



**FACTORS AFFECTING EFFECTIVENESS OF INTEGRATED MANAGEMENT  
SYSTEMS IN COUNTIES IN KENYA: A CASE OF NYAMIRA COUNTY**

<sup>1\*</sup> **Jones Moko Omwenga**

*Jomo Kenyatta University of Agriculture and Technology*

[jones.omwenga@yahoo.com](mailto:jones.omwenga@yahoo.com)

<sup>2\*\*</sup> **Willy Muturi**

*Jomo Kenyatta University of Agriculture and Technology*

[mmuturi2001@yahoo.com](mailto:mmuturi2001@yahoo.com)

**Abstract**

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*The use of IMS in the public service is undergoing challenges with many users experiencing problems with certain complex features of IMS coupled with security, flexibility, personnel training and reliability issues that have an impact on efficient financial management in the public service. The study therefore aimed to explore the factors affecting effectiveness of IMS on cash management in Nyamira County. The study was based on the logical framework (LogFrame) theory and case study research design was used in this study. The study targeted top management at the Nyamira County treasury and sampled the 70 target population using census method. Questionnaires and interview schedules were the data collection instruments. To establish reliability of research instruments, the Cronbach's coefficient alpha model was used while to establish Validity of the instruments, two experts on the topic from JKUAT University examined the content of the instruments. Data was analyzed using regression and correlation statistics and presented in tables, charts and graphs. The findings were significant to the treasury.*

**Keywords:** Price Structure, Supplier Selection, Procurement

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## I. INTRODUCTION

A strong Public Financial Management (PFM) system is a catalyst for economic growth and development (Ajayi & Omirin, 2007). It ensures that the government and its Departments raise, manage, and spend public resources in an efficient and transparent way with the aim of improving service delivery. Sound systems, strong legal and regulatory frameworks as well as a competent and productive civil service are the cornerstones of an efficient PFM regime. Public Financial Management reforms have been identified as the key drivers to efficient public service delivery and creation of wealth and employment (Asselin & Srivastava, 2009).

According to Government of Kenya (GOK), (2011), over the last decade the Government of Kenya has undertaken a number of PFM reforms aimed at enhancing accountability and transparency. These reforms have targeted the core PFM systems of budget formulation and execution, public procurement, revenue collection, internal and external audit, parliamentary oversight, Payroll and Pensions, Public debt and guarantees, Accounting and Reporting, the Macro-fiscal framework and cash management.

The broad objective of these reforms is to strengthen PFM systems by enhancing transparency, accountability and responsiveness to public expenditure policy priorities. The PFM reform is also instrumental in the fight against wasteful spending and corruption. Various studies show positive results and an improved performance by the public financial systems, although challenges still remain in key areas of the economy. One major improvement in the public sector is cash management (Ajayi & Omirin, 2007).

Financial management has attracted increasing attention among both academics and practitioners during last decades. In developed countries, the increasing interest in this field is related to the liberalization of the money market, technological progress, and internationalization of businesses and proper financial management particularly in the public service (Miranda & Keefe, 2008). These changes have forced management to critically review cash management strategy and, consequently, also cash management policies and responsibilities. These factors have created additional demand for various kinds of cash management services (Peterson et al, 2008).

One of the major reforms embarked on, is the automation of Public Financial Management processes. The introduction of the Integrated Financial Management Information System has been premised on the realization that GoK can effectively leverage existing and emerging technology to enhance the pace of reforms and management of cash (GOK, 2011).

Peterson et al (2008) notes that in modern financial management, the emphasis is usually on the part of the cash management which is responsible for money operations. A person responsible for the cash management function is primarily concerned with short-term financial activities. In a changing money management environment, it is more important than before to know how to further improve the company's cash position, including managing accounts receivable, improving cash flow, transferring funds, and controlling cash disbursements. It is therefore necessary to assess the effect of Integrated Financial Management Systems on cash management.

A financial management information system, or integrated financial management information system (IMS), is an information system that tracks financial events and summarizes financial information (Bartel, 2009). In its basic form, an IMS is little more than an accounting system.

configured to operate according to the needs and specifications of the environment in which it is installed.

