



Vol. 4, Iss. 1 (2023), pp 41 – 59, March 14, 2023. [www.reviewedjournals.com](http://www.reviewedjournals.com), ©Reviewed Journals

## CASH MANAGEMENT AND FINANCIAL PERFORMANCE OF PUBLIC UNIVERSITIES IN KENYA

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Accepted: January 3, 2023

### ABSTRACT

*The financial performance of Kenyan universities has been declining to recent time where most of the universities reported deficits in their income statement, following the dwindling revenues universities are in a deep financial crisis that can possibly lead some of them to a halt. Auditor General declared 11 universities insolvent in a report to Parliament for financial year (2017/2018). Proper cash management is essential for any organizational survival. This is because an institutions' inability to identify relevant cash management practices can be its source of inability to perform. The general objective of this study was to determine the Effect of cash management on financial performance of public universities in Kenya, which was guided by the following independent variables; effect of cash ratio management on financial performance of public universities in Kenya, effect of operational cash flow management on financial performance of public universities in Kenya, effect of cash budget management on financial performance of public universities in Kenya and the effect of student enrollment on the relationship between Cash management on financial performance of universities in Kenya . The study was anchored on operating cycle theory, liquidity theory and Baumol's Cash Management Model. The scope of the study was based on public universities in Kenya for period between years 2016 to 2019. Existing literature was reviewed in details in chapter two of the study. Quantitative research design was used in this study. The study population was 31 accredited public universities in Kenya. Secondary data was collected from the auditor general's office. The study found that cash management affects financial performance of public universities in Kenya. The study revealed that student enrolment moderates the relationship between cash management and financial performance of public universities in Kenya. The study concluded that cash management plays a significant role in financial performance of public universities in Kenya. The study therefore recommended that all public universities embrace prudent cash management in order to have sound financial performance.*

**Key Words:** Cash Ratio, Finance, Liquidity, Cash Flow, Budgeting

**CITATION:** Kithinji, M. M., Wepukulu, J. M., Gekara, M., & Mwanzia, M. (2022). Cash management and financial performance of public universities in Kenya. *Reviewed Journal International of Business Management*, 4 (1), 41 – 59

## **Background of the Study**

Working capital is defined as the difference between short-term assets and short-term liabilities. Resources that an organization owns are the assets while all the outstanding debts like credits and loans are the organizational liabilities. Signer (2010) describes working capital as the cash available for the day-to-day operations in an organization. Increasing returns on assets (ROA) and minimizing the risk of going bankrupt is the main objective of a good management of both current assets and current liabilities. Mathur (2002) argued that working capital management involves controlling and planning the gross current assets as against the net working capital, which deals with the cash of an organization. Goods, services and merchandise paid for upon delivery, goods and services provided on credit, merchandise purchased on credit, and the short-term loans are the main aspects of working capital management. Managing working capital essentially entails managing the cash flow of a business on a daily, weekly and monthly basis in such a way that satisfies all debts while reserving enough capital to continue operations and the generation of profits.

Ensuring that an organization makes enough money from its operations to take care of its upcoming expenses and short-term debt and making sure that it continues to operate is the main objective of working capital management (Bose, 2012). For an organization to maintain its operations in the market, it must maintain the right ratio of working capital, liabilities and assets. With most literatures carried out in the business world it had traditionally been concentrating on the study of financial decisions, which were long-term and had focused on the organization's performance. This had allowed scholars to concentrate on looking deep into analyzing the capital structure, dividend, investments and organization valuations. There have been surveys that had been carried out which indications is that executives spend a lot of time in coming up with a solution to their everyday problems which involves working capital decisions for their organizations (Raheman & Nasr, 2007).

When insufficient capital resources prevent organizations from paying their debts, they face bankruptcy. Organizations are able to pay all debts as they come due or mature if there is an efficient working capital management. It also brings continued profitable operations in the business that put it at a good competitive edge. Teruel and Solano (2007) argued that when calculating financial performance at the end of a financial period depending on how organizations looks at it, a successful working capital management allows them to break even. This implies that good working capital management is connected to avoidance of organizational bankruptcy. Keeping working capital at a good stand allows organizations to prosper and prevent themselves from bankruptcy because inefficient working capital management can lead to bankruptcy by preventing the generation of new capital with which to pay future debts or by preventing a business from paying off its liabilities.

Working capital deals with the efficiency of organizations and the turnover of their account's payables, accounts receivables and inventories hence it is important, as it is the key to the organizational financial health. The four pillars of the financial health of an organization include efficiency pillar, profitability pillar, liquidity pillar and leverage pillar. These pillars allow the analysis of the ratios used in the financial health to see which areas of an organization that should be focused on and also helps keep organizations from falling hence they are important (Santosuosso, 2014). One of the most important aspects in ensuring an organization going concern and in attaining optimal liquidity position is a good working capital management of organizational entities (Eljelly, 2013). When making a trade-off between profitability and liquidity in a way that optimizes composition and amount of current assets and how they are financed, good working capital management is important in making decisions for organizations and companies as it allows better management of their assets (Eljelly, 2013). Kenyan universities have played a big role in the Kenyan economy as it has led to many positive impacts to the people of Kenya. In this study, researcher looked at public universities in Kenya.

