The effects of cashless policy implementation on revenue optimization in Kakamega County, Kenya

Os efeitos da implementação de políticas sem dinheiro na otimização de receitas no Condado de Kakamega, Quênia

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Abstract: This study examined the effects of cashless policy implementation on revenue optimization in Kakamega County, Kenya. The shift from traditional cash-based transactions to electronic payment systems has been a significant development in public finance management, aimed at enhancing revenue collection efficiency, reducing pilferages, and curbing corruption. By adopting a cashless policy, Kakamega County sought to streamline its revenue collection processes, improve transparency, and increase accountability among revenue officers. The research employed a descriptive research design grounded in a quantitative approach. Data was collected from revenue clerks and customers. The findings indicate a substantial improvement in revenue collection, with a marked reduction in fraud and mismanagement. However, the study also identifies challenges such as initial resistance from the revenue clerks, the need for continuous training of revenue clerks, and technical issues related to the cashless system's infrastructure. Overall, the implementation of the cashless policy in Kakamega County has had a positive impact on revenue optimization, although there is a need for ongoing system upgrades, public awareness campaigns, and capacity building to sustain and enhance these gains. The study contributes to the broader discourse on the effectiveness of digital financial technologies in improving public sector revenue management in developing regions.

Keywords: Cashless; Policy implementation; Optimization.

Resumo: Este estudo examinou os efeitos da implementação da política de pagamento sem dinheiro na otimização de receitas no Condado de Kakamega, no Quênia. A transição de transações tradicionais baseadas em dinheiro para sistemas de pagamento eletrônico tem sido um desenvolvimento significativo na gestão das finanças públicas, visando melhorar a eficiência da arrecadação de receitas, reduzir desvios e combater a corrupção. Ao adotar a política de pagamento sem dinheiro, o Condado de Kakamega buscou simplificar seus processos de arrecadação de

receitas, melhorar a transparência e aumentar a responsabilidade entre os agentes arrecadadores. A pesquisa utilizou um desenho de pesquisa descritivo baseado em uma abordagem quantitativa. Os dados foram coletados de funcionários de arrecadação de receitas e clientes. Os resultados indicam uma melhoria substancial na arrecadação de receitas, com uma redução significativa em fraudes e má gestão. No entanto, o estudo também identifica desafios, como resistência inicial por parte dos funcionários de arrecadação, necessidade de treinamentos contínuos para esses profissionais e problemas técnicos relacionados à infraestrutura do sistema sem dinheiro. De maneira geral, a implementação da política de pagamento sem dinheiro no Condado de Kakamega teve um impacto positivo na otimização de receitas, embora haja a necessidade de atualizações contínuas no sistema, campanhas de conscientização pública e desenvolvimento de capacidades para sustentar e ampliar esses avanços. O estudo contribui para o debate mais amplo sobre a eficácia das tecnologias financeiras digitais na melhoria da gestão de receitas no setor público em regiões em desenvolvimento.

Palavras-Chave: *Sem dinheiro; Implementação de políticas; Otimização.*

1. Introduction

Since its inception in 2013, Kakamega County, initially relied on the traditional revenue collection system that had been in place under municipal and local authorities. This approach involved the physical collection of revenue by clerks (CGK, 2023). However, this method was marred by reported cases of embezzlement. In response, the County Government of Kakamega launched an e-revenue collection system in June 2019, shifting most of its revenue collection to cashless platforms. Since the rollout, taxpayers in the county were required to make payments through the *606# mobile payment platform. By dialing *606#, users receive a menu that guides them to make payments for various services, including hospital bills, market fees, and parking fees (CGK, 2023). The cashless system aims to reduce embezzlement by providing a payment method that does not involve direct cash transactions.

The cashless system implemented by Kakamega County consists of POS devices, the Kakapay platform, and KCB bank agents. Point of sale (POS) devices process payments and generate receipts instantly. These electronic devices include a cash register, receipt printer, customer display, and barcode scanner, and are also equipped with credit/debit card readers. One significant advantage of these machines is that they prevent dishonest tax collectors from overcharging customers since all revenue streams and corresponding amounts are pre-programmed into the system (CGK, 2023). The devices generate immediate receipts, and this information is automatically updated in the Kakapay system, indicating that a trader has made the payment. Additionally, the gadgets are configured to send payment prompts to the vendor's phone, enabling them to pay the specified amount in the relevant revenue stream.