Casals (2009) notes that generally, the term “IMS” refers to the use of information and communications technology in financial operations to support management and budget decisions, fiduciary responsibilities, and the preparation of financial reports and statements. In the government realm, IMS refers more specifically to the computerization of public financial management (PFM) processes, from budget preparation and execution to accounting and reporting, with the help of an integrated system for financial management of line ministries, spending agencies and other public sector operations (GOK, 2011). IMS can enable prompt and efficient access to reliable financial data and help strengthen government financial controls, improving the provision of government services, raising the budget process to higher levels of transparency and accountability, and expediting government operations (GOK, 2011; Peterson et al., 2008).

However, problems have been cited particularly on the users front with studies showing problems with some of the IMS features like the standard data classification for recording financial events; Internal controls over data entry, transaction processing, and reporting; and common processes for similar transactions and a system design that eliminates unnecessary duplication of data entry in cash management (Diamond & Khemani, 2008).

Bartel (2009) asserts that the ease of use, reliability, security, flexibility and personnel training of IMS that is meant to provide timely, accurate, and consistent data for financial management and budget decision-making has also been called to question by users who note that while IMS has been touted as necessary has weaknesses that need to be assessed.

Recent literature on IMS has addressed various aspects of IMS design, systems development, implementation and sustainability (Casals, 2009; Bartel, 2009; Miranda & Keefe, 2008), but no one study has effectively looked at the effect of IMS based financial management and particularly on its efficient usage, its reliability, flexibility and security. That is why this study aimed at investigating the effectiveness of IMS based financial management in selected County government in Kenya.

### **Statement of the Problem**

IMS are designed to streamline the public services and reduce the bureaucratic systems with efficient and adequate service delivery. Ideally it should lead to an end of malpractices and vices in public services has been met with orchestrated constraints to derail such (Transparency International Kenya, 2013). Further, this has led into the endless occasioned malpractices and vices in the public service. Tax evasions, exemptions and other non-prudent behavioural

practices in the public sector which will lead to operationalization of the staff and delivery. However, on the ground it has been realised that the complexity of the public service systems and the provision of such services often lead into practice of crime and malpractices in the budgeting, allocation, cash processing and evaluation procedures. While studies have been done on IMS and its development and implementation, none has been done significantly on IMS and its effect on cash management and taking particular focus on its reliability perspective in carrying out cash management. This study hoped to fill the gap.

### **Research Questions**

- i. What is the influence of system reliability on the effectiveness of integrated management Systems in Nyamira County?
- ii. What is the influence of system security on effectiveness of integrated management Systems in Nyamira County?
- iii. What is the influence of personnel training on effectiveness of integrated management Systems in Nyamira County?

## **II. LITERATURE REVIEW**

### **Theoretical Framework**

The This section discusses various related literatures in theory about the core subject under investigation and the overall investigation.

### **Three-Component Theory of Commitment**

This theory formulated by Allen and Meyer in the year 1990, seeks to explain trio dimensions: affective, normative and continuance in the conduct and behavioural resource management in the public sector. The trio commitments are essential in realizing the mode in which the public resources are managed. In this case, the public financial management system is a public resource by virtue of the management and administration of the same. The theory opines that affective is the commitment in which there is an emotional attachment by the employees and organization whereby the work experiences creates the emotional existence.

### **Institutional-Centric Theory of Finances**

As an alternative to the criticised theory of finance liberalization and with increased instability in the developing nations in the '90s, Stein and Rosefeldein in 2005 formulated institutional-centric theory of finances. With the existence of information asymmetry and market failure by the imperfection, the theory recognizes that and provides that efficiency is the main backing of development and that the needful for proper infrastructural systems (Stein & Rosefelde, 2005; Dornbusch & Reynoso, 2003). This theory is essential in explaining the financial integration in the public service and too the progressive inclusion of the current applications and technologies. Demaestri and Guerrero (2003) suggested that the financial integration would increase the

effectiveness in the sectorial areas of operations and the National Treasury. The researcher pools relevance of the theory in the investigation of the PFM and technology inclusion in the Public Sector. This theory reveals the fiduciary risk management and trust involvement in the management of the IMS system to attain the PFM agenda.

### **System Theory**

The theory suggested by Wang (2005) tries to explain the information concept as such contextualized into components and elements. The theory posit that, all segments of information flow can under a given pool of element in a set of components with divergent functionality and possibly use per given period of time. Kang'ethe (2012) adds that, such information management can be in form of a flow with which accessibility, disruptions, distributions and deletion can be facilitated at a given stage or with given security admissions. Such admissions can be agents of manipulations, productions, efficiency inclusions and too can provide a lead in controls for a given period of time. The theory also posit a close human resources interaction, resource inclusion and progressive change management that thus leads to effectiveness and efficiency inclusion in the particular segment under place focus. The coding and internal controls for management of such systems are operational dependents elements to succeeding the objective of what kind of information is under processing. This theory is applicable in the case of the technology infrastructure reliability and the fiduciary risk management on the operationalization of IMS on the PFM management.

