

RELATIONSHIP BETWEEN LIQUIDITY AND OPERATIONAL EFFICIENCY OF COMMERCIAL BANKS IN KENYA

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Abstract

The main aim of financial institutions is to operate efficiently in a bid to maintain stability and sustainable growth. Critical drivers to the performance and operational efficiency are external and internal economic environments. The aim of this study was to determine the relationship between liquidity and operational efficiency of commercial banks in Kenya for the five-year period 2018 - 2022. Specifically, the study sought to assess the relationship between Market Liquidity and operational efficiency of commercial banks in Kenya, establish the relationship between Funding Liquidity and operational efficiency and determine the relationship between Episodic Liquidity and operational efficiency of commercial banks in Kenya. The choice of the study five-year period was based on the availability of complete data over the study period and explosive growth of the banking sector in the country. This study adopted a descriptive research design with the study population comprising all the 42 operating commercial banks in the country. A sample of 38 banks was obtained and secondary data collected from banks annual reports for the analysis. Data was analyzed using descriptive, inferential statistics and regression analysis using SPSS (V23). Regression results indicated that the predictor variables explored in the analysis explained 46.1% of variation in operational efficiency of the commercial banks. The model was statistically significant with each of the explanatory variables, ROA, current ratio and price to earnings ratio exhibiting a positive relationship with the dependent variable. This study thus recommends financial institutions to adopt strategic measures to facilitate favourable liquidity for the commercial banks and thereby enhance their operational efficiency. Further, commercial banks should equally strive to have a large asset base in a bid to improve and record better performance in terms of profitability hence have a higher operational efficiency. Regulatory authorities should equally ensure sustainable climate for commercial banks by regulating the properly different macro-economic indicators.

Keywords: liquidity, operational efficiency, commercial banks

Introduction

The role of the banking industry worldwide as an intermediary is very fundamental to the economic growth where 80% of the financing is carried out by the banks through credit (Adam et al., 2018). The financial intermediary role played by the Commercial banks to both the borrowers and savers in Kenya is very important (Kitere, 2019). According to a report by the Kenya Credit Providers Association (KCPA), over US\$10 billion are disbursed by the commercial banks in form of loans. The remainder of the commercial bank loans is channeled to the market loans. Some of these credits include credits for the SACCOs or unions that disburse US\$2 billion in form of loans and the Micro Finance Institutions (MFI) that disburse

approximately only US\$300 million (KCPA, 2010). The banking sector has a bond that holds the economy of the country together. For instance, sectors like manufacturing and the agricultural sector almost depend entirely on the banking sector for purposes of their survival and growth. This brings us to the concept of operational efficiency which is the delivery of goods and services at cost-efficient rates without having to sacrifice the quality of the services (Ratemo & Ndede, 2021).

Operational efficiency also assumes the definition of the end product of the combination of the right process, people, and technology to ensure there is value and productivity of an operation of any business while conducting some routine check to ensure a desired level (Umoru & Osemwegie, 2016). The final result of operational tasks provides an opportunity for the previously needed resources to be channeled newly into other high-value initiatives that will bring more additional value to the organization. Firms that are efficient tend to maintain their stable levels of operating performance as well as output levels compared to firms that are still climbing the ladder towards efficacy (Ibrahim, 2018).

In most intermediations of funds from savers to borrowers, efficiency ensures that the funds are allocated to users who are most productive (Adam et al., 2018). The more efficient the financial system is in terms of generating resources, the greater the experience of economic growth and productivity in the system. Operations of management have been of less concern considering that for some reason it is less profitable to the whole system. A study done on the Indian scheduled commercial banks brings out clearly the importance of the operating efficiency of banks. This underpins why the drivers of operational efficiency need to be understood properly to ensure good management of commercial banks (Kaharuddin & Yusuf, 2022).