The Kakapay platform is a tool specifically designed to oversee the revenue collection process through POS devices and the KCB Mtaani service (CGK, 2023). This platform, which can be installed on computers or smartphones, also facilitates the reconciliation of all transactions. It organizes and categorizes revenue streams, allowing for easy tracking. For instance, revenues from stock rings, Single Business Permits, and Matatus stickers are sorted into their respective categories. Access to this platform is restricted to senior officials and executives responsible for overseeing the revenue collection process. Additionally, the platform allows for comparison of revenue figures, such as comparing collections from one Tuesday to another or from the first week of March to the first week of April (CGK, 2023). The software also includes configurations for all markets within the county, enabling the monitoring of revenue collection from each market and assisting in making strategic decisions to improve market conditions based on the revenue generated.

KCB agents, known as KCB Mtaani, provide an alternative payment option for customers unable to pay through their mobile phones, allowing them to make payments at KCB Bank branches. This initiative aims to promote a cashless culture in Kakamega County. With these systems and configurations in place to enhance revenue collection, it became essential to assess the impact of implementing cashless systems on optimizing revenue in the county.

A cashless policy is designed to minimize cash transactions by offering alternative methods for conducting financial transactions. This approach includes storing money in an electronic wallet or card, a practice that is becoming increasingly common in workplaces (Hassan & Schmiedel, 2012). The electronic wallet can then be used for purchasing goods and services within business environments. The efficiency and speed of transactions in a cashless system make it appealing to many economies (Okiro, 2015). Governments are particularly drawn to this system because it enhances tax collection and, consequently, increases tax revenues.

Additional advantages of a cashless system include improved effectiveness of monetary policy and technological advancements, which are especially beneficial in low-and-middle income countries such as Botswana, Kenya, Nigeria, and South Africa (Nyongesa, 2014). Furthermore, a cashless policy reduces printing costs and managing large amounts of physical currency. Handling large sums of cash requires stringent security measures, and transportation poses risks, including the high likelihood of robbery. While a cashless system mitigates these risks, it does not entirely eliminate them. The adoption of a cashless policy has the potential to significantly curb corruption, money laundering, and other illicit activities associated with cash transactions (Skaggs, 2014).

Many countries have introduced cashless policies to enhance efficiency in service delivery. These policies limit the amount of cash that individuals and businesses can carry for transactions, encouraging the use of electronic payment methods instead (Skaggs, 2014). The rapid advancements in Information and Communication Technology (ICT) and the resulting growth of the information services sector have transformed the global economic and social landscape. These changes have led to the development of new policies across various sectors of national economies, driven by information and knowledge (Morris & Moonb, 2005). As a result, new opportunities for development, employment, productivity, efficiency, and economic growth have emerged. ICT, as a powerful tool with significant potential for social impact and human development, plays a crucial role in shaping the monetary policies of governments worldwide.

This cashless monetary policy centers around the concept of a cashless economy, where all payments are made without the use of physical money. Payment methods in such an economy include options like cheques, wire transfers, debit and credit cards, online transactions, and mobile banking (Oyewole et al., 2013). Implementing this policy relies heavily on Information and Communication Technology (ICT). The key question is, what impact does ICT have on a cashless economy? In simple terms, ICT involves how computers manage the storage, transmission, reception, and interpretation of information from one location to another (Zandi et al., 2013). A cashless economy is essentially an environment where money is spent without the need for physical currency to be exchanged between individuals.

One of the central aspects of this system is the concept of an electronic purse. This involves electronic data transmitted to a device, revealing information about how much money a person has stored in the bank and how much they can spend (Okiro, 2015). This information is accessed through a storage medium, such as a smart card, which contains a unique electronic signature linked to the individual. This signature allows the system to identify the person whenever the card is used. As transactions occur, the amounts spent are electronically sent back to the bank, where the balances are adjusted accordingly (Καρατάσου & Karatassou, 2015). The availability of ICT reduces the need for human intervention in processes such as identifying, accessing, and transmitting a person's bank balance, as well as updating it. ICT enables the convergence of various technologies, making cashless transactions not only feasible but also efficient.

