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EFFECT OF CASHLESS PAYMENT SYSTEMS ON CASH MANAGEMENT OF COUNTY REFERRAL HOSPITALS IN KENYA

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Abstract

Most of the payment systems in the global landscape have been evolving over a number of years. Changes that have arisen from those evolution have been observed to be generating from a number of forces among them; the ongoing digital and technology revolution that has caused an ever-increasing penetration of smart phones and internet on mobile phone payment, free entry of several non-banking institutions that offers alternative payment solutions, constant customer demands for instantaneous and one touch payment solutions. Classification of any cashless payment system can be done according to the transaction type or the process by which a transaction is executed. This study focused on establishing the effect of cashless payment systems on cash management of county referral hospitals in Kenya. The researcher sought to establish the effect of electronic fund transfer payment, mobile money payment, credit card payment and Cheque payment systems on cash management of county referral hospitals in Kenya. The findings of this research if adopted may be beneficial to academician, the government, administrators of health facilities and the management of the county referral hospitals in Kenya. The study was anchored on the following theories liquidity preference theory, technology acceptance theory, Baumol's optimal cash conversion theory, stochastic cash conversion theory and Diffusion of innovation theory. The researcher applied a descriptive study design in conducting this research and analyzed only secondary data that was obtained from the facilities' financial statements of between 2014 and 2018. A census method was applied in determining the sources of data where all the 47 county referral hospitals were targeted. Analysis was conducted using SPSS and descriptive, correlation and regression methods were applied.

The results of the study established that the facilities recorded greater amounts being transacted through the cheques payment systems as compared to all other cashless platforms. Besides, most of the facilities are not able to comfortably settle their creditors from their cash and cash equivalent sources since they recorded a cash ratio of less than 1.00. It was also evident that EFT, MMP, CCP and CPS had a strongly positive and significant effect on cash management of the facilities. In order to improve their cash management, the study recommends that the county health referral hospitals should invest in improving and increasing the utilization of electronic fund transfer, mobile money payment, credit card and cheque as modes of payment in their transactions.

Key Words: *Electronic Fund Transfer Payment, Mobile Money Payment, Credit Card Payment, Cheque Payment Systems, Cash Management, County Referral Hospitals*

BACKGROUND OF THE STUDY

Kinyanjui and Kahonge (2018) defined management of cash in organizations to involve the process of receiving and paying money for services rendered or received. Further they highlighted on how money transactions get executed through payments system that forms the acceptable channels for trade. Most of the payment systems in the global landscape have been changing over a number of years (Marulanda & Paredes, 2015). Kumar and Ravis (2018) made an observation that changes in the cash management seems to be generating from a number of forces among them; the ongoing digital and technology revolution that has caused an ever-increasing penetration of smart phones and internet on mobile phone payment, free entry of several non-banking institutions that offers alternative payment solutions, constant customer demands for instantaneous and one touch payment solutions and finally several progressive changes in the financial regulatory framework arena.

Aljabri (2015) also noted that cashless payment systems namely credit transfer, mobile money payment, credit card payment and cheque payment systems got introduced in the economy to resolve various emerging challenges to most of the players in the economy. Transactions carried out through digital means can be termed as cashless payment system (Lai, 2016). Cashless payment may include cheque payment, electronic payment, mobile payment and card payment (Marulanda & Paredes, 2015). It is well known that cash plays a significant role in the successful functioning of any organization (Michalski, 2010). Bem (2013) organization therefore should ensure that it does not suffer from lack-of or excess liquidity to meet its short-term compulsions if it wants to have a proper cash management.

Cashless Payment System and Cash Management

According to the Central Bank of Nigeria (2017), the introduction of cashless payment policy has contributed towards enhanced liquidity management by discouraging the outrageous cost of banking services that affects business activities in the economy. A number of empirical studies that have been carried shows that that more profitable organization paid their suppliers faster, whereas less profitable organizations waited longer to pay their bills (Rauscher & Wheeler, 2012). Shy and Tarkka (2017) carried analytical review in India and concluded that cash management systems should maintain an organizational framework where proper control of cash flows are controlled correctly. That framework may include cash collection, payments authorization, fund transfers and bank accounts management which should give the organization continuity in its activities (Stavins, 2016).

In Latin America payment systems has been the fastest growing among the major regions albeit off the smallest revenue pool (Rodgers, 2014). However, this growth rate turned to a flat-line abruptly in 2017 due to change in cash management approaches. An organized cash management approaches therefore enables organizations to produce more services and goods for sale that may be generating expanded business cycles in purchasing, Selling and paying activities (Kinyanjui & Kahonge, 2018).

In Brazil, Kocherlakota and Naryana (2018) observed that despite Brazil being the dominant revenue engine cash management got negatively affected by regulations on the payments sector resulting to the credit card system almost to extinction based on the two third rules on interest rate. Indeed, cash management may not be properly controlled if the payment systems in place are prown to abuse that may suppress a good intention (Lai, 2016). In the developing nations in the Eastern Europe and Africa introduction of new payment systems have generated the highest single digit growth that has actually offset nominal decline in business volumes reported Western Europe (Gutrie & Wright, 2006) Further, Gutrie and Wright (2006) observed that individual firms in the European payments arena such as Adyen and wire cord funded the highest business increase that resulted substantial trade valuations. Kamau (2016) held that business people in the East African community need to embrace a generally accepted payment system that can be adopted by all to foster proper cash management and trade in the region. He concluded that cash management is a critical tool that may help a company in establishing the financial position of that organization.