According to KCPA (2010), considering that the banking sector in Kenya is one of the biggest assets in terms of financial services they offer, it is however, not the largest credit supplier. There has been a major improvement on the liquidity of the banking industry over the last decades. Only two banks namely Chase Bank Ltd and Imperial Bank Ltd that were undergoing receivership were placed under the CBK statutory management (CBK, Central Bank Annual Report, 2018). Before then, between the years 1986 and 1998, the banking sector in Kenya experienced serious crisis that resulted in the collapse of thirty-seven banks (Matheka, 2021). The level interest rates remained high owing to the fact that there has been attempts of the commercial banks passing their inefficiencies to the consumers (Kiemo et al., 2019). This passing of inefficiencies could be attributed to the incapability to push down the costs of operations. Notwithstanding the growth that is experienced in the banking sector of Kenya, there are still challenges that are faced in terms of the liquidity of management that most banks are exposed to (Kiemo et al., 2019).

According to CBK (2018), the most critical risk factors faced by the Kenyan banking sector is the operating efficiency. This is because most of the Kenyan banks are yet to adopt approaches that are model-based when assessing their operating efficiencies. Liquidity is considered to be an intrinsic element in the banking sector and profits play an important part in the reward for adequate liquidity in the banking sector (CBK, 2020). Issues of cooperate governance,

profitability, and e-banking etcetera, has been addressed by the Kenyan banking sector. Nonetheless, no study has been conducted to investigate the relationship between liquidity and operating efficiency commercial banks in Kenya and yet it is a requirement that ensures the sector runs efficiently. Usually, the analysis done on the operating efficiency in terms of capital adequacy is always intended to provide an understanding to the managers on the best approaches that can be put in place in terms of risk management in the banking sector (Wekesa, 2016).

In conducting analysis on the financial health of any firm, four different groups of ratios are considered by the analyst. These groups of ratios include; ratios of liquidity, ratios on financial leverage, ratios of efficiency, and ratios of profitability. Some of the most used ratios of liquidity include; ratios that deal with receivables, ratios of working capital, inventory, ratios of acid tests, and those of the (Chen et al., 2018), account receivables in days, and account receivable turnovers (Kirimi et al., 2023). This is therefore the reason why this paper seeks to investigate the relationship between liquidity and operating efficiency of commercial banks in Kenya.

According to Akhter (2018), a significant relationship exists between liquidity and operational efficiency in commercial banks, where mismatches between assets and liabilities. This mismatch also referred to as liquidity gaps can lead to financial losses, impair loan portfolios, and heighten risks if not managed timely (CBK, 2013). In Kenya, banks maintain large cash reserves to avert liquidity traps from depositor withdrawals. The liquidity traps if not checked are costly and forgo market opportunities often forcing reliance on expensive inter-bank or central bank borrowing (Windasari & Purwanto, 2022). This liquidity gap exacerbates operational challenges, increasing costs and affecting profitability (Maaka, 2013). This has also been linked to higher leverage and repo market borrowing in Kenyan banks (Maaka, 2013).

Studies have been done both globally and locally on or those that relate to liquidity and operational efficiency on various firms. According to an investigation conducted by The Macaulay (1988), the adoption of best liquidity management practices in the United States of America reported that over 90% of banks in their countries have adopted the best practices when it comes to banking. From the study, most banks only needed to manage well their liquidity portfolio as well as the risks that may occur due to risks pertaining individual credit transactions for them to have efficient banking systems. A study done by Rono (2018), indicated that liquidity of the banking system led to operational efficiency of most of the agricultural firms. According to Oludhe (2011), capital adequacy, efficiency of the management, quality of the assets, and liquidity had a weak link with the operational efficiency whereas liquidity has a strong link with the operational efficiency. All these considerations have an antithetical impact on the operational efficiency of any banking system (Ravi and Sharma 2012).

According to Maaka (2013), the profitability of the commercial bank in Kenya is mostly affected by the increase in the leverage and the liquidity gap. Whenever there is a significant liquidity gap in most banks, they are usually forced to borrow from the repo market at a relatively high cost and this increases the costs the bank incurs. This therefore leaves the level

of the deposits from the customers to positively ensure the banks growth and profitability. A study by Kimari (2013), concluded that in Kenya, there exists a positive relationship between liquidity and operational efficiency of the micro financial institutions/ SACCOs that take deposits. On the other hand, Olongo (2013) also agrees that back then there was a stronger influence of the operational efficiency of commercial banks in Kenya for a given period of time.