2. Literature review

Καρατάσου and Karatassou (2015) found that most governments had intentions to provide online payment options for utility bills, fees, and fines. However, Norris and Moon (2005) observed that the percentage of governments implementing e-payment systems for financial transactions was expected to increase by 32 percent between 2000 and 2002, but the actual growth was only 6.5 percent. Several challenges hindered the provision of online services, including a shortage of IT staff, insufficient financial resources, and concerns about security and convenience. These challenges highlight the complexities involved in developing online transaction systems.

Wahab (2012) evaluated the use of cashless systems as a method of payment and receipt in Ghana to identify the existing modes of cashless systems and assess their level of implementation. He employed a quantitative approach, collecting data from 345 respondents who were knowledgeable about cashless systems using a structured questionnaire. The study revealed that mobile money services were rapidly gaining traction in the market, outpacing all other cashless payment and receipt methods. It also found that Point of Sale (POS) terminals were rarely available in local shops, limiting the use of cards for purchases.

In Nigeria, Oyewole et al. (2013) avers that electronic payment systems adoption would have a positive impact on economic growth and trade. Similarly, Hasan et al. (2012) investigated the relationship between the adoption of electronic retail payment systems and overall economic growth across 27 European countries from 1995 to 2009. They found that transitioning to an efficient electronic retail payment system would stimulate overall economic growth, consumption, and trade. However, the study noted that the influence of credit and debit card payments, fund transfers, and cheque payments on the economy was relatively modest.

Zandi et al. (2013) investigated the impact of the long-term shift to credit and debit card usage on the economic growth of 56 countries. Their findings indicated that electronic card payments enhance efficiency and drive economic consumption. Furthermore, they emphasized that the adoption of electronic transactions is crucial for ensuring transparency, accountability, and the reduction of cash-related fraud (Mieseigha & Ogbodo, 2013).

In a separate study, Okiro (2015) examined the effect of tax payment compliance on optimal revenue collection. The research revealed that revenue collection in Nairobi City County significantly improved following the introduction of an e-payment system. The study concluded that implementing an e-payment system positively impacts revenue collection performance in Nairobi City County. However, it also uncovered issues of corruption among revenue clerks and tax officials, as well as a lack of adequate training opportunities, leading to inexperienced staff within the Nairobi County Government. The study recommended that county governments should focus on enhancing the competence of revenue clerks and other county officials and attracting skilled employees to boost revenue collection performance. However, the study did not explore additional systems for improving revenue collection, which the current research aims to investigate.

Nyongesa (2014) recommended the implementation of decentralized ICT-based tax collection systems and offices in sub-counties as part of adopting differentiation strategies for revenue collection in Mombasa County. Among the suggested strategies were the direct remittance of cash to the nearest bank rather than cash offices, the improvement of tax rates, expansion of the tax base, devolution of the tax base to county government departments, and enhanced controls on cash management. The study emphasized that automating the revenue collection system could significantly boost revenue. Nyongesa (2014) further suggested that the County Government of Mombasa should automate its revenue collection process by partnering with regional banks, offering taxpayers the option to pay county fees through mobile money or branded credit cards through a new revenue collection system.

Otieno et al. (2013) found a significant relationship between Information Systems (IS) and the efficiency and effectiveness of revenue collection, as well as a strong positive correlation between

Internal Control Systems and revenue collection. However, the study noted that resistance to change among council staff was hindering the full implementation of IS.

Kayaga (2010) argued that new technology alone is insufficient unless the government also recognizes the importance of having skilled tax officials. The study emphasized that effective tax administration requires qualified personnel with the necessary skills to maintain and operate these systems to their full potential. Simiyu (2010) found that tax officers often accepted bribes to reduce tax liability or demanded bribes during visits, a practice that significantly impacted revenue collection in Nairobi County, Kenya.

Kaburia (2004) identified the lack of suitable e-payment alternatives as a major challenge to the growth of e-commerce in Kenya and proposed an e-payment model tailored to individuals in the country. Zandi (2013) highlighted that the use of third-party vendors has enabled counties with limited ICT resources to implement online ticket-paying systems, demonstrating the importance of vendor partnerships and cooperative resource pooling.