### **III. RESEARCH METHOD**

The study applied a case study research design; as such it was an intensive descriptive and holistic analysis of Nyamira County Treasury. The study targeted the top management at the Nyamira County treasury. The study intended to draw its population from Nyamira County Treasury Department. The total population for the study was therefore 70 respondents from treasury department.

### **IV. RESULTS AND DISCUSSION**

#### **Influence of Reliability on Effectiveness of IMS in Nyamira County Government**

As The first objective sought to establish the effect of system reliability on effectiveness of IMS in Nyamira County. The result is as seen in Table 1

**Table 1 Reliability and effectiveness of IMS**

		SA		A		U		D		SD		Mean	StD
		C	P	C	P	C	P	C	P	C	P		
IMS	collects accurate information relevant for effective county management	11	15.9%	33	47.8%	6	8.7%	15	21.7%	6	5.8%	3.18	.8134
IMS	collects timely financial information relevant for effective financial management	3	4.3%	26	37.7%	3	4.3%	27	39.1%	10	14.5%	3.28	.8235
IMS	generated information is consistent without delays and undue changes that demands further manual help	3	4.3%	27	39.1%	4	5.8%	27	39.1%	8	11.6%	2.47	1.117
IMS	provides adequate management reporting	3	4.3%	22	31.9%	5	7.2%	29	42.0%	10	14.5%	2.65	.9282
IMS	supports government-wide policy decisions	4	5.8%	27	39.1%	3	4.3%	27	39.1%	8	11.6%	3.07	.9728
IMS	is therefore significantly reliable.	5	7.2%	17	24.6%	5	7.2%	32	46.4%	10	14.5%	3.01	.9007

From table 1, it can be seen that majority of respondents at 63.7% agreed that IMS collected accurate financial information relevant for effective financial management. Only 27.5% disagreed and 8.7% were undecided. This implies that the accuracy of IMS was ascertained towards certifying the program reliable. The Joint Financial Management Improvement Program (JFMIP) (2010), described the core financial system requirements of a reliable system as the ability to: Collect accurate, timely, complete, reliable and consistent information; Provide adequate management reporting; Support government-wide and agency policy decisions; Support budget preparation and execution.

When asked if IMS collected timely financial information relevant for effective financial management, 53.6% disagreed, 42.0% agreed and 4.3% were undecided. This implies that while as earlier found, IMS provided accurate data, the data was however not exactly timely. In an interview with the County Accountant, he noted that the system was often overwhelmed with the large amount of data which consequently caused it to get slow and therefore less timely. It should be noted that timeliness as mentioned by The Joint Financial Management Improvement Program (JFMIP) (2010), is a major measure of system reliability. This result therefore shows a lapse in certifying IMS reliable because of its general lack of timeliness.

On whether IMS generated information was consistent without delays and undue changes that demanded further manual help, 50.7% disagreed, 43.4% agreed and 5.8% were neutral. This shows that IMS showed a lapse in consistency. Based on experience in Ethiopia, talking about IMS consistency, Peterson (2006) argues that process change not process (innovation) re-engineering is the best method to improve the consistency of IMS. Reform processes require capacity building that can be enhanced through modular implementation followed by progressive activation which later improves on IMS consistency.

When asked if IMS provided adequate management reporting, 56.5% disagreed, 36.2% agreed and 7.2% were undecided. This implies that there was a problem with IMS providing management reporting. Peterson et al (2008) had argued that IMS that was not restructured to suit the local management requirements brought out unsatisfactory management reports which in the end became unhelpful. This result shows that IMS may have fallen into the aforementioned trap.

When asked whether IMS supported government-wide policy decisions, 50.7% disagreed, 44.9% agreed and 4.3% were undecided. This implies that there was a problem with IMS design flexibility. Flexibility of local IMS design can decrease chances of failure in cash management as explained by Heeks using the Volta River Authority (Ghana) as an example (Heeks, 2009). Flexibility is achieved by: modularity (supporting one function at a time by allowing separation of, for example, accounting and personnel functions), incrementalism (providing stepped levels of support for organization functions by allowing separation of, for example, clerical and management support). In Kenya this has been achieved to some extent. Both the personnel and accounting functions are computerised with varying degrees of success within the ministries. However, the program needs to be structured to support more government-wide policy decisions.