From the studies above, not much has been done concerning liquidity and operational efficiency in the commercial banks. This study therefore saw the need to establish the relationship between liquidity and the operational efficiency of commercial banks in Kenya.

Research Objective

To establish the relationship between liquidity and operational efficiency of commercial banks in Kenya

Research Hypothesis

There is no significant relations between liquidity (Market, funding and episodic liquidity) and operational efficiency of Commercial Banks in Kenya

Methodology

The study adopted a descriptive research design to analyze the relationship between liquidity and operational efficiency in commercial Banks in Kenya. This design encompasses the collection of information without any manipulation of environment (Konthari, 2004). Descriptive research design was appropriate since the study aimed to construct a picture of the observed relationship between variables and can propose (Monsen & Van Horn, 2008). The study target population was all 42 licensed commercial banks in Kenya operating under the banking act as at 31st December 2022) under the regulatory framework of the Central Bank of Kenya. A sample of 38 banks was selected using the Formulae. To select the final study sample, banks were stratified by size as small, medium and large size banks and the stratified random sampling technique was used to select from each stratum a given number of banks as small banks (19), medium banks (14) and large banks (5). Secondary data was used in this study. The data was obtained primarily from banks annual reports. Data was equally obtained from the Central Bank of Kenya bank supervision audited reports, using a data collection sheet. The data was collected for a period of five years between the year 2018 to 2022. This period was considered sufficient and adequate to provide data that yield reliable findings. Data extracted included for Market liquidity, Funding liquidity and Episodic liquidity.

The collected data was analyzed with the aid of the SPSS (version 23) software. Data was analyzed by use of both descriptive and inferential statistics. The descriptive statistics show the measure of central tendencies and dispersion using the mean, standard deviation, maximum and minimum. A detailed explanation was provided to interpret the data, draw conclusions and make recommendations. The inferential statistics was used to provide the relationship between

the variables. Pearson correlation was used to establish the stretch of the independent variable on the dependent variable. Regression analysis was conducted to establish the effect of the independent variable over the dependent variable. The regression analysis was used to test the hypothesis at 95% confidence level (level of significance = .05). To determine the accuracy of the statistics in the regression and models of best fit, the study performed test for multicollinearity, test for linearity and normality of residuals.

Results and Discussion

The main objective of the study was to determine the relationship between liquidity and operational efficiency in commercial banks in Kenya. The variables that constituted the liquidity included the market liquidity, the funding liquidity and the episodic liquidity. The descriptive statistics used are mean, standard deviation, minimum and maximum. Trend analysis was also used to show the pattern of change in variables among the firms through the study period of 2018-2022.

Operational Efficiency

The study assessed the operational efficiency of the commercial banks by use of total asset turnover ratio which was derived by doing a ratio of net sales to total Assets.

Table 1.1 Operational Efficiency (overall)

YEAR	Mean	SD	MAX	MIN
2018	9.98%	9.79%	60.80%	2.86%
2019	8.29%	4.42%	27.43%	2.44%
2020	7.57%	3.35%	19.54%	2.46%
2021	8.88%	4.19%	25.02%	2.01%
2022	8.83%	4.72%	26.75%	2.84%
Average	8.71%	5.29%	31.91%	2.52%
Overall Mean	8.71%	5.29%		

In table 1.1, the study the operational efficiency was measured using the total asset turnover ratio which was derived by doing a ratio of net sales to total assets between the year 2018 and 2022. Over the five-year period, firms registered the following levels of operational efficiency, the mean operational efficiency was 9.98% in the year 2018, 8.29% was registered in year 2019 while 7.57% was recorded in year 2020 and 8.83% was recorded in the year 2022. The average mean of operational efficiency was 8.71% while the standard deviation was 5.29% with a maximum and minimum value of 31.91% and 2.52% respectively. The overall mean and standard deviation of 8.71% and 5.29% respectively. The results indicate moderate efficiency for the firms that generated about 8.71 cents in sales per dollar of assets on average. The wide range (min 2.52%, max 31.91%) highlights variability where top performers excelled in operational efficiency while laggards struggled, with high SD signaling inconsistency across firms. This implies banks under study have adequate but not exceptional operational efficiency.