3. Methodology

This study utilized a descriptive research design grounded in a quantitative approach. According to Orodho (2009), a research design is the framework, outline, or plan employed to generate solutions to research questions. It serves as a structured arrangement of conditions for data collection and analysis, designed to align with the research objectives. The descriptive research design was selected for this study because it effectively captures and describes the current state of affairs. This design is particularly useful for gathering information about people's attitudes, opinions, habits, and behaviors (Orodho, 2009).

The researcher employed several sampling techniques to obtain a representative sample. For selecting customers, a systematic random sampling method was used. Based on records from the Kakamega County Revenue Agency, around 8,200 individuals regularly use the cashless system for revenue remittance. To determine an appropriate sample size for these revenue remitters, a sample size calculator was utilized, with a confidence interval of 10 and a confidence level of 95%. Given the population of 8,200, the required sample size was determined to be 95.

Revenue clerks were selected through a simple random sampling technique. The researcher applied the same calculator to determine the sample size for revenue collectors. Kakamega County currently employs 750 revenue collectors/clerks. Using a confidence interval of 10 and a confidence level of 95%, the necessary sample size for the collectors was calculated to be 85.

Kakamega County has six primary revenue streams that have adopted the cashless system, including hospitals, tolls, parking, barter, stock rings, and single business permits. The researcher therefore focused on clerks and customers involved in these revenue streams. Data collection was conducted using questionnaires. Creswell (2014) emphasizes the importance of questionnaires in gathering unbiased data from large samples. In this study, questionnaires were employed to collect data from both revenue clerks and customers/revenue payers. Data collection was conducted over a two-week period. During the first week, the researcher distributed questionnaires to both revenue clerks and customers/revenue remitters. At hospitals, the researcher allowed clerks a two-day period to complete the questionnaires due to their demanding schedules. In marketplaces, parking areas, matatu/motorbike stages, and stock rings, the researcher distributed the questionnaires and waited on-site for the clerks to complete them, as tracking them later would have been challenging due to their frequent changes in work locations.

To ensure the research objectives were met, data sampling, classification, and analysis were carried out to produce clear, accurate, current, and reliable information. The collected data was reviewed for errors and organized into appropriate tables. Descriptive statistics were employed to

analyze the data, revealing patterns, trends, and relationships, which were then presented in frequency tables.

The effect of implementation of cashless systems on revenue optimization was established using multiple linear regression analysis. The applicable regression model is shown below in Eq.(1).

$$Y = B_0 + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4 + e \qquad (1)$$

Where:

Y is revenue optimization,
X_1 is Cashless Policy Implementation
X_2 is POS Management
X_3 is User Perceptions
X_4 is System Interoperability Management
e is residual error
B_0 is constant which is the value of dependent variable when all the independent variables are
B_1, B_2, B_3 and B_4 are the regression coefficients for implementation of cashless systems.

The values for effect of implementation of cashless systems were regressed against revenue collection to estimate the study model. The study used IBM Statistical Package for Social Science (SPSS) version 24.0 software.

4. Findings and discussions

This study utilized a descriptive research design grounded in a quantitative approach. According to Orodho (2009), a research design is the framework, outline, or plan employed to generate solutions to research questions. It serves as a structured arrangement of conditions for data collection and analysis, designed to align with the research objectives. The descriptive research design was selected for this study because it effectively captures and describes the current state of affairs. This design is particularly useful for gathering information about people's attitudes, opinions, habits, and behaviors (Orodho, 2009).

4.1. Findings from revenue clerks

Respondents were also asked to state how they perceived the implementation of the cashless policy. From the findings in Table 1, a majority of the respondents (67.30%) agreed that before the cashless system was launched, they received sufficient support training. Table 1 also indicates that 64.60% agreed that they normally undergo regular training to increase their skills in using the cashless gadgets. Further, 70.00% of the revenue clerks agreed they have good knowledge on how the cashless system works. Further, the results revealed that 81.40% agreed that they have proper knowledge and skills in helping customers to pay through cashless systems. This is a clear indication that they received prior training and normally undergo regular training to remain abreast with how the technology works. These findings concur with Simiyu (2010), who found out that sufficient training in cashless systems is paramount in helping boost revenue collections. The results also revealed that 69.20% agreed that one year after the system was launched, customers like it. This s a clear indication that the cashless system had increased the quality of services offered to revenue remitters. In addition, the results revealed that 76.80% agreed that one year after the system was launched, they could say that it is an effective revenue optimization tool.