Finally, when asked if IMS was therefore significantly reliable, 60.9% disagreed, 31.8% agreed, 7.2% were undecided. This implies that reliability of IMS is in question. Heeks (2009) observes that reliability needs to be improved so as to ensure that the integrated financial and information systems meet the full scope of its functionality.

### **Security and effectiveness of IMS in Nyamira County Government**

The second objective sought to determine the security factor and how it influences effectiveness of IMS in Nyamira County. The result is as seen in Table 2

**Table 2 Security of IMS**

	SA		A		U		D		SD		Mean	StD
	C	P	C	P	C	P	C	P	C	P		
IMS use is a risky mode of management practice to use	8	11.6%	34	49.3%	4	5.8%	20	29.0%	3	4.3%	2.70	1.047
I am concerned about the security aspects of IMS	7	10.1%	33	47.8%	5	7.2%	21	30.4%	3	4.3%	3.05	.8732
Information concerning my IMS use can be tampered with by others	9	13.0%	28	40.6%	6	8.7%	21	30.4%	5	7.2%	2.67	.8309
I have heard embezzlement issues even in the use of IMS	8	11.6%	32	46.4%	2	2.9%	23	33.3%	4	5.8%	2.69	.7421
The IMS security policy is water-tight	7	10.1%	13	18.8%	7	10.1%	36	52.2%	6	8.7%	3.16	.8082
Security of IMS is significant thus improving effective financial management	7	10.1%	15	21.7%	7	10.1%	33	47.8%	7	10.1%	3.13	.9154

From table 2 it is clear that majority of respondents at 60.9% agreed that IMS use was a risky mode of management practice to use. Only 33.3% disagreed and 5.8% were undecided. This gives an implication that there is a problem with the tightening of security on IMS which consequently puts effective management in jeopardy. According to Casals (2009), the use of Information Technology is vital and must be protected from any form of disruption or loss of service and so it is essential that the availability, integrity and confidentiality of the IT system and data are maintained at a level that is appropriate for IMS needs.

When asked if therefore the staff were concerned about the security aspects of IMS, 57.9% agreed, 34.7% disagreed and 7.2% were undecided. This is an indication that the staff in their interaction with the system was aware of certain security lapses of concern as far as IMS use was



concerned. This concern is shared with many studies. Embretson & Hershberger, (2009) had for instance argued that the purpose of the IT Security Policy should be to establish a framework for implementing security and control measures of the computerized information systems in IMS. Recognizing that information provided by the computerized systems is key to the operation of the IMS business, it is essential that the information and the infrastructure which supports it is secure from destruction, corruption, unauthorized access and breach of confidentiality whether accidental or deliberate. He further notes that however, such measures have often not been taken into keen consideration particularly in developing countries.

On whether Information concerning IMS use can be tampered with by others, 53.6% agreed, 37.6% disagreed and 8.7% were neutral. This implies that again the security of IMS was considerably compromised, enough to make it easy for unscrupulous persons to tamper with it. According to Bartel, (2009) IMS security has often been compromised because information security management basic objectives which must be maintained at all times have always been compromised: Confidentiality: ensuring that the IMS data is not disclosed or revealed to unauthorized persons. Integrity: ensuring consistency of the data, i.e. preventing creation, alteration, or destruction of data. Availability: ensuring that the legitimate users are not denied authorized access to resources such as information, computing and communication resources when required. Authorized use: ensuring that the IT resources are not used by un-authorized persons; Non-reputation: ensuring that one does not deny or alter the information sent across the IMS network.

On whether the staff had heard of embezzlement issues even in the use of IMS, 58.0% agreed, 39.1% disagreed and only 2.9% were neutral. This implies that the staff themselves was aware of the IMS security lapses and they had experiences of the consequences of such lapses. Casal, (2009) had mentioned that when talking about security, IMS technical policies in form of usernames and password should be considered. Under the technical policies certain other issues are inherent and they include: Scope: The use of information systems shall be protected by access controls to ensure that only authorized users have access to avoid the all consuming embezzlement. This access shall be restricted to only those capabilities that are appropriate to each employee's job duties. Therefore all users, vendors and service providers shall require usernames and passwords to access IMS computer resources.