Cash management has a relationship with the overall performance of the concerned organizations and has been considered as the life-blood of any business. According to Hampton (2011), cash management policy is a function of two decisions which include the appropriate level of investment in current assets and the chosen methods of financing the investment. Moreover, Hampton argued further that in respect to the organization's total flow of funds and corporate structure, the level of organization's current assets and working capital is a tradeoff between risk and profitability. Aggressive working capital would be used whereby the organization should maintain a minimum level of debtors, securities and cash if there were little risk but a more conservative policy will be called for, requiring high stock reserves and high cash balances if there is little stability. Liquidity position is a major issue that must be put into consideration by financial managers in all organizations. According to Weinraub and Visscher (2012), liquidity state can be identified by their risk-return characteristics because risk and return tradeoffs are inherent in alternative working capital policies.

Finance always being disregarded in financial decision making since it involves investment and financing in short-term period. Further, also act as a restrain in financial performance, since it does not contribute to return on equity (Rafuse, 2014). A well-designed and implemented financial management is expected to contribute positively to the creation of an organizations' value (Padachi, 2006). Lazaridis and Tryfonidis (2006) argues that achieving desired trade-off between profitability, solvency and liquidity is a dilemma in financial management. Significant attention has been received in the subject of financial performance from scholars in areas of both strategic management and business management. Since financial performance has implications to organization's health and ultimately its survival, it has been the primary concern of business practitioners in all types of organizations. According to Naser and Mokhtar (2004), Efficiency and effectiveness of management is reflected by high performance in making use of resources of the company which leads to growth of the country's economy.

Liquidity measures the ability of an organization to meet its financial obligations as they come due, without disrupting the normal, ongoing operations of the organization. Liquidity can be analyzed both structurally and operationally. Structural liquidity refers to balance sheet measures of the relationships between assets and liabilities and operational liquidity refers to cash flow measures. Solvency measures the amount of borrowed capital used by an organization relative the amount of owner's equity capital invested in the business. In other words, solvency measures provide an indication of the organization ability to repay all indebtedness if all of the assets were sold. Solvency measures also provide an indication of the organization ability to withstand risks by providing information about the operation's ability to continue operating after a major financial adversity (Harrington & Wilson, 1989).

Profitability measures the extent to which an organization generates profit from the factors of production: labor, management and capital. Profitability analysis focuses on the relationship between revenues and expenses and on the level of profits relative to the size of an organization. Four useful measures of profitability are the rate of return on assets (ROA), the rate of return on equity (ROE), operating profit margin and net income (Hansen & Mowen, 2005). Repayment capacity measures the ability to repay debt from both operation and non-operation income. It evaluates the capacity of the business to service additional debt or to invest in additional capital after meeting all other cash commitments. Measures of repayment capacity are developed around an accrual net income figure. The short-term ability to generate a positive cash flow margin does not guarantee long-term survivability (Jelic & Briston, 2001).

In this context, an efficient cash management plays a significant role in overall corporate strategy in order to increase shareholder value (Dong and Su, 2010) by determining the composition and level of investments on current assets, the level, sources and mix of short-term debts (Nwankwo & Osho, 2010). Especially an efficient cash management can enable a firm to react quickly and genuinely to unexpected changes in economic environment and gain competitive advantages over its rivals (Alshubiri, 2011). To put it briefly, an efficient cash management primarily aims to ensure an optimum balance between profitability and risk (Ricci

and Di Vito, 2000). This objective can be achieved by continuous monitoring of cash management components such as cash ratio, cash budgets and operating cashflows. The success of a firm heavily depends on the effective skills of financial managers (Filbeck & Krueger, 2005; Afza & Nazir, 2007).

Following the dwindling revenues, universities are in a deep financial crisis that can possibly lead some of them to a halt. Some of the universities are unable to submit statutory deductions to various agencies and pay lecturers and other university staff. This shows that they are hardly surviving and unable to meet financial obligations hence throwing the future of some of them into disarray. Lack of students for parallel programmes that formed the bedrock of the institutions' revenues is one of the major causes of these financial crises. This is after the university cut-off points were lowered to C+, offering a window of opportunity for all the form four leavers who scored above the minimum university entry grade to proceed to university under government sponsorship. Kenya Universities and Colleges Central Placement Services absorbed all students who scored a minimum of C+ in KCSE in both public and private institutions within the last two years. Auditor General declared 11 universities insolvent in a report to Parliament in year (2017). The affected universities included University of Eldoret, Pwani University, Embu University, Murang'a University, Multimedia University, Masinde Muliro University, Machakos University College, Laikipia University, Technical University of Kenya, Jomo Kenyatta University of Agriculture and Technology and University of Nairobi.

Kenyatta University, JKUAT, Egerton, and Moi University are other universities surviving on bank overdrafts to pay staff and run their affairs. According to the auditor general report (2018), management of Moi university failed to submit to the relevant agencies Ksh 598 million deductions made from staff to cater for loans and statutory. Another deducted fund but not submitted to agencies was Ksh 117 million for provident fund. The university is currently languishing in an estimated Sh1 billion deficit despite having about 23,500 students on government-sponsored programmes (Gok, 2018). Njoro-based Egerton University's bank had their accounts once frozen over workers' deductions arrears for insurance schemes and loans that have accrued to over Ksh 246 million. The 2017 and 2018 audit reports revealed that Ksh 127 million for the pension scheme and Ksh 122 million collected from staff as Sacco savings was not submitted to the relevant agent. The university also owes staffs loans and insurance schemes amounting to Ksh 250 million. The university also has Ksh500 million deficit (Gok, 2018).