STATEMENT OF THE PROBLEM

Although many organizations are adopting cashless payments systems there has been confounding evidence on how it affects cash management. This is despite the fact that many researchers have invested a lot time to try and establish how cashless payment systems affects cash management in organizations but there has been no harmony in their findings. Hakan (2016) carried out a research project on effect of internet, mobility and other technological advances on cash management in Sweden and from his findings he concluded that a payment system adopted do not have a direct connection to how cash is managed in an organization. In making his conclusion he pointed out that lack of consumers adapting modern payment system may not have any bearing to cash management in that organization.

In his study Dundore (2016) carried out study on impact of the electronic funds transfer system on cash operations for Non-Financial institutions within Boston city in USA from his findings he concluded that there is a remarkable improvement in financial management for organization that have embraced cashless payment system. In Kenya Ageng'a (2015) carried out a study on the effect of electronic funds payment system on cash management in government offices a case of Kisumu East district treasury from his findings he concluded that there is a positive correlation between cashless payment systems and cash management in government offices generally. Based on the above studies conducted across the globe and even locally it is evident that there is conflicting findings on the effect of cashless payment systems on cash management in an organization. In addition most of those studies have majorly concentrated on other industries. This research project therefore was undertaken to bridge this identified gap and seek to establish how cashless payment systems affect cash management in county referral hospitals in Kenya.

RESEARCH OBJECTIVES

i. To evaluate the effect of electronic transfer payment system on cash management of County Referral Hospitals in Kenya.
ii. To ascertain the effect of mobile money payment system on cash management of County Referral Hospitals in Kenya.
iii. To determine the effect of credit card payment system on cash management of County Referral Hospitals in Kenya.
iv. To establish the effect of Cheque payment system on cash management of County Referral Hospitals in Kenya.

LITERATURE REVIEW

Theoretical Literature Review

This study was anchored on the Liquidity Preference Theory, Technology Acceptance theory, Baumol's Optimal Cash Conversion theory, Stochastic Cash Conversion theory and Diffusion of Innovation Theory.

Liquidity Preference Theory

This theory was developed in 1936 by Keynes who carried out a research project on the factors that drive the holding of cash rather than investing before coming up with the liquidity preference theory. According to this theory, the rate of interest paid can dictate the reason parting with cash which he referred as liquidity. Keynes asserted that liquidity preference is the amount of money people would like to keep with them at a particular time while he referred the same liquidity as the convenience of holding cash. To some extent this assertion is true because of the surrounds uncertainty in the economy which brings about crucial drive for one to be holding on liquidity. The theory of liquidity preference is probably the single most controversial of the core constituents of the general theory of money. In his theory Keynes tried to explain the motive for liquidity as including: precautionary motive and speculative motive.

The money demanded for these motives constitute liquidity preference. De Porter (2016) made some improvements to the theory of liquidity preference where he tried looking for mechanisms that could explain the persistence of economic depression in an economy. De Porter developed an argument that liquidity preference theory assumes that the rate of interest is purely a monetary phenomenon overlooking other forces such as productivity of capital and thriftiness in determining the rate of interest. This theory is relevant in the cash management of an organization from the liquidity perspective which is mostly affected by the systems of disbursements and collections. Initially there was no consideration that liquidity can be affected by technological advancement at the time of coming up with this theory. In the modern time technology is a force that no business can thrive without giving it due consideration. This study therefore was undertaken to establish whether holding of cash can be affected by payment system adopted by an entity.

Technology Acceptance Theory

Momani and Jamous (2017) held that technology acceptance theory (TAT) is one of the most important subjects in software engineering. They held that many theories and models have arisen from this subject over the years to try and explain the individual's usage behavior towards technology. TAT is a widely used model in information system field which presents a theoretical contribution towards understanding adoption of technology in cashless

payment system. Brignal (2018) and Chuttur (2018) made an attempt to explain how users can select a given technology in payment system and adopt it in their day to day operations. Chuttur (2018) held that this theory holds the view that when users are introduced to a new technology, a number of factors influence their adoption decision. He concluded that users are likely to adopt a consumer innovation that is beneficial, easy to use and one that is most likely may improve his or her job performance. Chuttur (2018) held the preposition that technology acceptance theory drives a consumer into innovation through a technological process of improving performance or efficiency over time.

However, Benbasat and Barki (2017) cited some shortcomings related to technology acceptance theory specifically from the simplistic conception of "acceptance" which fails to understand that users of any technology can invent other uses from it. This theory therefore narrowly perceives users as passive absorbers of technological products with all users absorbing a technology for the same purpose. An argument by Chuttur (2018) also pointed out that the theory lacks sufficient rigor and relevance that would make it a well-established theory in using Information technology for cash management solutions in a community. The relevance of this theory to the current study is also perceived in the assertions made by different authors such as Humphrey et al., (2016) who supported the introduction and use of electronic payment instruments to benefit both business and consumers in the form of reduced costs and greater convenience. Besides, innovative systems helps to achieve secure and reliable means of payment and settlement for a potentially vast range of goods and services offered worldwide over the internet or other electronic networks (Chuttur, 2018). This theory is therefore applicable to this study as it encapsulates cashless management systems such as electronic cash transfer payment, mobile money payment and card payment systems which basically on technology platform.

Baumol's Optimal Cash Conversion Theory

Although this theory was developed Baumol in the 1950s several writers have tried to develop it to add value to it. Baumol's optimal cash conversion is the theory behind the development of Baumol's model. It mainly focuses on cash holding in short term to manage short term liquidity shocks brought about by uncertainty in cash management as the key element in the working capital management. Baumol adds that the model performs the cost analysis associated with maintaining cash, for example, the opportunity cost determined by the interest rate that the firm receives or not for its investment and the cost of obtaining money by converting the investment into cash. The transfer cost represents expenditure incurred when investing in funds or withdrawals, such as interest rates and taxes. In the absence of uncertain cash flows, the model shows a trade-off between cash holding and investing in fixed assets reflecting the transaction motive. Introducing uncertain cash flows reveals that cash holding reduces liquidity risk management through a reduced default risk, which enhances access to short-term bank finance made possible through cashless payment system (Kling, 2016).