Table 1 – Cashless Policy Implementation

Statements	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Mean	Std. Dev
Before the cashless system was launched, I received sufficient support training	1.40%	13.90%	17.40%	44.40%	22.90%	3.74	1.01
I normally undergo regular training to increase my skills in using the cashless gadgets	2.10%	19.40%	13.90%	42.40%	22.20%	3.63	1.10
I have good knowledge on how our cashless system works	4.00%	10.30%	15.70%	40.60%	29.40%	3.55	1.06
I have proper knowledge and skills in helping customers to pay through cashless systems	3.60%	10.60%	5.00%	57.50%	23.90%	3.42	1.00
One year after the system was launched, I can say that customers like it	0.00%	13.20%	17.60%	53.80%	15.40%	3.51	0.85
One year after the system was launched, I can say that it as an effective revenue optimization tool	1.40%	18.10%	2.80%	36.10%	40.70%	3.91	0.82
Average						**3.63**	**0.97**

Source: Researcher (2023).

Correlation analysis was conducted between cashless policy implementation (independent variable) and revenue optimization (dependent variable). Results in Table 2 indicated that there was a positive and a significant association between cashless policy implementation and revenue optimization (r=0.317, p=0.000). These findings agree with that of Simiyu (2010) who observes that effective implementation of revenue policy will result in increased revenue.

Table 2 – Correlation Matrix

		Revenue Optimization	Cashless Policy Implementation
Revenue optimization	Pearson Correlation	1.000	.317*
	Sig. (2-tailed)		0.000
Cashless policy implementation	Pearson Correlation	.317*	1.000
	Sig. (2-tailed)	0.000	

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

Source: Researcher (2023).

The results presented in Table 3 present the fitness of model used of the regression model in explaining the study phenomena. Cashless policy implementation was found to be satisfactory variable in explaining revenue optimization. This is supported by coefficient of determination also known as the R square of 10.1%. This means that cashless policy implementation explains 10.1% of the variations in the dependent variable which is revenue optimization

Table 3 – Model Fitness

Variables	Values
R	0.317
R Square	0.101
Adjusted R Square	0.094
Std. Error of the Estimate	0.513

Source: Researcher (2023).

The results on analysis of variance are represented below. Table 4 provides the results on the analysis of the variance (ANOVA). The results indicate that the overall model was statistically significant. Further, the results imply that the independent variable is a good predictor of revenue optimization. This was supported by an F statistic of 15.906 and the reported p value (0.000) which was less than the conventional probability of 0.05 significance level.

Table 4 – Analysis of Variance

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	4.178	1	4.178	15.906	0.000
Residual	37.299	143	0.263		
Total	41.478	144			

Source: Researcher (2023).

Regression of coefficient results is presented in Table 5. Regression of coefficients showed that cashless policy implementation and revenue optimization had a positive and significant relationship ($r = 0.468, p = 0.000$). These results support Otieno et al. (2013), who found a positive relationship between cashless systems and revenue optimization.

From the regression equation (Eq.2), when cashless policy implementation changes by 0.468% the revenue optimizations change by 1% showing there is a positive relation between the two variables.

$$Y = 1.597 + 0.468X_1 \tag{2}$$

Table 5 – Analysis of Variance

	B	Std. Error	t	Sig.
Constant	1.597	0.455	3.509	0.001
Cashless policy implementation	0.468	0.117	3.988	0.000

Source: Researcher (2023).