Trend Analysis for Operational Efficiency

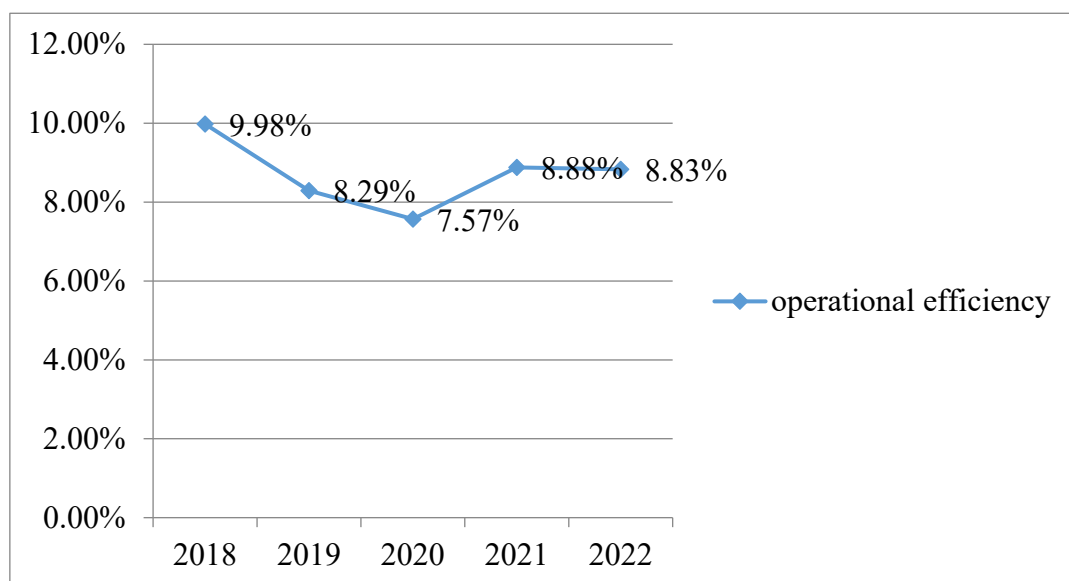


Figure 1.1 assessed the trend movement of operational efficiency for a period of 5 years, the mean operational efficiency in the year 2018 was 9.98% then there was a decline to 8.29% in the year 2019 and further the operational efficiency declined to 7.57% in the year 2020, operational efficiency increased in the year 2021 to 8.88% and a decline again in the year 2022 to 8.83%, the findings implies that the operational efficiency of the banks were fluctuating from year with a steady decline between 2018 to 2020 then an increase between 2020 and 2021 and slight decline in 2022

Funding Liquidity

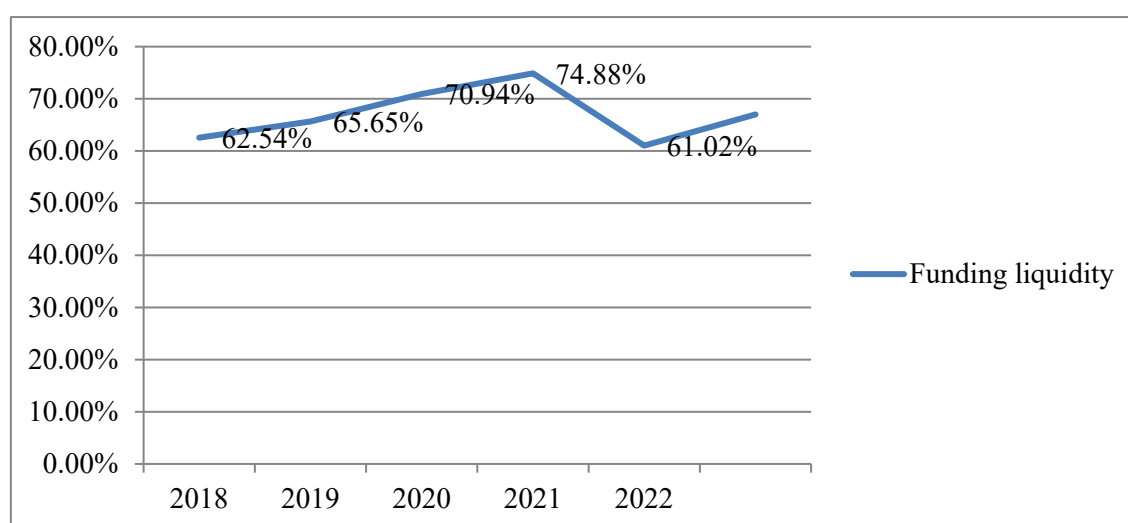
The study assessed the funding liquidity of the commercial banks by use of current ratio, the ratio was calculated by doing a ratio of current assets to current liabilities.