Adams, Bauer and Sickles (2016) established that there exists trade-off between payment and investments. He found that there is a fixed cost of writing a check, while cash has an opportunity interest cost. In equilibrium cash is used for small purchases and checks for larger ones. Prescott uses this model to compare the effect of a country's welfare on equilibrium in the international financial market. He also established that rich countries (with a higher marginal product of capital and greater output) the use of checks is far greater than in a poor countries. Since checks are socially costly (they require resources to produce) while cash is not, the optimal nominal interest rate is zero; in that checks won't be used if one perceives a loss by virtually making use of it. Among the greatest concerns identified in relation to the model of Baumol are that most financial institution does not give interest on checking accounts and therefore the model is only applicable when the payment position can be reasonably assessed. However, the degree of uncertainty is usually high in predicting the cash flow transactions and that the

model only suggests an optimal balance under a set of assumptions which may not hold in real situations. In this particular study the researcher made use of the model to anchor the objective of cheque payment as a cashless payment system adopted by an organization against cash management.

Stochastic Cash Conversion Theory

This theory arose from the stochastic model that was propounded in 1966 by Miller and Orr . Miller analyzed the cash balance as having a random variable with an irregular fluctuation and proposed a stochastic model for managing the cash balance and by extension liquidity management (Liyanapathirana & Ranjani, 2017). Liyanapathirana and Ranjani (2017) therefore asserted that managing the available cash balance is a constant problem in all types of firms, which happens due to the daily inflows and outflows, whether by operating activities of the firm or financial transactions. Despite the importance of the problem, few studies dedicated themselves to elaborate a review of the models in this problem, essentially the work of Gregory in 1976, which presented a survey by the models until the mid-1970s focused on variants of the Miller–Orr model which deals only with deterministic models until the mid-1980s.

However, Kachani and Langella (2015) asserted that the major limitation of Miller-Orr models is the need of prior knowledge about the distribution of cash flows. Furthermore, the view of the cash balance is still limited and not regarded as an investment, which has a negative profitability (defined by total cost of the cash), immediate liquidity, and risk associated with cash deficit. Notwithstanding, this theory Was be relevant to the current study as the researcher, in line with the arguments by Miller and Orr that managing the available cash balance is a constant problem in all types of organizations; including the public health institutions which happens due to the daily cash inflows and outflows, whether by operating activities of the firm or financial transactions that is effected through a cashless payment system (Kachani & Langella, 2015).

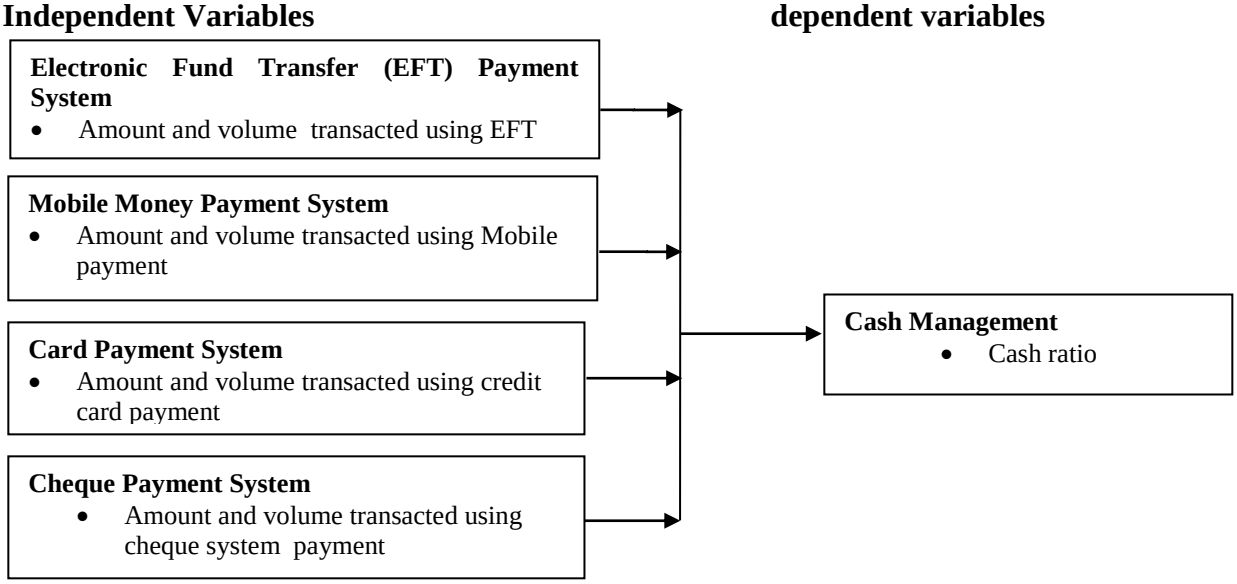
Diffusion of Innovation Theory

According to Lai (2016), the theory of diffusion of innovation was to establish the foundation for conducting research project on innovation acceptance and adoption. The theory explicates the process by which an innovation is communicated through certain channels over time among the members of a social system. Rogers synthesized research project from over 508 diffusion studies and came out with the diffusion of innovation theory for the adoption of innovations among individuals and organization. Diffusion of innovation theory originated to explain how, overtime, an idea or products gains momentum and diffuses (or spreads) through a specific population or social system. The end result of this diffusion is that people, as part of a social system adopt new idea, behavior, or product.