On the other hand, Jomo Kenyatta University of Agriculture and Technology did not submit third-party deductions and statutory deductions close to Ksh 300 million. Kenyatta University (KU) is unable to furnish the newly constructed referral hospital so it can begin offering services and has had delayed salary payments. Players in the higher education sector agreed that universities, especially the big and older ones, are in serious financial crunch, and if not bailed out soon, will have massive ramifications on university education. Kenya Universities Staff Union secretary general said that no university has a sound financial base and that all are in a red line. He also argued that the most affected are the older universities like Kenya Methodist University, Egerton, Moi University, Jomo Kenyatta University of Agriculture and Technology, Kenyatta University, University of Nairobi. He reported that huge workforce installed to run expensive academic programmes in big universities and the drastic reduction in capitation every financial year by the state is the main cause of this financial crunch. In his remarks which were also confirmed by the university, he stated that University of Nairobi has a monthly payroll deficit of Ksh 475 million because it only receives Ksh 395 million to cater for salaries despite paying Ksh 870 million every month. He pointed out that universities were left with big holes in their budgets when the exchequer funding was reduced. Mukhwaya said that Leave alone paying the third-party and statutory deductions, most mainstream universities cannot even sustain their payroll because they had their budgets drastically cut by the Treasury. As a result of the Treasury not releasing funds, Ksh 3.65 billion pension has not been paid by all universities for staff who retired since 2010. The national government promised to provide a pension component of Ksh1.95 billion to match the new salary increment provided in

the 2010-2013 Collective Bargaining Agreement but up to date the money has not been wired into the institution's accounts. (GoK,2018).

Through revenues collected from parallel programmes, universities could fend for themselves in olden days to curb this shortfall but this loophole is no longer available because universities are now recording zero admission in parallel programme. This has made universities to largely depend on bank overdrafts in payment of their fees, university administrators and vice chancellors must look for alternative revenue sources due to the sharp drop of parallel students and government capitation. Massive expansion programmes is another cause of financial difficulties besides decreasing parallel programmes enrolment and reduced government capitation. When vice chancellors receive funds to pay salaries but decide to use it on equipping a lab might not be mismanagement but misapplication of funds. Therefore, universities managers should not be blamed of extravagance and management of funds because of this. Given that we have not witnessed any action from fraud investigating agencies, then we can conclude that there is no misuse of funds in our universities. Vice Chancellor's Committee chairman who is also the Technical University of Kenya vice chancellor told the star investigative journalist that funds they receive is not enough to cater for human resources let alone running the academic programmes. Universities have been pushed to solely depend on bank overdrafts to run the university operations. In an effort to reduce wage bill, part-time lecturers are being hired by other institution but are still unable to pay them since 2014. Given that institutions are seriously underfunded that they cannot support their budgets, questions should be raised on how heads of these institutions are able to sustain them all year round (Gok, 2018).

### **Statement of the Problem**

The financial performance of Kenyan universities has been declining to recent time where most of the universities reported deficits in their income statement, following the dwindling revenues universities are in a deep financial crisis that can possibly lead some of them to a halt. Auditor General declared 11 universities insolvent in a report to Parliament for financial year (2017/2018). It is necessary for all institutions to manage their liquidity well. Institutions are likely to encounter cash shortages that leads them to experience problems of paying its obligations when they fall due if it does not manage its liquidity well. According to Rafuse, (2014), if working capital starvation is not the main cause of various institutional failure in many developing as well as developed countries, it has been generally credited as the major cause. Working capital management is important because of its effect on the organization profitability and risk, and consequently its value. A very significant position of total assets is represented by investments in current assets. Small and growing institutions lacks a well-established long-term financing mechanism. Therefore, this makes a good working capital management critical for them because they must finance their current assets adequately. In addition, there is risk-return trade off; in that the optimal level calls for a balance between profitability and solvency by minimizing the total costs of liquidity and cost of illiquidity, the working capital management objectives being enhancing profitability and liquidity (Pandey, 2008). Differences in financial ratios and averages between industries were examined by the work of (Huefner & Gupta, 2010). In the organizations where many financial executives are struggling to identify the basic working capital drivers and an appropriate level of working capital, working capital management has become one of the most important mechanism to be practiced. Working capital management strategic importance has encouraged several researchers to maintain their focus on finding out the relationship between working capital management and profitability (Samiloglu & Demirgunes, 2008; Uyar, 2009). Because most of the previous studies focused on developed economies, additional insights could be provided through investigating this issue and perhaps different evidence on working capital management in public universities in Kenya could be unearthed.

Working capital management and financial performance have also been studied locally in Kenya. The following studies have been done locally; Waweru (2011) carried out a study on the relationship between working capital management and the value of the companies listed at the NSE. The study found that there is a

statistical relationship between efficient working capital management and the value of firms quoted at the NSE. Mutungi (2010) carried out a study on the relationship between working capital management and financial performance of oil marketing firms in Kenya. From the correlation analysis, the study concluded an existence of aggressive working capital policy in the oil sector. Kithii (2008) carried out a study on the relationship between working capital management and profitability of listed companies in the NSE. A significantly negative relationship between cash conversion cycle and profitability was found through a Pearson's moment correlation of co-efficient. Nyakundi (2010) carried out a study on working capital management policies among public companies in Kenya. The concluded that there was no relationship between working capital management and profitability after a simple linear regression was run.

