund is the most consistent performer with least value of coefficient of variation which is 120%. Moreover, Aditya Birla has more C.V than a market return which is 227.51% meaning thereby rest all funds has been performing more consistently than market index.

Axis fund has the highest beta which is 1.48% and the lowest beta is of Sundaram which is 1.03% moreover, all funds have a beta value more than 1 which means all funds are aggressive in relationship with market index.

Axis fund has a highest Sharpe ratio which is 0.54 which means it gives the best risk adjusted return while as, Aditya birla sunlife tax relief 96 has lowest Sharpe ratio which is 0.25 meaning that it gives least risk adjusted return among the selected schemes.

Reliance tax saver fund has a highest treynors ratio which is 11.22%.which means it gives best risk adjusted return whereas, SBI magnum has a lowest treynors ratio which is 6.97% meaning that it gives least risk adjusted return among the selected schemes.

Reliance tax saver has given the highest excess return over expected return with the highest Jensen alpha of 6.37 while as SBI magnum has given least excess return over the expected return with the lowest alpha which is 1.64.

The value of t-test is 0.68 which is more than .050, therefore, null hypothesis has been accepted hence concluded that there is no significant difference between fund return and market return of the sample organizations under study.

The study concludes that all ELSS funds have beaten the market index in terms of average return; all the funds except Aditya birla sunlife tax relief 96 have performed more consistently than benchmark index. Also, axis fund is the most reliable scheme in market; moreover, all the funds have aggressive relationship with market.

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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.

Color charges: Authors are advised to pay the full cost for the reproduction of their color artwork. Hence, please note that if there is color artwork in your manuscript when it is accepted for publication, we would require you to complete and return a Color Work Agreement form before your paper can be published. Also, you can email your editor to remove the color fee after acceptance of the paper.

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.

5. Use the internet for help: An excellent start for your paper is using Google. It is a wondrous search engine, where you can have your doubts resolved. You may also read some answers for the frequent question of how to write your research paper or find a model research paper. You can download books from the internet. If you have all the required books, place importance on reading, selecting, and analyzing the specified information. Then sketch out your research paper. Use big pictures: You may use encyclopedias like Wikipedia to get pictures with the best resolution. At Global Journals, you should strictly follow here.

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.

- 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.

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.

Infer your data in the conversation in suitable depth. This means that when you clarify an observable fact, you must explain mechanisms that may account for the observation. If your results vary from your prospect, make clear why that may have happened. If your results agree, then explain the theory that the proof supported. It is never suitable to just state that the data approved the prospect, and let it drop at that. Make a decision as to whether each premise is supported or discarded or if you cannot make a conclusion with assurance. Do not just dismiss a study or part of a study as "uncertain."

Research papers are not acknowledged if the work is imperfect. Draw what conclusions you can based upon the results that you have, and take care of the study as a finished work.

- 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.
- Make a decision as to whether the tentative design sufficiently addressed the theory and whether or not it was correctly restricted. Try to present substitute explanations if they are sensible alternatives.
- One piece of research will not counter an overall question, so maintain the large picture in mind. Where do you go next? The best studies unlock new avenues of study. What questions remain?
- Recommendations for detailed papers will offer supplementary suggestions.

Approach:

When you refer to information, differentiate data generated by your own studies from other available information. Present work done by specific persons (including you) in past tense.

Describe generally acknowledged facts and main beliefs in present tense.

The Administration Rules

Administration Rules to Be Strictly Followed before Submitting Your Research Paper to Global Journals Inc.

Please read the following rules and regulations carefully before submitting your research paper to Global Journals Inc. to avoid rejection.

Segment draft and final research paper: You have to strictly follow the template of a research paper, failing which your paper may get rejected. You are expected to write each part of the paper wholly on your own. The peer reviewers need to identify your own perspective of the concepts in your own terms. Please do not extract straight from any other source, and do not rephrase someone else's analysis. Do not allow anyone else to proofread your manuscript.

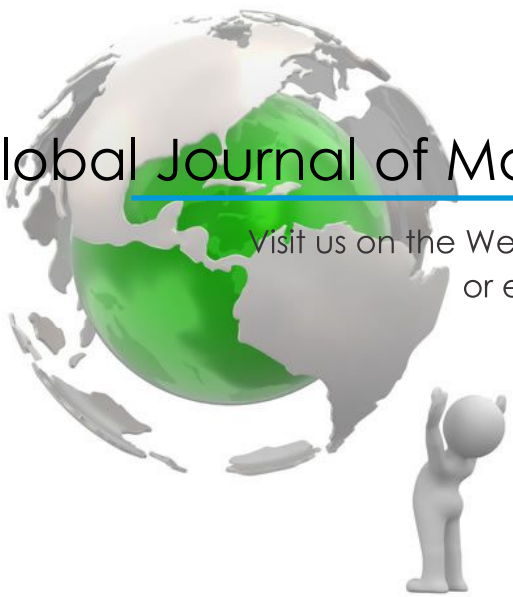
Written material: You may discuss this with your guides and key sources. Do not copy anyone else's paper, even if this is only imitation, otherwise it will be rejected on the grounds of plagiarism, which is illegal. Various methods to avoid plagiarism are strictly applied by us to every paper, and, if found guilty, you may be blacklisted, which could affect your career adversely. To guard yourself and others from possible illegal use, please do not permit anyone to use or even read your paper and file.

Criterion for Grading a Research Paper (Compilation) by Global Journals

Please note that following table is only a Grading of "Paper Compilation" and not on "Performed/Stated Research" whose grading solely depends on Individual Assigned Peer Reviewer and Editorial Board Member. These can be available only on request and after decision of Paper. This report will be the property of Global Journals.

Topics	Grades		
	A-B	**C-D**	**E-F**
Abstract	Clear and concise with appropriate content, Correct format. 200 words or below	Unclear summary and no specific data, Incorrect form Above 200 words	No specific data with ambiguous information Above 250 words
Introduction	Containing all background details with clear goal and appropriate details, flow specification, no grammar and spelling mistake, well organized sentence and paragraph, reference cited	Unclear and confusing data, appropriate format, grammar and spelling errors with unorganized matter	Out of place depth and content, hazy format
Methods and Procedures	Clear and to the point with well arranged paragraph, precision and accuracy of facts and figures, well organized subheads	Difficult to comprehend with embarrassed text, too much explanation but completed	Incorrect and unorganized structure with hazy meaning
Result	Well organized, Clear and specific, Correct units with precision, correct data, well structuring of paragraph, no grammar and spelling mistake	Complete and embarrassed text, difficult to comprehend	Irregular format with wrong facts and figures
Discussion	Well organized, meaningful specification, sound conclusion, logical and concise explanation, highly structured paragraph reference cited	Wordy, unclear conclusion, spurious	Conclusion is not cited, unorganized, difficult to comprehend
References	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring

INDEX



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