In support of this theory, Lai (2016) noted that the rate at which payment systems develop depends largely on a struggle between rapid technological change and natural barriers to new product or service acceptance. Consumers have a variety of the payment methods from which to choose, and the price is one of the factors that undoubtedly influence that choice. The introduction of charges for writing cheques, for example, played an important role in the decline in the use of cheques in the late 1990s. It is extremely easy to introduce selected transaction costs that show that the chosen payment model is better than all other alternatives, while ignoring countless others transaction costs that may be equal or more expensive than the one selected (Gutrie& Wright, 2006). Jason and Francesco (2017) identified a shortfall in this theory pointing out that it assumes that users adopt new technology to maximize their utility and does not integrate the overlapping effect of the different contexts. However, the theory still stands relevant to the current study since it views the adoption of the cashless financial technologies in

the public hospitals within a single context, that is, their impact to cash management in these organizations. In addition, it sought to explain how, overtime, the use of cashless payment systems has gained momentum and diffused among the organization.

Conceptual Framework



Empirical Literature Review

A study carried by Dundore (2016) on implications of the electronic funds transfer system a case of Non-Financial institutions within Boston city in USA revealed that there is a remarkable improvement in financial management for organization that have embraced cashless payment system. Ageng'a (2015) carried out a case study on electronic funds payment system and cash management a case of Kisumu East district treasury. The study focused on adoption of electronic fund transfer in public facilities and established that there is a positive correlation between computerized accounting systems and cash management. Pelletier, Khavul and Estrin (2015) carried a research on mobile money payment system in developing countries. The research project comprised of two country level survey of the retail agents involved in mobile money payment system in Bangladesh and Tanzania. The findings of the research project suggested that the performance of agents in Bangladesh and Tanzania are strongly affected by the relationship they form with their distributors particularly in terms of communication, training and goals. The researcher concluded that in order to improve the performance of mobile money payment system training is critical. Hakan (2016) carried out a research on effect of internet, mobility and other technological advances in Sweden and from his findings he concluded that few customers use Seqr compared to mobile money payment solutions. He also concluded that people always becomes reluctant to adapt to the payment system because they are not convinced of any existence of clear benefits that may accrue from use of cashless payment system either in terms of convenience or savings.

Klee (2015) in their different studies virtually come to one conclusion that socio-demographic and technological factors on the propensity to use electronic payment systems or the probability of them being used influences cash management sharply. However, Mantel (2016) proposed a set of framework to describe why most consumers would prefer to pay their bills using cashless payment system as evidenced in the US national. A similar study was conducted by Stavins (2016) who also used a survey data from US households in order to evaluate the effects of consumer characteristics on the probability of using different electronic payment systems. His results showed a strong effect of demographic characteristics on consumers' who used cashless payment systems as a result proper cash management. Adams, Bauer and Sickles (2016) conducted a study to investigate the impact of applying cheque payment system on employees' satisfaction in Accounting Departments' of Jordanian Islamic banks. Against expectation, the results showed that only tangibility had a positive and significant relationship with 'Employees' Satisfaction.

Hancock and David (2018) in the United States of America (USA) conducted a research to establish factors influencing usage of cheques in business. The study was conducted in the transport industry in the New York City. From the findings it was revealed that cheque payment systems has been replaced with real time gross settlement operated by the Federal Reserve System (The Fed) and the Clearinghouse Interbank Payment Systems which is a privately-owned payment system combining net and gross real time settlement to speed up business operations. Humphrey, Pulley and Vesala (2016) did a study on cash, paper and electronic payment and established that to process large value and urgent US dollar transfers Fedwire are employed by depository institutions and their customers. The Cheque and Credit Clearing Company which deals in paper instruments like cheques and credit vouchers are involved in these systems where two types of access arrangements in the form of direct settlement members and indirect participants.

RESEARCH METHODOLOGY

The researcher employed descriptive research design because of its advantages in clearly bringing out causal explanations that has been tested and can easily enhance the establishment of the hypotheses of this study. The target population comprised of all the 47 county referral hospitals in Kenya. The targeted population was viewed to be well placed to give feedback on the study since they hold critical roles in healthcare provision in Kenya. A census was conducted on the entire population. The researcher used secondary data accessed from the Ministry of Health data base for the five years 2014-2018. To test the hypothesis, a multiple linear regression model was used because this study encompassed multiple variables that the researcher was evaluating to establish if they have any significance contribution to the cash management of County Referral Hospitals in Kenya.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Where; Y – Cash Management, β_0 – Constant, $\beta_1, \beta_2, \beta_3, \beta_4$ - Regression coefficients, X_1- Electronic Fund Transfer, X_2 –Mobile money Payment, X_3- Credit Card Payment, X_4- Cheque Payment and ε - Error term.

Variable Operationalization

Table 1: Operationalization of Variables

Orientation	Variable	Indicators	Measure
Dependent variable	Cash Management	Cash Ratio	Cash + Cash Equivalent)/Total Liabilities
Independent variables	EFT	Proportion of Amount Transacted Through EFT	Total EFT Transactions between 2014 and 2018/Total Cash Transacted
	MMP	Proportion of Amount Transacted Through MMP	Total MMP Transactions between 2014 and 2018/Total Cash Transacted
	CCP	Proportion of Amount Transacted Through CCP	Total CCP Transactions between 2014 and 2018/Total Cash Transacted
	CPS	Proportion of Amount Transacted Through CPS	Total CPS Transactions between 2014 and 2018/Total Cash Transacted

Test of Hypothesis

The researcher used t-statistic of 95% confidence. The t-statistic of 95% confidence was used because it was seen to be very useful way to measure the statistical relationship that exists between independent and dependent variables in this study. The decision to reject and accept the null hypothesis was set as; if the calculated t, $t_{(count),}$ is larger than the tabulated t, $t_{(table),}$ then the null hypothesis is rejected and the alternative hypothesis accepted. Similarly, if the calculated t, $t_{(count),}$ is smaller than the tabulated t, $t_{(table),}$ then the null hypothesis is accepted and the alternative hypothesis rejected.