When the respondents were then asked if the IMS security policy was water-tight, 60.9% disagreed, 28.9% agreed and 10.1% were undecided. This again goes to show that the security of IMS was a matter of grave concern. In talking about the security features of IMS both Casal, (2009) and Bartel, (2009) noted that the fact that most public finance management platforms and software are not ISO certified by standardized certifications like Cobal, creates a platform whose security is not water-tight and is thus susceptible to undue manipulations. Further, the requirements of such certification should be fully implemented. This, according to the County Accountant is what is ailing IMS in Kenya, as it is well certified but the implementation of the certification requirements is what poses a challenge leading to security lapses, that and lack of sufficient personnel training.

Finally, when asked if therefore the Security of IMS was significant thus improving effective cash management, 57.9% disagreed, 31.8% agreed and 10.1% were neutral. This again implies a lapse in security of IMS thus hampering the effective implementation of proper financial management at the treasury. This is in agreement with Bartel, (2009) who had earlier noted that IMS security has often been compromised thus leading to problems in management.

### **Personnel training and Effectiveness of IMS in Nyamira County Government.**

The third objective sought to determine the personnel training factor and how it influences effectiveness of IMS in Nyamira County. The result is as seen in figure 1 and Table 3.

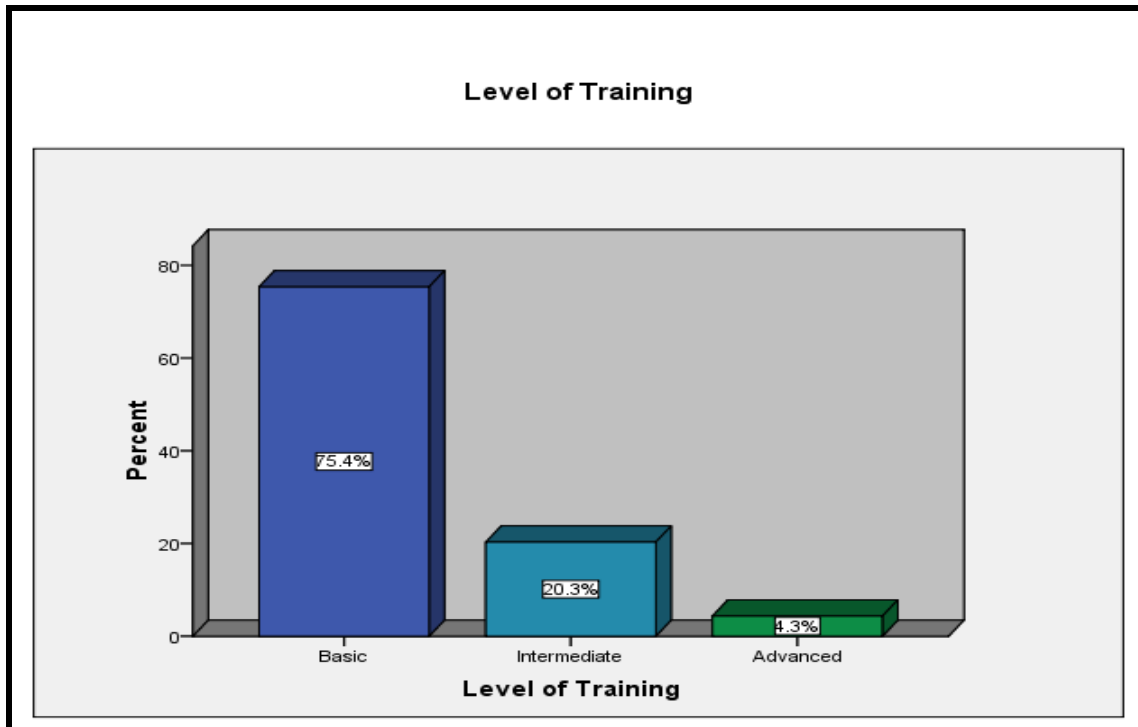


Figure 1: Level of Training

Of those who had pre-service training in IMS, figure 1 shows that majority at 75.4% had basic training, 20.3% had intermediate level of training and only 4.3% had an advanced training. This implies that the level of training in IMS was mainly basic, the efficacy of which is not necessarily top-notch but hopefully sufficient.