The studies showed that there were few studies that were done to find out the effect of cash management on universities financial performance, despite the financial distress the universities have been facing over recent years in Kenya. Therefore, the study sought to find out the effect of cash management on financial performance of public universities in Kenya, guided by the following specific variables; effect of cash ratio management on performance universities in Kenya, effect of operational cash flow management on performance universities in Kenya, effect of cash budget on performance universities in Kenya and the effect of student enrollment on the relationship between Cash management on financial performance of universities in Kenya

### **The Study Objectives**

The main objective was to establish the effect of Cash management on financial performance of public universities in Kenya. The study was guided by the following specific objectives;

- To establish the effect of cash ratio on financial performance of public universities in Kenya
- To find out the effect of operational cash flow management on financial performance of public universities in Kenya
- To determine the effect of cash budget management on financial performance of public universities in Kenya
- To establish effect of student enrollment on the relationship between Cash management on financial performance of universities in Kenya

The study tested the following hypotheses:

- $H_{01}$ : There is no significant relationship between cash ratio management and financial performance of public Universities in Kenya
- $H_{02}$ : There is no significant relationship between operational cash flow management and financial performance of public Universities in Kenya
- $H_{03}$ : There no significant relationship between cash budget management and financial performance of public universities in Kenya
- $H_{04}$ : There is no significant moderating effect of student enrollment on the relationship between Cash management on financial performance of universities in Kenya

## **LITERATURE REVIEW**

### **Theoretical Review**

#### **Liquidity Theory**

Liquidity theory was developed by John Maynard Keynes in 1936. It states that liquidity theory as is a function of current assets and current liabilities. It is an important factor in determining working capital policies and indicates firm's capability of generating cash in case of need. Current ratio, acid-test and cash ratios as traditional measures of liquidity are incompetent because these balance sheet-based measures cannot provide detailed and accurate information about effectiveness of working capital management. Formulas used

for calculating these ratios consider both liquid and operating assets in common. Besides, mentioned traditional ratios are also not meaningful in terms of cash flows (Laughlin & Richards, 1980).

Boer (1999) insisted on using ongoing liquidity measures in working capital management. Ongoing liquidity refers to the inflows and outflows of cash through the firm as the product acquisition, production, sales, payment and collection process takes place over time. As the firm's ongoing liquidity is a function of its cash conversion cycle, it would be more appropriate and accurate to evaluate effectiveness of working capital management by cash conversion cycle, rather than traditional liquidity measures (Pinches, 2011)

### **Baumol's Cash Management Model**

The model was designed by Baumol in 1952 to minimize the sum of opportunity cost associated with holding cash and trading costs associated with converting other to cash. The procedure is very similar to the economic order quantity (EOQ) model for inventory size but it deals with different variables. It assumes that the firm holds a portfolio of marketable securities which can easily be converted into cash (Baumol, 1952). According to this model, cash is assumed to start from a replenishment level, C, and then declines smoothly to a value zero. When cash declines to zero, it can be immediately replenished by selling another C worth of marketable securities, for which the firm has to pay a trading cost of F (Cornett, 2009).

In Baumol model, the financial manager has to decide on the repartition of liquid funds between cash and marketable securities (Pandey, 2008). Once again, there is a trade-off which constitutes the basis for the calculation. Yet, this trade-off is related to the opportunity costs of holding cash which increase along with the cash level and the trading costs which are incurred with every transaction and which decrease when the cash level increases (Cornett, 2009). The opportunity costs represent the interest forgone for funds which are held in cash instead of being invested. The trading costs correspond to fixed costs which are incurred when a company decides to either buy or sell marketable securities (Pandey, 2008). If a company decides to maintain a low cash level it will have to carry out many transactions leading to high trading costs but low opportunity costs because there are little idle cash funds. If it maintains a high level of cash, the firm's opportunity costs will be higher due to the relatively large amount of un-invested cash but the trading costs will decrease since only a few transactions will be necessary (Pandey, 2008).

Baumol's cash management model has three assumptions; first, the firm uses cash at a steady predictable rate, cash flows from operations also occur at a steady state and finally the net cash out flow occur at a steady state. Under these assumptions the model can be stated as follows:

$$C^* = \sqrt{2TF / i}$$

Where: C= is the optimal cash replenishment level

T = is the annual demand for cash

F = is the trading cost per transaction

I = is the interest rate on marketable securities

Hence, using this formula an organization can determine the optimal cash replenishment level. Despite the fact that Baumol's cash management is an important tool in management, it suffers from a number of short comings; first, the model assumes that the firm has a constant, perfectly disbursement rate for cash. In reality, disbursement rates are much more variable and unpredictable; secondly, the model assumes that no cash will come in during the period in question. Since most firms hope to make more money than they pay out, and usually have cash inflows at all times, this assumption is obviously at odd with what we see. Finally, the model does not allow for any safety stock of extra cash to buffer the firm against unexpectedly high demand for cash (Cornett, 2009).