RESEARCH FINDINGS

Descriptive Analysis

Table 2: Descriptive Statistics of Transactions through Cashless Payment Systems

	EFT		Mobile Money		Credit Card		Cheque Payment	
Name of County Referral Hospital	**Ksh (M)**	**% of Total**	**Ksh (M)**	**% of Total**	**Ksh (M)**	**% of Total**	**Ksh (M)**	**% of Total**
Embu Provincial General Hospital	1,109.31	5.6%	562.34	5.6%	157.70	5.6%	14,605.27	11.4%
Nakuru Provincial General Hospital (PGH)	1,055.46	5.3%	535.04	5.3%	150.04	5.3%	13,221.17	10.3%
Coast Province General Hospital	895.70	4.5%	454.06	4.5%	127.33	4.5%	9,521.36	7.4%
Jaramogi Oginga Odinga Teaching Referral Hospital	820.31	4.1%	415.84	4.1%	116.61	4.1%	7,985.70	6.2%
Kakamega Provincial General Hospital (PGH)	805.95	4.1%	408.56	4.1%	114.57	4.1%	7,708.25	6.0%
Kisii Hospital (Level 5)	680.30	3.4%	344.86	3.4%	96.71	3.4%	5,491.92	4.3%
Machakos Level 5 Hospital	673.12	3.4%	341.22	3.4%	95.69	3.4%	5,376.39	4.2%
Pumwani Maternity Hospital	628.25	3.2%	318.48	3.2%	89.31	3.2%	4,683.25	3.7%
Nyeri Provincial General Hospital (PGH)	579.78	2.9%	293.91	2.9%	82.42	2.9%	3,988.40	3.1%
Meru District Hospital	549.27	2.8%	278.44	2.8%	78.08	2.8%	3,579.47	2.8%
Isiolo District Hospital	547.47	2.8%	277.53	2.8%	77.83	2.8%	3,555.97	2.8%
Kiambu District Hospital	518.75	2.6%	262.97	2.6%	73.74	2.6%	3,192.55	2.5%

	EFT		Mobile Money		Credit Card		Cheque Payment	
Homa Bay County Teaching and Referral Hospital	502.60	2.5%	254.78	2.5%	71.45	2.5%	2,996.68	2.3%
Kerugoya District Hospital	495.42	2.5%	251.14	2.5%	70.43	2.5%	2,911.55	2.3%
Murang'a District Hospital	484.65	2.5%	245.68	2.5%	68.90	2.5%	2,786.23	2.2%
Thika Level 5 Hospital	475.67	2.4%	241.13	2.4%	67.62	2.4%	2,683.88	2.1%
Kericho District Hospital	448.75	2.3%	227.48	2.3%	63.79	2.3%	2,388.55	1.9%
Kitale County Refferal Hospital	448.75	2.3%	227.48	2.3%	63.79	2.3%	2,388.45	1.9%
Siaya District Hospital	430.80	2.2%	218.38	2.2%	61.24	2.2%	2,201.11	1.7%
Garissa Provincial General Hospital (PGH)	402.08	2.0%	203.82	2.0%	57.16	2.0%	1,917.34	1.5%
Bungoma County Referal Hospital	387.72	2.0%	196.55	2.0%	55.12	2.0%	1,782.76	1.4%
Nyamira District Hospital	364.38	1.8%	184.72	1.8%	51.80	1.8%	1,574.56	1.2%
Kitui District Hospital	359.00	1.8%	181.99	1.8%	51.03	1.8%	1,528.30	1.2%
Mbagathi District Hospital	359.00	1.8%	181.99	1.8%	51.03	1.8%	1,528.24	1.2%
Kapsabet County Referral Hospital	359.00	1.8%	181.99	1.8%	51.03	1.8%	1,528.18	1.2%
Maralal District Hospital	341.05	1.7%	172.89	1.7%	48.48	1.7%	1,379.13	1.1%
Busia County Referral Hospital	332.07	1.7%	168.34	1.7%	47.21	1.7%	1,307.45	1.0%
Kilifi County Hospital	308.74	1.6%	156.51	1.6%	43.89	1.6%	1,130.11	0.9%
Iten District Hospital	299.76	1.5%	151.96	1.5%	42.61	1.5%	1,065.32	0.8%
Baringo County Referral Hospital	287.20	1.5%	145.59	1.5%	40.83	1.5%	977.84	0.8%
Vihiga County Referral Hosptial	287.20	1.5%	145.59	1.5%	40.83	1.5%	977.80	0.8%
Kapenguria District Hospital	287.20	1.5%	145.59	1.5%	40.83	1.5%	977.76	0.8%
Msambweni District Hospital	278.22	1.4%	141.04	1.4%	39.55	1.4%	917.57	0.7%
Narok County Referral Hospital	278.22	1.4%	141.04	1.4%	39.55	1.4%	917.53	0.7%
Longisa District Hospital	258.48	1.3%	131.03	1.3%	36.74	1.3%	791.89	0.6%
Nyahururu District Hospital	254.89	1.3%	129.21	1.3%	36.23	1.3%	770.02	0.6%
Olkalou Sub-District Hospital	254.89	1.3%	129.21	1.3%	36.23	1.3%	769.99	0.6%
Kajiado District Hospital	247.71	1.3%	125.57	1.3%	35.21	1.3%	727.19	0.6%
Hola District Hospital	236.94	1.2%	120.11	1.2%	33.68	1.2%	665.30	0.5%
Mandera County Refferal Hospital	229.76	1.2%	116.47	1.2%	32.66	1.2%	625.57	0.5%
Makueni District Hospital	226.17	1.1%	114.65	1.1%	32.15	1.1%	606.15	0.5%
Moyale District Hospital	215.40	1.1%	109.19	1.1%	30.62	1.1%	549.77	0.4%
Wajir County Referral Hospital	215.40	1.1%	109.19	1.1%	30.62	1.1%	549.75	0.4%
Mama Lucy Kibaki Hospital – Embakasi	201.04	1.0%	101.91	1.0%	28.58	1.0%	478.87	0.4%
Migori District Hospital	179.50	0.9%	90.99	0.9%	25.52	0.9%	381.74	0.3%
Taveta District Hospital	179.50	0.9%	90.99	0.9%	25.52	0.9%	381.72	0.3%
Total	**19,780.84**	**100%**	**10,027.46**	**100%**	**2,811.97**	**100%**	**128,074.02**	**100%**