Table 1.2 Funding Liquidity

Year	Mean	SD	MAX	MIN
2018	62.54%	23.97%	99.69%	2.49%
2019	65.65%	27.42%	109.99%	1.34%
2020	70.94%	28.08%	110.14%	0.38%
2021	74.88%	23.87%	102.54%	2.92%
2022	61.02%	27.05%	135.07%	0.05%
Average	67.00%	26.08%	111.49%	1.44%
Overall Mean	67.01%	26.08%		

Table 1.2 shows that the average funding liquidity was 67% while the standard deviation registered is 26.08% and the maximum and minimum value of funding liquidity is 111.49% and 1.44% respectively. The study findings imply some banks have fully funding liquidity in the operations. When a bank has a higher ration of current liabilities to current assets then this is an indicator of more liquidity when it is compared to other companies with such ratios that are lower. This therefore means that the banks have to invest a lot on its loaners. The choice of funds and portability has also proved to be a great factor under which money will move from one entity to another. The central bank plays a vital role in funding liquidity in most commercial banks and this is one of the most important settlement of assets.

Trend analysis for funding liquidity



In figure 1.2, the study assessed the trend analysis of funding liquidity of commercial banks for a period of 5 years, the average funding liquidity in the year 2018 was 62.54%, in 2019 the funding liquidity registered is 65.65% while in the year 2020 the funding liquidity is 70.88%, in the year 2021 and 2022, the funding liquidity registered is 74.55% and 61.02%, the findings implied there was a steady increase of funding liquidity from the year 2018 to 2021 and a decline in the year 2022 to 61.02%.

Market Liquidity

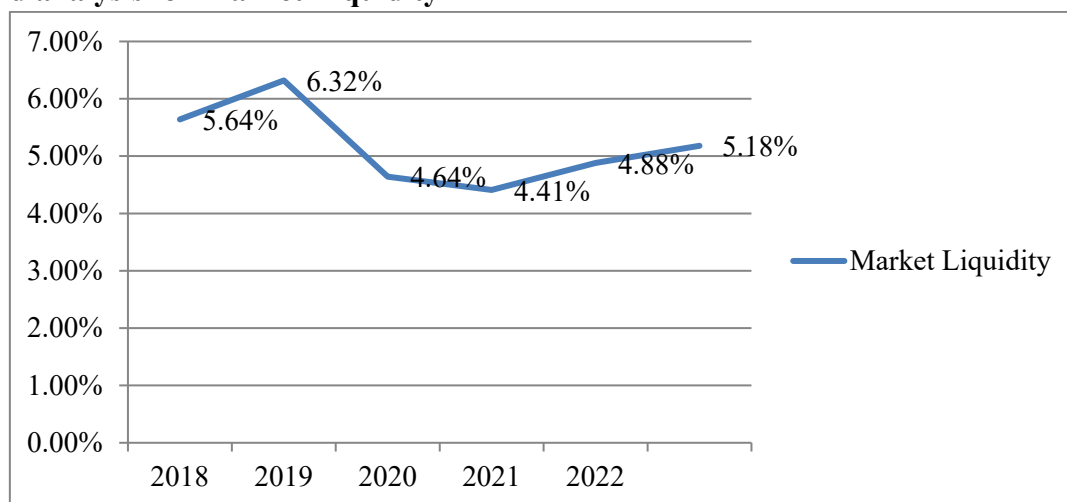
The study also assessed the market liquidity of the commercial banks. This variable was arrived by using return on asset which was derived by doing a ratio of Net Profit after tax to average total asset.