4.2. Findings from customers

The study also sought to investigate how the customers perceived the cashless revenue system. Respondents were asked to state how they perceived the cashless policy implementation. Results in Table 6 revealed that 67.30% of the respondents agreed that before the cashless system was launched, there was enough public participation. This shows that the public was involved in the county's decision-making framework regarding service delivery. According to Okifo and Igbunu (2015), involving the public helps to reduce any resistance along the way. Further, 65.60% of the participants agreed that before the implementation of the cashless policy, there was sufficient awareness campaigns and sensitization. This shows that the county government took sufficient measures to prepare the customers of the impending changes within the revenue sector. Findings also reveal that 60% of the respondents agreed that they have good knowledge on how the cashless system works. When asked if they know how to use the cashless systems to pay revenue, 71.40% of the respondents agreed to this. According to Otieno et al. (2013), customers can only be able to learn how new systems work when they are involved in the planning processes. In this case, there was public participation and sufficient sensitization before the cashless system was launched. In contrast, Chukwuebuk et al. (2019) observed that despite the introduction of the cashless policy in 2012, in Lagos State, many users continue to face significant challenges, and additional efforts are necessary to establish a fully functional cashless society.

Findings also reveal that 64.20% of the respondents agreed that when the system was launched, they saw it as an effective revenue optimization tool. Similarly, Rahman (2022) highlighted that implementing cashless payment systems among businesses in Malaysia could lower costs

associated with managing large cash volumes and improve transaction efficiency. However, the current adoption rate of such systems remains low, and limited research exists on the underlying factors influencing their use. Meanwhile, Abdullah and Yusmita (2022) emphasized that cashless payment systems could curb corruption practices such as money laundering and kickbacks within Singapore's local government operations. They also noted that encouraging widespread use of non-cash transactions would require local governments to enforce such systems in both urban and rural areas, supported by reliable internet access and advanced technology. Lastly, 76.80% of the respondents agreed that one year after the system was launched, they could say that it as an ideal revenue optimization tool. This concurs with what Ismail (2013) found out in his study, that customers felt relieve when new modes of revenue optimization were introduced.

Table 6 – Cashless Policy Implementation

Statements	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Mean	Std. Dev
Before the cashless system was launched, there was enough public participation	1.40%	13.90%	17.40%	44.40%	22.90%	3.74	1.01
Before the implementation of the cashless policy, there was sufficient awareness campaigns and sensitization	4.10%	19.40%	10.90%	45.40%	20.20%	3.63	1.10
I have good knowledge on how the cashless system works	4.00%	20.30%	25.70%	30.60%	19.40%	3.55	1.06
I know how to use the cashless systems to pay revenue	3.60%	10.60%	15.00%	47.50%	23.90%	3.42	1.00
When the system was launched, I saw it as an effective revenue optimization tool	0.00%	13.20%	22.60%	53.80%	10.40%	3.51	0.85
One year after the system was launched, I can say that it as an ideal revenue optimization tool	1.40%	18.10%	2.80%	36.10%	40.70%	3.91	0.82
Average						**3.63**	**0.97**

Source: Researcher (2023).

Correlation analysis was conducted between cashless policy implementation (independent variable) and revenue optimization (dependent variable). Results in Table 7 indicated that there was a positive and a significant association between cashless policy implementation and revenue optimization (r=0.004, p=0.000).

Table 7 – Correlation Matrix

		Revenue Optimization	Cashless Policy Implementation
Revenue optimization	Pearson Correlation	1.000	0.004
	Sig. (2-tailed)		0.008
Cashless policy implementation	Pearson Correlation	0.004	1.000
	Sig. (2-tailed)	0.008	

Source: Researcher (2023).

The results presented in Table 8 present the fitness of model used of the regression model in explaining the study phenomena. Cashless policy implementation was found to be satisfactory variable in explaining revenue optimization. This is supported by coefficient of determination also

known as the R square of 7.7% This means that cashless policy implementation explains 7.7% of the variations in the dependent variable which is revenue optimization.

Table 8 – Model Fitness

Variables	Values
R	0.278
R Square	0.077
Adjusted R Square	0.075
Std. Error of the Estimate	0.2932

Source: Researcher (2023).

Table 9 provides the results on the analysis of the variance (ANOVA). The results indicate that the overall model was statistically significant. Further, the results imply that the independent variable is a good predictor of revenue optimization. This was supported by an F statistic of 33.378 and the reported p value (0.000) which was less than the conventional probability of 0.05 significance level.