**Table 3 personnel training in IMS**

	SA		A		N		D		SD		Mean	StD
	C	P	C	P	C	P	C	P	C	P		
Personnel training in IMS is important for quality management	13	18.8%	32	46.4%	3	4.3%	18	26.1%	3	4.3%	2.42	.6126
There is no quality efforts to train personnel for better management	10	14.5%	12	46.4%	4	5.8%	20	29.0%	3	4.3%	2.65	1.001
We are not fully prepared to handle IMS for effective management	14	20.3%	13	47.8%	3	4.3%	16	23.2%	3	4.3%	2.53	.9498
Personnel training in IMS, or lack of it, have greatly hampered effective management.	13	18.8%	15	55.1%	4	5.8%	12	17.4%	2	2.9%	2.40	.8495

From table 3 it is evidently clear that majority at 65.2% agreed with the assertion that personnel training in IMS were important for quality management. Only 30.4% disagreed and 4.3% were undecided. This implies staff appreciation of the need for training in IMS. Many public service managers still perceive the lack of ICT-related knowledge of personnel as a major obstacle to the realisation of their IMS-related goals (Pelgrum, 2002).

When the respondents were asked if there were quality efforts to train personnel for better management, 60.9% disagreed, 33.3% agreed and 5.8% were neutral. This implies that while training was considered important, such consideration was not commensurate with efforts to train. This result implies a presence of untrained staff. The ITPOSMO model has been used in literature in explaining some of the reasons as to why implementation of IMS in Kenyan government fails. According to (Beynon & Davies, 2009), while IMS remains necessary, its usability is called into question considering that the developers without local considerations make the interfaces difficult. In fact Peterson et al, (2008) argues that one of the biggest challenges for an IMS system especially in a post conflict environment is HR capacity and the ability of Government to retain qualified and trained staff with the know-how of IMS and as

such, looking at the other end of the stick, making the system simpler without compromising on its security is necessary.

When the respondents were asked if they were fully prepared to handle IMS for effective management, 68.1% disagreed, 27.5% agreed and 4.3% were undecided. This implies a lack of sufficient training on the part of the public service entities. Heeks (2009) says that this is a problem considering that most IMS interfaces are difficult since they have not been 'localized.' According to Heeks (2009), local improvisation needs to be done to reduce actuality-reality gaps and improve ease of use or usability. This can be through hybrids that recognize local capacities and improve success rates. However, Heeks notes that schemes to develop these hybrids in the Direct Communications are virtually nonexistent thus hampering improvisation. Participative approaches to implementation e.g. group working and end-user involvement; have to be carefully considered since most have been developed for the industrialized countries. As a result, personnel need to be trained to fully handle the usability features of IMS, which from this result seems not to be the case.

Finally, when the respondents were asked if personnel training in IMS, or lack of it, had greatly hampered effective management, 73.9% agreed, 20.3% disagreed and 5.8% were neutral. This is an indication that there were problems with personnel training which evidently affected management. This agrees with numerous literature reviewed in this study. Personnel need to be prepared for use of IMS by being educated to use it effectively and creatively. In many developing countries, however, most personnel have minimal or no IMS skills themselves and therefore cannot develop (Venezky, 2004).

## **V. CONCLUSIONS AND RECOMMENDATIONS**

IMS had been used by many staff for between 1-5 years. Many were using IMS for access of reliable financial data, summarizing financial information and strengthening financial controls. Moreover, it was used for tracing financial events and finally for preparing financial reports statements and budgets. Further, IMS was used often. The Use of IMS had improved financial management in the office. However, IMS usage was experiencing many problems thus hampering effective financial management. Moreover, it was used for tracing financial events and finally for preparing financial reports statements and budgets. Further, IMS was used often. Consequently, that lack of system security and inadequate personnel training negatively affected the effectiveness of IMS in Nyamira County. Thus, it is being recommended that the government through the Ministry of Finance should relook IMS to improve its user interfaces in a bid to make it simpler, accurate, consistent, timely and generally reliable to spur proper management. The County government should tighten the security of IMS to avoid unscrupulous practices seeking to embezzle public funds. Further, the county government should introduce intensive personnel training in IMS to equip staff with necessary skills to effectively use IMS, know the uses, reliability and security issues. The County government should avail more funds for more inclusion of IMS in the public service, since, even considering the problems, it has been shown that the system is important for overall management.

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