Table 1.3 Market Liquidity

Year	Mean	SD	MAX	MIN
2018	5.64%	4.55%	19.66%	0.93%
2019	6.32%	6.77%	38.52%	-1.30%
2020	4.64%	4.25%	18.81%	-3.89%
2021	4.41%	3.30%	15.06%	-1.89%
2022	4.88%	4.41%	16.51%	-13.28%
Average	5.18%	4.65%	21.71%	-3.89%
Overall Mean	5.18%	4.66%		

In table 1.3, the study recorded market liquidity average mean of 5.18%, the standard deviation registered is 4.65% while the maximum and the minimum market liquidity recorded for a period of 5 years is 21.71% and -3.89% respectively. The overall mean and standard deviation is 5.18% and 4.66% respectively. Market liquidity proves to have a lot of impact on the portfolios and traded securities. It is therefore important for a bank to be in the know of how its liquidity position is from a marketing perspective. This will help the bank to expand its customer loans whenever there are attractive market opportunities (Falconer, 2021). A bank that has problems with its liquidity position loses many business opportunities and this affects its operational efficiency in a great way.

Trend analysis for Market Liquidity



In figure 1.3 assessed the annual trend of market liquidity, the average mean of market liquidity in the year 2018 was 5.64%, in 2019 there is an increase to 6.32% and market liquidity decline

in year 2020 to 4.64%, in year 2021 the study registered a mean of 4.41% and an increase in year 2022 to 4.88%. The findings implied the market liquidity was not constant but it kept on changing.

Episodic Liquidity

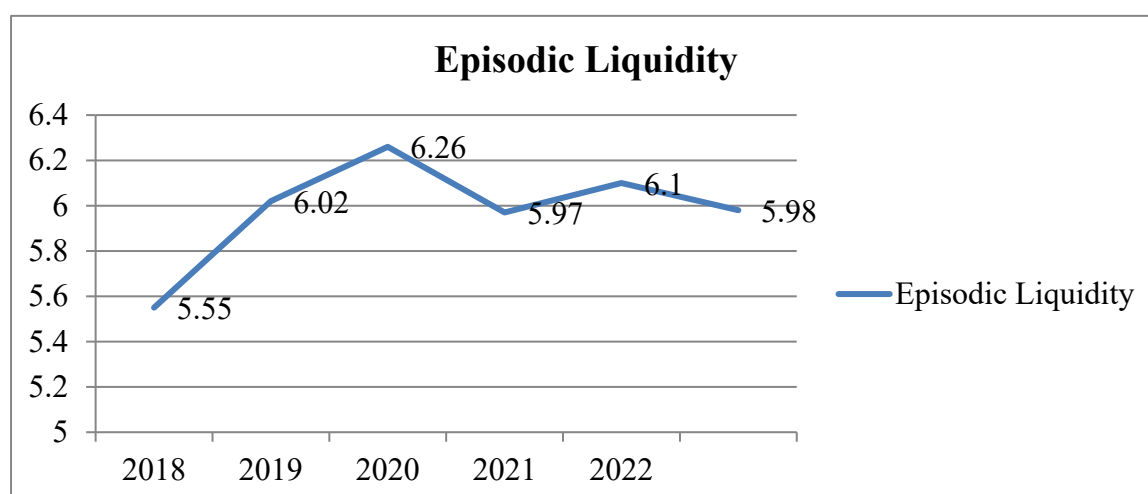
The study assessed the episodic liquidity, this variable was determined using Price to Earnings Ratio which was derived by doing a ratio of Price per share to EPS.