Table 9 – Analysis of Variance

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	2.87	1	2.87	33.378	**0.000**
Residual	34.22	398	0.086		
Total	37.09	399			

Source: Researcher (2023).

Regression of coefficients showed that cashless policy implementation and revenue optimization were positively and significantly related ($r = 0.101, p = 0.000$), in Table 10. From the regression equation (Eq.3), when cashless policy implementation changes by 0.101% the revenue optimization changes by 1% showing there is a positive relation between the two variables.

$$Y = -0.33 + 0.101X_5 \tag{3}$$

Table 10 – Analysis of Variance

	B	Std. Error	T	Sig.
Constant	-0.33	0.204	-1.618	0.107
Cashless policy implementation	0.101	0.017	5.777	**0.000**

Source: Researcher (2023).

4.3. Hypothesis testing for cashless policy implementation

The hypotheses were tested using multiple regressions analysis (Eq.4). Table 11 shows multiple regression results. The results presented indicated that cashless policy implementation, POS management, user perceptions and system interoperability management explained 85.72% of the variances in revenue optimization as indicated by squared multiple correlation (R^2) of 0.8572. The results indicated that the overall model was statistically significant. Further, the results imply that cashless policy implementation, POS management, user perceptions and system interoperability management are good predictors of revenue optimization. This was supported by an F statistic of 378.25 and the reported p value (0.000) which was less than the conventional probability of 0.05 significance level.

$$Revenue\ Optimization = 9.9819 + 1.42E - 06X_1 + 6.4E - 05X_2 + 0.1627X_3 - 0.0171X_4 + 0.8237X_5 \tag{4}$$

Table 11 - Regression Analysis

	Coef.	Std. Err.	T	P>t	[95% Conf.	Interval]
POS management	6.4E-05	2.59E-06	24.46	0.000	5.8E-05	6.9E-05
Cashless policy implementation	1.42E-06	3.34E-07	4.24	0.000	7.59E-07	2.07E-06
User perceptions	0.1627	0.08386	1.97	0.004	-0.0023	0.32769
System interoperability management	-0.0171	0.00269	-6.37	0.001	-0.0224	-0.0118
_cons	9.98919	0.77488	12.89	0.005	8.46459	11.51
R Squared		85.72				
F (5,315)		378.25				
P		**0.000**				

Source: Researcher (2023).

Results in Table 11 show that in all the hypotheses, the *p*-value was 0.000 p<0.05. This indicated that the null hypothesis was rejected, thus, there is a significant relationship between cashless policy implementation and revenue optimization in Kakamega County; there is a significant relationship between Point of sale (POS) management and revenue optimization in Kakamega County; there is a significant relationship between user perceptions and revenue optimization in Kakamega County; there is a significant relationship between system interoperability management and revenue optimization in Kakamega County.

5. Conclusion

From the findings, cashless policy implementation affects revenue optimization positively. Both revenue clerks and customers agreed that the implementation of the cashless policy reduced pilferages and improved the efficiency and effectiveness of the revenue optimization process. From the study findings, it can be concluded that the cashless policy implementation has a positive effect on revenue optimization. Kakamega County took a good step in initiating the implementation process of the cashless policy. Amidst the fear for change among some customers and revenue clerks, the process was conducted in such a way that there was public participation and the customers and clerks were informed early enough before the rolling out process.

Although the process has faced a few hitches, it can be concluded that it has boosted revenue optimization in Kakamega County. Kakamega County should always conduct frequent and regular training for its revenue clerks to keep them well-updated on how to use the POS gadgets and other cashless systems. Although they were trained initially, frequent training helps to overcome any challenges that might come along the way. Besides, regular training increases the confidence of the clerks to serve the customers well. It also boosts their loyalty and trust towards the government, thereby reducing any chances of developing negative mindsets.

This study contributes both to policy and knowledge in the cashless economy industry as well as revenue collection within government. The findings and conclusions will inform various levels of government's policies on enhancing revenue collection by reducing pilferages. Besides, the findings will also enrich the knowledge bank in resource management. However, the study heavily relies on revenue clerks' perceptions. There is need for future research to focus on customer perspectives due to their critical role in the cashless system's success.

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