Descriptive Statistics Regarding EFT Platforms

From the findings in Table 2, it was evident that the total amount of money transacted through the platform in all the county referral hospitals throughout the period under study (2014 – 2018) was in excess of Ksh. 19.78 billion. Most of the transactions were undertaken within the Embu Provincial General Hospital which recorded at total amount of Ksh. 1.11 billion representing 5.6% of all the transactions done through EFT within the study period. This was followed by Nakuru Provincial General Hospital (PGH) that accounted for 5.3% of all the EFT

transactions, indicating a cumulative transacted amount of Ksh. 1.06 billion. The third, fourth and fifth referral hospitals which record a great amount of transaction through this platform were Coast Province General Hospital (Ksh. 0.09 billion, 4.5%), Jaramogi Oginga Odinga Teaching Referral Hospital (Ksh. 0.82 billion, 4.1%) and Kakamega Provincial General Hospital (Ksh. 0.81 billion, 4.1%).

On the other hand, the least amounts were transacted through this platform in Taveta District Hospital and Migori District Hospital which both recorded a cumulative amount of Ksh. 0.18 billion transacted within the study period which represents 0.9% of the total amount transacted through the platform between 2014 and 2018. This was followed by Mama Lucy Kibaki Hospital – Embakasi which registered a total amount of Ksh. 0.20 billion (1.0%), then Wajir County Referral Hospital and Moyale District Hospital that both individually transacted a total amount of Ksh. 0.22 billion through the EFT platform representing a 1.1% of the total EFT transaction for each of these hospitals.

Descriptive Statistics Regarding Mobile Money Payments

The results further depict that the total amount transacted through the MMP for the period under study stood at approximately Ksh. 10.03 billion. The findings also indicated that the total amounts transacted through the platform for the individual institutions range between Ksh. 0.56 billion and Ksh. 0.09 billion. The amount was transacted at Migori and Taveta referral hospitals where each of the facilities recorded a total amount Ksh. 0.09 billion that represent 0.9% of the total amount transacted through the platform within the study period.

Besides, Embu Provincial General Hospital and Nakuru Provincial General Hospital transacted a total amount of Ksh 0.56 billion and Ksh. 0.54 billion respectively through the platform, representing 5.6% and 5.3% of the total amount transacted within the MMP platform. The other facilities that recorded high amounts transacted through the MMP within the study period include Coast Province General Hospital, Jaramogi Oginga Odinga Teaching Referral Hospital and Kakamega Provincial General Hospital that registered total figures of Ksh. 0.45 billion, Ksh. 0.42 billion and Ksh. 0.41 billion which respectively represent 4.5%, 4.1% and 4.1%. Other key facilities such as Mama Lucy Kibaki Hospital – Embakasi and Pumwani Maternity Hospital contributed up to 3.2% and 1.0% of the total amount transacted through the MMP platform respectively.

Descriptive Statistics Regarding Credit Card Payment Systems

The results also indicated that the total amount transacted through the CCP for the period under study stood at approximately Ksh. 2.81 billion. From the findings, it was also evident that most (25 facilities) of the facilities account for less than two percent of the total amounts transacted through the credit card payment platforms. Out of these facilities, only two individually account for less than one percent of the total amount transacted through the CCP platform. On average, the total transacted amounts through the CCP platform stood at Ksh. 0.06 billion further representing an average percentage of 2.1% of the total amount transacted in the facilities through this payment platform for the period under study.

The results also depict that Embu Provincial General Hospital and Nakuru Provincial General Hospital were the only facilities that had a percentage of the total amount transacted through the platform greater than 5.0%. This represented a cumulative amount of Ksh. 0.16 billion and Ksh. 0.15 respectively. Other facilities that recorded a high amount transacted through the CCP platforms were Coast Province General Hospital (Ksh. 0.13 billion, 4.5%), Jaramogi Oginga Odinga Teaching Referral Hospital (Ksh. 0.12 billion, 4.1%) and Kakamega Provincial General Hospital (Ksh. 0.11 billion, 4.1%). On the other hand, Mama Lucy Kibaki Hospital – Embakasi, Migori District Hospital and Taveta District Hospital registered the least amount of money transacted through CCP platform for the period under study.

The amounts were Ksh. 29 million (1.0%), Ksh. 26 million (0.9%) and Ksh. 26 million (0.9%) respectively.