## **Conceptual Framework**

Conceptual framework helps in understanding why we are doing a project in a particular way (Kothari 2003). The conceptual framework of this study included four independent variables, one moderating variable and one dependent variable. Independent variables are variables that cause, affect or influence an outcome. Moderating variable changes the direction and strength of the relationship between independent variable and dependent variable. The main objective for this study was to determine the effect of cash management on financial performance of public universities in Kenya, guided by the following specific objectives; effect of cash ratio management on finance performance of public universities in Kenya; effect of operation cash flow management on finance performance of public universities in Kenya; effect of cash budget management on financial performance of public universities in Kenya and the effect of student enrollment on the relationship between Cash management on financial performance of public universities in Kenya.

## **Empirical Literature**

In Kenya Kithii (2008) carried out a study on the relationship between working capital management and profitability of listed companies in Nairobi securities exchange. The objectives were to establish how efficient the firms are managing their working capital; establishing the relationship between profitability, the cash conversion cycle and its components for the listed companies in the Nairobi securities exchange for the period 2001 – 2006. The results showed that there is statistically significant negative relationship between indicators of working capital management and the profitability of firm except for the average payment period which showed a positive relationship.

Mutungi (2010) carried out a study on the relationship between working capital management and financial performance of oil marketing companies in Kenya. The study was inspired by the fact that working capital in any firm is extremely critical and requires conscious balance between the components on the working capital namely cash, receivables, payables and inventory. The objectives of the study were to establish the working capital management policies among oil marketing firms in Kenya and to examine the relationship between working capital management and profitability in oil marketing firms in Kenya. From the correlation analysis, the study concluded an existence of aggressive working capital policy in the oil sector. Nyakundi (2003) studied working capital management policies among the public companies in Kenya. From a sample of 30 companies quoted at the NSE covering the period from 1998 – 2002, he concluded that most companies practiced the aggressive working capital management policy. No significant differences were noted between the working capital management policies across the five sectors. Further there were no significant differences in return on equity among companies that practice different working capital management policies. From a simple regression analysis, the study found no relationship between the working capital management policies and return on equity.

Ochieng (2006) carried out a study on firms quoted on the NSE over the last twenty (20) years on the relationship between working capital and the economic activities in Kenya. The objective of the study was to examine how the changes in economic activities affect changes in working capital by firms listed on the NSE. The findings revealed that the liquidity of the small firms as measured by the current and quick ratios increased slightly during economic slowdown. The study also shows that the liquidity positions reacted differently to various economic indicators such as inflation and lending rates. With lending rates, the study found that lending rates indeed did affect the amount of working capital for the firms and this further showed that during times of economic contraction, working capital positions of the firms improved. Waweru (2011) carried out a study on the relationship between working capital management and the value of companies quoted at the NSE. The study used secondary data obtained from annual reports and audited financial statements of companies listed on the NSE. A sample of 22 companies listed on the NSE for a period of seven years from 2003 to 2009 was studied. The average stock price was used to measure the value of the firm. The regression models indicated that there was some relationship between working capital management and the



organizations value while the result of the Pearson correlation indicated a negative relationship between average cash collection period, inventory turnover in days, cash conversion cycle and the value of the firm.

## **METHODOLOGY**

The study was guided by epistemology (what is known to be true) research philosophy. According to Galliers, (1991), interpretivist and positivist are the main research philosophies that have been identified. Positivist research philosophy that is epistemological (what is known to be true) was adopted by this study. It is believed by positivists that reality is stable and can be described and observed from an objective point of view (Levin 1988). This study adopted a quantitative research design. The entire population of study was 31 accredited public universities in Kenya. This study used the census since the entire target population was used in the study. Data sources for the study was secondary data. The collection sheet quantitative data was keyed into a computer software called SPSS (statistical package for social sciences) after being edited, blank responses handled, coded and categorized ready for analysis. To verify whether the captured data correlates with the data-captured into SPSS the dataset was subjected to a verification process. SPSS version 20 was used to run the descriptive statistics. After analysis, both descriptive and inferential statistics was generated. According to Zikmund (2011), descriptive statistics involved calculating percentage and frequency distribution. Mean and standard deviations were used to measure central tendencies and dispersion respectively. The relationship between dependent and independent variables was determined through a regression analysis. Correlation analysis determines the association between the variables. Multiple linear regression model tested the influence of each independent variable on the dependent variable for each of the years and the overall. The ability of multiple linear regression model to measure or test the variables correlation effect justified its use.

The main variable was linked to specific variables by the regression model shown below

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \epsilon$$

Where by:

Y– Universities financial performance in Kenya

$\beta_0$  – Constant

X1 – Cash Ratio management

X2 – operational cashflow management

X3 -Cash budget management

$\epsilon$ = Error term

## **FINDINGS AND DISCUSSIONS**

The study sought to address the objectives by use of collection data sheet, out of the accredited 31 public universities, information on 26 public universities was obtained, which represented 83.8% response rate, which was considered appropriate and enough for the study conclusions, Babbie(2010) and (Mugenda and Mugenda 2003),asserted that 50% and above response rate was considered adequate and above 70% and above was rated very good, hence the response rate for the study was adequate.

### **Diagnostic Test**

Diagnostic test is used to evaluate the model assumptions and investigate whether or not there are observations with a large, undue influence on the analysis. This study carried out normality test, multicollinearity test, homogeneity test and autocorrelation test. Violation of these assumptions means that the forecasts, confidence intervals and scientific insights yielded by the regression model would be inefficient or extremely biased and misleading.

### Normality Test

Parametric tests require normal data. When data is not normally distributed it may distort the results of any further analysis. Teste of normality was conducted using shapiro wilk test. According to Tabachnik and Fidell (2007), P-value > 0.05 shows that the data fits a normal distribution. The results were presented in Table 1.