Table 1.4 Episodic Liquidity

Year	Mean	SD	MAX	MIN
2018	5.55	2.19	11.58	1.93
2019	6.02	2.76	13.39	0.3
2020	6.26	2.34	10.9	3.09
2021	5.97	2.12	10.9	0
2022	6.1	2.23	13.3	3.18
Average	5.98	2.33	12.01	1.7
Overall Mean	5.98	2.33		

In table 1.4, the study assessed the episodic liquidity which was derived by doing a ratio of Price per share to EPS. The average mean of episodic liquidity was 5.98, the standard deviation is 2.33 while the maximum and the minimum value of episodic liquidity is 12.01 and 1.70 respectively. The findings show a that banks establish a lending relationship with the market to provide an insurance against the risk of shortages and the use of excess funds during the maintenance period. This positively influences the operational efficiency of the commercial banks in Kenya.

Trend Analysis Episodic Liquidity



In figure 1.4 the study assessed the annual trend analysis of episodic liquidity, the average mean for episodic liquidity was 5.55 for the year 2018, 6.02 was recorded in the year 2019 while in 2020 and 2021 the episodic liquidity was 6.26 and 5.97 respectively and in year 2022 the episodic liquidity recorded was 6.1. The findings depicted the episodic liquidity was not constant for the period of 5 years.

Correlation Analysis

Table 1.5 Correlation Coefficient Matrix

		Operational Efficiency	Funding Liquidity	Market Liquidity	Episodic Liquidity
Operational Efficiency	Pearson	1	.116	.678**	.154
	Correlation				
	Sig. (2-tailed)		.495	.000	.362
	N	37	37	37	37
Funding Liquidity	Pearson	.116	1	-.138	.251
	Correlation				
	Sig. (2-tailed)	.495		.415	.133
	N	37	37	37	37
Market Liquidity	Pearson	.678**	-.138	1	.089
	Correlation				
	Sig. (2-tailed)	.000	.415		.601
	N	37	37	37	37
Episodic Liquidity	Pearson	.154	.251	.089	1
	Correlation				
	Sig. (2-tailed)	.362	.133	.601	
	N	37	37	37	37

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

Correlation results showed that relationship between funding liquidity and operational efficiency was positive and insignificant ($r=0.116$, $p>0.05$), market liquidity and operational efficiency was positive and significant ($r=0.678$, $p<0.05$) and episodic liquidity and operational efficiency was positive and insignificant ($r=0.154$, $p<0.05$). The correlation between the variables was weak and strong respectively. If two predictor variables indicate a correlation coefficient of more than 0.60, then the problem of multi-collinearity exists. None exceeds 0.6 and hence none of them are highly correlated with each other and thus none of them was to be dropped hence, the study sought to analyse the regression analysis to establish further the magnitude of the relationships.

Hypothesis Testing

Table 1.6 Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.711 ^a	.506	.461	.0248478
a. Predictors: (Constant), Episodic Liquidity , Market Liquidity , Funding Liquidity				
b. Dependent Variable: Operational Efficiency				

The models summary presented reports a coefficient of determination, R-square of 0.506 and an adjusted R-square of 0.461. These study findings reveal that the independent predictors significantly predict almost half of operational efficiency, approximately 46.1% ($R^2=0.461$). Findings equally imply that episodic liquidity, market liquidity, funding liquidity explain 46.1% variability in the operational efficiency of commercial banks. Other factors not explored in this analysis account for about 53.9% variability in the dependent variable

Table 1.7 Analysis of Variance (ANOVA)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.021	3	.007	11.249	.000 ^b
	Residual	.020	33	.001		
	Total	.041	36			
a. Dependent Variable: Operational Efficiency						
b. Predictors: (Constant), Episodic Liquidity , Market Liquidity , Funding Liquidity						

To assess the overall significance of fit, the F-statistic from the regression results was used. From table 1.7, the computed F statistic was 11.249 and a p-value of 0.000. The p-value reported was used to test the hypotheses whether the overall model was significant. At 5% level of significance, we conclude that the overall model fitted was significant, implying the predictor variables adequately explain the dependent variable. Thus, the relationship between the variables can be used to produce a predictive model.