Descriptive Statistics Regarding Cheque Payment System

In regard to Cheque payment system, it was established that the total amount transacted through the CPS for the period under study stood at approximately Ksh. 128.1 billion. From the findings, it was also evident that most (31 facilities) of the facilities account for less than two percent of the total amounts transacted through the cheque payment systems. Out of these facilities, nineteen individually account for less than one percent of the total amount transacted through the CPS platform. On average, the total transacted amounts through the CPS stood at Ksh. 2.7 billion further representing an average percentage of 2.1% of the total amount transacted in the facilities through this payment platform for the period under study.

The results also depict that Embu Provincial General Hospital and Nakuru Provincial General Hospital were the only facilities that had a percentage of the total amount transacted through the platform greater than 10.0%. This represented a cumulative amount of Ksh. 14.6 billion and Ksh. 13.2 billion respectively. Other facilities that recorded a high amount transacted through the CCP platforms were Coast Province General Hospital (Ksh. 9.5 billion, 7.4%), Jaramogi Oginga Odinga Teaching Referral Hospital (Ksh. 8.0 billion, 6.2%) and Kakamega Provincial General Hospital (Ksh. 7.7 billion, 6.0%). On the other hand, Mama Lucy Kibaki Hospital – Embakasi, Migori District Hospital and Taveta District Hospital registered the least amount of money transacted through CCP platform for the period under study. The amounts were Ksh. 48 million (0.4%), Ksh. 38 million (0.3%) and Ksh. 38 million (0.3%) respectively.

Cash Management

Table 3: Cash Management

Name of County Referral Hospital	Total Amount Transacted	Current Liabilities	Cash Ratio
Embu Provincial General Hospital	16,434.61	11,873.64	1.38
Nakuru Provincial General Hospital (PGH)	14,961.71	11,556.90	1.29
Coast Province General Hospital	10,998.45	11,119.80	0.99
Jaramogi Oginga Odinga Teaching Referral Hospital	9,338.46	10,828.75	0.86
Kakamega Provincial General Hospital (PGH)	9,037.33	10,550.02	0.86
Kisii Hospital (Level 5)	6,613.80	10,448.43	0.63
Machakos Level 5 Hospital	6,486.43	10,347.74	0.63
Pumwani Maternity Hospital	5,719.28	10,289.52	0.56
Nyeri Provincial General Hospital (PGH)	4,944.51	9,960.96	0.50
Meru District Hospital	4,485.26	9,870.93	0.45
Isiolo District Hospital	4,458.80	9,720.00	0.46
Kiambu District Hospital	4,048.01	9,603.72	0.42
Homa Bay County Teaching and Referral Hospital	3,825.51	9,498.02	0.40

Name of County Referral Hospital	Total Amount Transacted	Current Liabilities	Cash Ratio
Kerugoya District Hospital	3,728.54	9,255.52	0.40
Murang'a District Hospital	3,585.46	8,974.46	0.40
Thika Level 5 Hospital	3,468.31	8,882.34	0.39
Kericho District Hospital	3,128.58	8,677.68	0.36
Kitale County Refferal Hospital	3,128.48	8,311.25	0.38
Siaya District Hospital	2,911.54	8,164.01	0.36
Garissa Provincial General Hospital (PGH)	2,580.40	7,705.43	0.33
Bungoma County Referal Hospital	2,422.14	7,558.66	0.32
Nyamira District Hospital	2,175.46	7,544.59	0.29
Kitui District Hospital	2,120.32	7,524.63	0.28
Mbagathi District Hospital	2,120.26	7,212.96	0.29
Kapsabet County Referral Hospital	2,120.20	6,763.32	0.31
Maralal District Hospital	1,941.55	6,304.93	0.31
Busia County Referral Hospital	1,855.06	5,988.74	0.31
Kilifi County Hospital	1,639.24	5,656.09	0.29
Iten District Hospital	1,559.65	5,286.69	0.30
Baringo County Refferal Hospital	1,451.46	4,873.59	0.30
Vihiga County Referral Hosptial	1,451.42	4,840.00	0.30
Kapenguria District Hospital	1,451.38	4,475.92	0.32
Msambweni District Hospital	1,376.39	4,434.26	0.31
Narok County Referral Hospital	1,376.35	4,109.40	0.33
Longisa District Hospital	1,218.15	3,738.88	0.33
Nyahururu District Hospital	1,190.35	3,499.95	0.34
Olkalou Sub-District Hospital	1,190.32	3,221.43	0.37
Kajiado District Hospital	1,135.68	2,884.28	0.39
Hola District Hospital	1,056.04	2,841.75	0.37
Mandera County Refferal Hospital	1,004.46	2,599.37	0.39
Makueni District Hospital	979.12	2,331.08	0.42
Moyale District Hospital	904.98	2,158.07	0.42
Wajir County Referral Hospital	904.96	2,065.41	0.44
Mama Lucy Kibaki Hospital - Embakasi	810.40	1,866.81	0.43

Name of County Referral Hospital	Total Amount Transacted	Current Liabilities	Cash Ratio
Migori District Hospital	677.75	1,570.00	0.43
Taveta District Hospital	677.73	1,287.56	0.53
Total	**160,694.30**	**308,277.46**	**0.52**

Cash ratios for the referral hospitals between the year 2014 to 2018 was established and summarized in Table 3. A cash ratio with a value of more than 1 depicted that the facility was able to pay its creditors from its cash and cash equivalent sources and still remained with some funds. The results revealed that the total cash and cash equivalents for the facilities recorded within the study period of between 2014 and 2018 stood at approximately Ksh. 160.69 billion while the cumulative current liabilities for the similar period were approximately Ksh. 308.28 billion. This further indicated an average cash ratio of 0.52 for all the 47 facilities. This implied that most of the facilities were not able to comfortably settle their creditors from their cash and cash equivalent sources. On average, the total cash and cash equivalents for each of the facility in the period under study was Ksh. 3.14 billion while the liability was Ksh. 6.56 billion for the same period.