**Table 1: Tests of Normality**

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Financial Performance	.158	26	.095	.892	26	.074
Cash management	.310	26	.061	.505	26	.059
Student enrolment	.214	26	.055	.500	26	.062

\*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

As indicated in Table 1, each of the study variables was normally distributed, that is, financial performance (P-value = 0.074>.05), cash management (P-value = .059>.05) and student enrolment (P-value = .062>.05) respectively. This implied that the data was suitable for further regression analysis.

### Multicollinearity Test

Multicollinearity refers to high correlation between the independent variables. This test was based on variance inflation factor and tolerance values. Variance inflation factor <10 and tolerance>0.1 implies that the variables are not highly correlated. The findings are presented in Table 2.

**Table 2: Multicollinearity Test**

	Collinearity Statistics			Variance Proportions			
	Tolerance	VIF	Condition Index	Accounts receivable	Accounts payable	Inventory	Cash
				management	management	management	management
Cash management	.908	1.101	7.808	.71	.02	.55	.20
Student enrolment	.675	1.481	4.016	.35	.07	.45	.12

The results revealed that VIF values were less than 10 and tolerance values greater than 0.1. these are within the thresholds. Thus, the data did not suffer from multicollinearity. It implies that all the five variables could be used in the regression model.

### Homogeneity Test

Homogeneity test (homoscedasticity or heteroscedasticity) was tested to establish whether or not the variance for the variables were constant. Levene's test of homogeneity of variances was used. Gastwirth et al., (2009) argued that levene statistic is significant if p-value > 0.05 (equal variance of errors). The findings are presented in Table 3.

**Table 3: Test of Homogeneity of Variances**

Variables	Levene Statistic	df1	df2	Sig.
Cash management	3.761	5	20	0.074
Student enrolment	4.092	5	20	0.066

As indicated in Table 4, p-values of Levene's test of homogeneity of variance were greater than 0.05 for each variable. The test was thus, significant at  $\alpha = 0.05$ . this confirmed the presence of homoscedasticity. The assumption of constant variance of error (homoscedasticity) was satisfied.

### Autocorrelation Test

Autocorrelation is the similarity of a time series over successive time intervals. It can lead to underestimates of the standard error. A rule of thumb is that test statistic values in the range of 1.5 to 2.5 are relatively normal. The results are presented in Table 4.

**Table 4: Durbin Watson Test**

Model	Durbin-Watson
Cash management	2.421 <sup>a</sup>
Student enrolment	2.131 <sup>a</sup>

a. Predictors: (Constant), Cash management, Accounts receivable management, Accounts payable management, Inventory management

b. Dependent Variable: Financial Performance

As shown in Table 4, Durbin Watson values are all less than 2.5 and lies in the range of 1.5 to 2.5. it therefore means that the data did not suffer for autocorrelation problem, thus, no serial correlation over the time interval 2015 through 2018.

### Correlations for Study Variable

Correlation is used to test the magnitude and direction of the relationship between the dependent and independent variables. Pearson's correlation ranges between -1 and +1. the closer the correlation values to -1 or +1 the greater the indication of association. When correlation values are not close to 1 or -1 it indicates that the factors are sufficiently different measures of separate variables (Farndale, Hope-Hailey & Kelliher, 2010). The results are presented by the correlation matrix in Table 5.

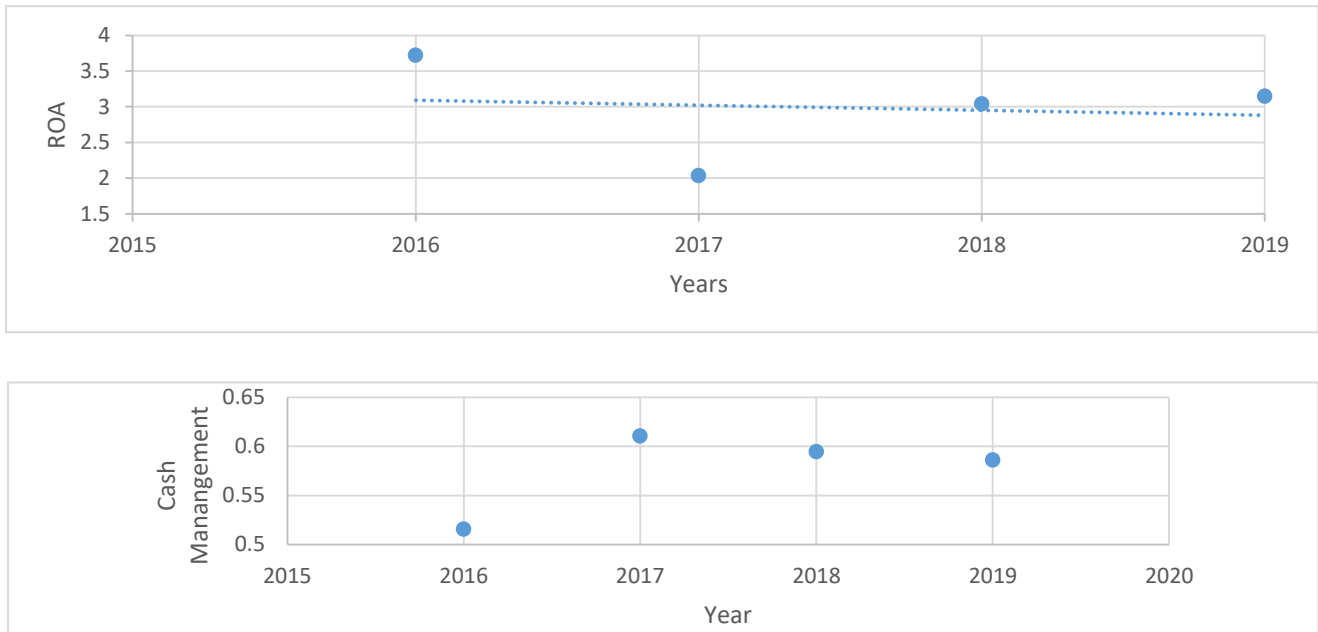
**Table 5: Correlations of the Study Variables.**