Table 1.8 Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.025	.019		1.327	.194
Funding Liquidity	.034	.022	.203	1.579	.024
Market Liquidity	.679	.120	.702	5.634	.000
Episodic Liquidity	.001	.002	.041	.320	.751

a. Dependent Variable: Operational Efficiency

The proposed regression model was given by $Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon_i$

Based on the findings, the model can thus be stated as

$$Y = 0.025 + 0.034X_1 + 0.679X_2 + 0.001X_3$$

From the estimated model, all the variables have positive coefficients signifying a positive relationship with the dependent variable. A null model, without accounting for the four predictor variables indicates a mean operational efficiency value of 0.025 as measured by total asset turnover ratio. Holding all the other variables constant, a unit increase in the measure of funding liquidity results into an increase in operational efficiency by 0.034 units, a unit increase in the measure of market liquidity results into an increase in operational efficiency by 0.679 units. A unit increase in the measure of episodic liquidity results into an increase in operational efficiency by 0.001 units. Thus, funding liquidity is an important predictor in explaining the variability in operational efficiency of commercial banks in Kenya.

As it presented in table 1.7, combined liquidity (Market liquidity, funding liquidity, episodic (p=0.000) with a minimum of 95% confidence level. The above results thus lead to rejecting the null hypothesis H_0 that combined liquidity (Market liquidity, funding liquidity, episodic liquidity) has no significant relationship with operational efficiency of commercial banks in Kenya. Rejecting the null hypothesis implies combined liquidity (Market liquidity, funding liquidity, episodic liquidity) has significant relationship with operational efficiency of commercial banks in Kenya. From this, the data collected in the 50 firms were analyzed and the results of the analysis showed that liquidity management suggestively led to operational efficiency in the agricultural firms

Conclusions

This study concludes that market liquidity measured by ROA, funding liquidity measured by current ratio, episodic liquidity measured by price to earnings ratio are significant factors affecting the operational efficiency of commercial banks in Kenya over the period 2018-2022. The most significant finding in this study that has not yet been pointed out in previous studies in our economic setting is the fact that liquidity is an important determinant of the operational

efficiency of commercial banks. Using ROA, current ratio and price to earnings ratio as proxies for market liquidity, funding liquidity and episodic liquidity, the study establishes that operational efficiency is positively related with these measures of liquidity. Notably, all the factors examined in this study suffice to explain the variation observed in operational efficiency of the commercial banks.

The study also concludes that funding liquidity had a significant relationship with operational efficiency of commercial banks. This implies that liquidity is an important factor in banking, its direct impact on operational efficiency. However, from other studies other factors such as credit risk, asset quality, and bank size may have a more significant influence on operational efficiency. Commercial banks should focus on managing these factors to improve their operational efficiency and overall financial performance.

In addition, the study also concludes that episodic liquidity has no significant relationship with operational efficiency in commercial banks in Kenya. The study failed to reject the null hypothesis the study recommended that banks should give importance to activities that improve their liquidity and capital ratios to enhance operational efficiency.

Finally the study revealed that combined liquidity (Market, funding and Episodic liquidity had a significant relationship on operational efficiency of the commercial banks in Kenya. These findings reveal that the performance and operational efficiency of the financial institutions over the study period was a function of high liquid assets kept rather than the asset quality, capital adequacy. Hence it suffices to note that bank managers who invest their liquid assets can generate more income and improve their operational efficiency. Drawing from the above findings, the current liquidity management approach of commercial banks can still be evaluated and redesigned to improve operational efficiency beyond present levels.

Recommendations

To the regulatory authorities, the study recommends that there is need for bank managers and these set of financial institutions to adopt strategic measures to facilitate favourable liquidity for the commercial banks and by doing so the banks will have strong funding liquidity and therefore increase the banks operational efficiency. Commercial banks and other financial institutions should equally strive to have a large asset base in a bid to improve and record better performance in terms of profitability and therefore increase their liquidity hence have a higher operational efficiency.

Secondly to the policy makers the study recommends that there is need for policy on efficient management to ensure banks' operational efficiency. This should have the approach of finding ways of optimal utilization of resources during the production of banking products and services. Such policy instruments should be able to increase operational efficiency through cost decisions. From the study, another recommendation is that there is equally need for strong

monitoring and control of funding liquidity by both bank management and regulatory framework.

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