The results for the individual facilities revealed that only two hospitals recorded a cash ratio greater than 1.0. This included Embu Provincial General Hospital (1.38) and the Nakuru Provincial General Hospital (1.29). These findings further confirm that most of these facilities are not able to comfortably settle their creditors using their cash and cash equivalents. Most (45) facilities recorded a cash ratio of below 1.0. The least cash ratio recorded was 0.28 at Kitui District Hospital, followed by 0.29 which was registered in a number of facilities; Nyamira District Hospital, Mbagathi District Hospital and Kilifi County Hospital. Generally, the results depict the existence of a poor cash management strategy within the county referral hospitals.

Regression Analysis

To determine the overall effect of Electronic Fund Transfer, Mobile Money Payment, Credit Card Payment and Cheque Payment on Cash Management, a multiple regression analysis was conducted. The results were as presented in tables 4, 5 and 6. The value of coefficient of determination depicted by R square in Table 4 shows that Electronic Fund Transfer, Mobile Money Payment, Credit Card Payment and Cheque Payment collectively affect Cash Management up to 17.5%; this is the combined effect of the four variables on Cash Management. The variables however leave 82.5% of the change in cash management in the county referral hospitals in Kenya unexplained.

Table 4: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.418[a]	.175	-.210	.041

Predictors: (Constant), Electronic Fund Transfer, Mobile Payment, Credit Card Payment and Cheque Payment

The study also sought to establish the significance of the cumulative effect of independent variables on cash management. The results were as presented in table 5. The significance value of 0.033 (< 0.05) revealed that the combined effect of Electronic Fund Transfer, Mobile Money Payment, Credit Card Payment and Cheque Payment on Cash Management is statistically significant.

Table 4.9: ANOVA table

Model		Sum of Squares	Df	Mean Square	F	Sig.
	Regression	.286	3	.095	.139	.033
	Residual	29.755	44	.676		
	Total	30.041	47			

Predictors: (Constant), Electronic Fund Transfer, Mobile Money Payment, Credit Card Payment and Cheque Payment.

Dependent Variable: Cash Management

Table 6 presents the coefficients of the independent variables; Electronic Fund Transfer, Mobile Money Payment, Credit Card Payment and Cheque Payment.

Table 6 : Regression Model Coefficients

		Unstandardized Coefficients		Standardized Coefficients		
Model		**B**	**Std. Error**	**Beta**	**t**	**Sig.**
	(Constant)	2.432	.826		1.331	.001
	Electronic Fund Transfer	.417	.253	.162	1.375	.037
	Mobile Money	.385	.251	.098	1.707	.007
	Credit Card	.359	.143	.125	1.981	.024
	Cheque	.371	.216	.107	1.696	.013

Hypothesis Testing

In this study, the researcher used t-statistic set at 95% confidence. Besides, the decision to reject and accept the null hypothesis was set as; if the calculated t, t (count), is larger than the tabulated t, t (table), then the null hypothesis is rejected and the alternative hypothesis accepted. Similarly, if the calculated t, t (count), is smaller than the tabulated t, t (table), then the null hypothesis is accepted and the alternative hypothesis rejected. From the results indicated in table 4.10, the calculated t values for each of the independent variable; EFT (2.375), MMP (1.707), CCP (1.981) and CPS (1.696) were all greater than the tabulated t value (1.671). The study therefore rejected all the null hypothesis and settled that Electronic fund transfer, Mobile Money Payment, Credit Card Payment and Cheque Payment have a significant effect on cash management of County Referral Hospitals in Kenya.

CONCLUSIONS

The study's major objective was to evaluate the effect of cashless payment systems on cash management of county referral hospital. This objective was attained through assessing Electronic Fund Transfer, Mobile Money Payment, Credit Card Payment and Cheque Payment against cash management. From the findings, the study concluded the cashless payment system within the facilities that recorded the greatest total amounts transacted through it was cheques payment followed by EFT payment then Mobile Money Payment and lastly credit card payment. Besides, most of the facilities are not able to comfortably settle their creditors from their cash and cash equivalent sources since they recorded a cash ratio of less than 1.00.

Based on the study results, the researcher concluded that EFT had a strongly positive and significant effect on cash management of the facilities. This implies that EFT has an influence on the cash management of the county referral hospitals. Besides, the study also established that Mobile Money Payment had a strong positive and significant influence on cash management of the referral hospitals. This further implies that MMP does have influence on the cash management of the facilities. In relation to Credit Card Payment, the research concluded that this variable also had a strong positive and significant association with cash management which further depicted that CCP has influence on the cash management of county referral hospitals. Lastly, the results established that Cheque Payment System had a strongly positive and significant effect on cash management of the facilities. This implies that CPS has influence on the cash management of the county referral hospitals.

RECOMMENDATIONS

Based on the outcome of the analysis conducted in this study, the research proposes that the health referral facilities within the 47 counties all around the country should seek to enhance their usage of Electronic Fund transfer and Mobile Money Payment in conducting their transactions since these money transacting platforms greatly and positively influence the management of cash within the facilities. The study also recommends that the county health referral hospitals should invest in improving and increasing the utilization of credit card and cheques as modes of payment in their transactions. The two forms of payments have been proved from the findings of this study to greatly and positively impact cash management within the referral hospitals. Following the findings of this study on most of the facilities having a cash ratio of below one, this study recommends that the county referral hospitals should intentionally enhance the utilization of the cashless payment systems; EFT, MMP, CCP and CPS. This will improve their ability to manage their cash thus effectively pay their creditors out of their cash and cash equivalent sources.

Conflict of Interest

No potential conflict of interest was recorded by the Authors

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