		Financial Performance	Accounts receivable management	Accounts payable management	Inventory management	Cash management	Student enrolment
Financial Performance	Pearson Correlation	1					
	Sig. (2-tailed)						
Cash management	Pearson Correlation	.054	-.149	-.206	-.180	1	
	Sig. (2-tailed)	.008	.469	.313	.379		
Student enrolment	Pearson Correlation	.014	.214	.332	.345	0.145	1
	Sig. (2-tailed)	.008	.469	.313	.379	0.123	

The findings indicated, cash management and student enrolment were positively related to financial performance while accounts payables was negatively associated with financial performance. Further cash management ( $r = .054$ ) and student enrolment ( $r = .014$ ) respectively.

### Trend Analysis

Trend analysis is a technique used to predict future stock price movements based on recently observed trend data. The study variables were presented using a trend analysis for a period of 2016 through 2019. As shown in Figure 1, return on assets and cash management had a downward trend over the period 2016 through 2019.



**Figure 1: Trend Analysis**

### Effect of Cash Management on Financial Performance

The study sought to find out the relationship between cash management and financial performance of public universities in Kenya. To achieve this objective, a regression of financial performance on cash management was performed using multiple linear regression model. Further simple linear regression model was performed to test the hypothesis. The findings were presented in Table 6, 7 and 8.

**Table 6: Model Summary before moderation**

Model	R	Adjusted R Square	Std. Error Change Statistics			Sig. Change	F	
			of the Estimate	R Square Change	F Change			
1	.786 <sup>a</sup>	.618	.77481	.618	1.459	3	22	.003

a. Predictors: (Constant), CVR, CR, OCR

As shown in Table 6 correlation coefficient ( $R = 0.786$ ) depicted a strong association between cash ratio, operating cashflow ratio, cash variance ratio and financial performance of public universities in Kenya. The results indicate that the value of  $R^2 = 0.618$ . Thus, cash ratio, operating cashflow ratio and cash variance ratio accounts for 61.8 percent of the variations in financial performance of public universities in Kenya, leaving 38.2 percent unexplained (error term).

**Table 7: ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.628	3	1.542	2.571	.003 <sup>b</sup>
	Residual	13.207	22	.600		
	Total	17.835	25			

a. Dependent Variable: ROA

b. Predictors: (Constant), CVR, CR, OCR

The analysis of cash management on financial performance of public university yielded the ANOVA results in Table 7. The findings indicated that  $F = 2.571$ ,  $P\text{-value} = 0.003 < 0.05$ . This implied that the model of cash

ratio, operating cashflow ratio and cash variance ratio on financial performance was statistically significant in overall. Thus, the indicators of cash management jointly significantly influence financial performance of public universities in Kenya.

**Table 8: Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients		95.0% Confidence Interval for B		
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
1	(Constant)	.303	.224		5.808	.000	.298	.338
	CR	.516	.281	.468	1.836	.080	.498	.867
	OCR	.487	.215	.392	2.265	.008	.437	.663
	CVR	.985	.451	.935	.618	.003	.963	1.029

a. Dependent Variable: ROA

The study sought to determine the predictive model of financial performance using cash ratio, operating cashflow ratio and cash variance ratio. This was to determine the coefficients for the linear regression equation of financial performance on cash ratio, operating cashflow ratio and cash variance ratio and its significance. The regression equation was to be presented in the form;

$$ROA = \beta_0 + \beta_1 CR + \beta_2 OCR + \beta_3 CVR + \epsilon$$

Where by:

ROA – Universities financial performance in Kenya

$\beta_0$  – Constant

CR – Cash Ratio

OCR – Operating Cashflow Ratio

CVR - Cash Variance Ratio

From the results in Table 8, the following regression model was obtained

$$ROA = 0.303 + 0.468 CR + 0.392 OCR + 0.935 CVR$$

The Model coefficients indicated that; for every one unit increase on cash ratio, financial performance of public universities in Kenya increases by 0.468 units other factors held constant; for every one unit increase in operating cashflow ratio, financial performance of public universities in Kenya decreases by 0.392 units other factors held constant and for every one unit increase in cash variance ratio financial performance of public universities in Kenya decreases by 0.935 units other factors held constant. Cash ratio, operating cashflow ratio and cash variance ratio were statistically individually significant (P-value<0.05).

**Table 9: Model Summary with moderation**

Model	R	Adjusted R Square	Std. Error of Estimate	Change Statistics			Sig. Change	F
				of the R Square	Change	Change		
1	.787 <sup>a</sup>	.620	.76983	.620	2.720	1	24	.001

a. Predictors: (Constant), CM

The findings in Table 10 showed that correlation coefficient (R = 0.787) demonstrating a strong association between cash management and financial performance of public universities in Kenya. The results indicate that the value of  $R^2 = 0.620$ . This means that cash management explained 62 percent of the variations in financial performance of public universities in Kenya, leaving 38 percent explained by other factors not included in the model.

**Table 10: ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.612	1	1.612	2.720	.001 <sup>b</sup>
	Residual	14.223	24	.593		
	Total	15.835	25			

a. Dependent Variable: ROA

b. Predictors: (Constant), CM

ANOVA results indicated that  $F = 2.720$ ,  $P\text{-value} = 0.001 < 0.05$ . This means that the model of financial performance on cash management was statistically significant in overall. Thus, the cash management significantly influence financial performance of public universities in Kenya.

**Table 11: Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients		95.0% Confidence Interval for B		
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
1	(Constant)	.392	.106		3.698	.000	.367	.418
	CM	.864	.427	.799	2.023	.002	.849	.879

a. Dependent Variable: ROA

The results in Table 11 indicated that cash management was statistically significant ( $\beta = 0.799$ ,  $t = 2.023$ ,  $P\text{-value} = 0.002 < 0.05$ ). Thus, the hypothesis that cash management has significant effect on financial performance was supported. Beta coefficient for cash management suggest that for every one unit increase in cash management, financial performance (ROA) of of public universities in Kenya decreases by 0.799 units holding other factors constant. The predictive model of financial performance (ROA) on cash management was of the form;

$$FP (ROA) = 0.392 + 0.799 CM$$

Where FP is Financial Performance (ROA) and CM is Cash Management

### Summary of Hypothesis Testing Results

***H0<sub>4</sub>: There is no significant relationship between cash management and financial performance of public universities in Kenya***

Beta coefficient of cash management was statistically significant ( $\beta = 0.799$ ,  $t = 2.023$ ,  $P\text{-value} = 0.002 < 0.05$ ). Beta coefficient for cash management suggest that for every one unit increase in cash management, financial performance (ROA) of of public universities in Kenya increases by 0.799 units holding other factors constant. The hypothesis that here is no significant relationship between cash management and financial performance of public universities in Kenya was rejected and concluded that cash management has significant effect on financial performance was supported.

### CONCLUSIONS AND RECOMMENDATIONS

The objective of the study was to establish the effect of Cash management on financial performance of universities in Kenya. The study was supported by the following specific objectives; to establish the effect of cash ratio management on financial performance of public universities in Kenya; to find out the effect of operational cashflow management on financial performance of public universities in Kenya; to determine the effect of cash budget management on financial performance of public universities in Kenya and to establish the moderating effect of student enrollment on the relationship between cash management on financial

performance of universities in Kenya. The study used a quantitative research design. The study used the census since the entire target population (31 accredited public universities in Kenya) was used in the study.

The study established that a strong relationship existed between cash ratio, operating cashflow ratio, cash variance ratio and financial performance of public universities in Kenya. Cash budget management had the greatest positive influence on financial performance of public universities in Kenya, followed by cash ratio and operating cash flow ratio respectively.

The study set out to establish the effect of cash management on financial performance of universities in Kenya. The study concluded that cash management measured by cash ratio, operating cashflow management and cash budget management influences financial performance of public universities in Kenya. There was a positive significant relationship between cash management and financial performance of public universities in Kenya. The study concluded also that student enrollment has a significant moderating effect on the relationship between cash management and financial performance of public universities in Kenya.

The study aimed at establishing the effect of working capital management on financial performance of universities in Kenya. The findings of the study are expected to have an implication for theory and practice

The study contributes to theories by supporting trade off theory by linking all study variables working capital indicators to financial performance. according to trade off theory, working capital involves a balance/tradeoff between risk and profitability because investment decision that leads to increase in profitability will be inclined to increase risk and vice versa. It also supports operating cycle theory; in that it provides a linkage between cash management and financial performance. The study further supported liquidity theory, in that liquidity is an important factor in determining working capital policies and indicates firm's capability of generating cash in case of need. In line with Baumol's Cash Management Model, the study posits that working capital when combined with student's enrollment may lead to improvement on financial performance of universities in Kenya. By using Baumol's Cash Management Model, an organization can determine the optimal cash replenishment level.

Education sector in Kenya is of great importance hence the findings of this study are expected to be of great significance in relation to existing literature in the areas of financial performance practices. The study findings are expected to help financial managers at the universities in planning their Cash management in this competitive market environment characterized with challenges of government capitations. This will make policy makers identify the best financial management practices that leads to organization performance. The results of this study are expected to enlighten working capital indicators and how they impact of sound financial management. It is further expected to shed light on how to identify basic competencies required in order to improve financial performance.

### **Suggestions for Further Studies**

This study used quantitative research design; future studies should use other research design such as descriptive cross-sectional research design. Further studies should use triangulation so as to get more information. The study relied on secondary data, future studies should incorporate both primary and secondary data. It is also suggested that future studies should test the mediating effect on the relationship between working capital and establish the effect of working capital management on financial performance of universities in Kenya. Further studies should be conducted in private universities and the results be compared for the purposes of generalization. This study used return on assets as a financial measure of performance; future study should use other financial and non-financial indicators of performance measurements.

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