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Influence of School Managers' Attitudes on Their Utilisation of Educational Management Information Systems in Public Senior Schools in Nakuru County, Kenya

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Abstract

This article examined the influence of school managers' attitudes on the utilisation of Education Management Information Systems (EMIS) in public senior schools in Nakuru County, Kenya. The study was grounded in the Technology Acceptance Model (TAM2) and employed a convergent parallel research design. The final sample comprised 62 principals, 191 deputy principals and 191 class teachers. Qualitative data were obtained through interviews with the County Director of Education, 11 Sub-County Directors of Education and principals, while quantitative data were collected using questionnaires. The instruments were pretested in five schools outside the study area. The study applied descriptive and inferential statistical techniques to the quantitative data, including Pearson's correlation and simple linear regression. The qualitative data were analysed in NVivo following Braun and Clarke's six-phase thematic analysis framework. The findings revealed that school managers' attitudes significantly influenced EMIS utilisation, accounting for 24.3 per cent of the variance. Qualitative findings further indicated generally positive attitudes towards EMIS, but highlighted usability challenges, compliance-based perspectives and limited persistence despite perceived benefits. The study concluded that positive attitudes alone are insufficient to ensure sustained EMIS utilisation without adequate infrastructure and user efficacy. It recommended improving system usability, providing regular training and technical support, and demonstrating the importance of EMIS to promote sustained use. The findings have implications for policy and practice aimed at enhancing EMIS utilisation in public senior schools.

Keywords: Education Management Information System, NEMIS, school managers' attitudes, Technology Acceptance Model, utilisation.



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INTRODUCTION

The effective utilisation of Education Management Information Systems (EMIS) in public senior schools remains a significant concern, particularly in Nakuru County, Kenya, where school managers' attitudes towards the system may constrain its use. The EMIS is an online data management system for the gathering, processing and use of data for policy making, resource provisioning and quality enhancement in education. The National Education Management Information System (NEMIS) was introduced in 2018 in Kenya to improve transparency and accountability in schools and to provide information to support decision-making. The contribution of EMIS to effective management in public senior schools, however, may be limited by user-related factors, such as school managers' attitudes towards the system. The extent to which school managers' attitudes influence utilisation in Nakuru County remains insufficiently established. This study examined how school managers' attitudes affect their utilisation of EMIS in public senior schools in Nakuru County, Kenya. The significance of the study lies in its potential to inform policy and practice on improving EMIS utilisation, ultimately enhancing data-driven decision-making in schools.

School managers' attitudes towards technology are well known to be a critical determinant in the successful use of information systems. Studies abroad and in China suggest that people who perceive technology as useful and easy to use are more likely to use it and use it well. However, negative attitudes, obstacles to change, and lack of confidence in using technology are barriers to successful implementation and use (Boda & Brown, 2020). Although Boda and Brown (2020) constructed a conceptual model that combines the Technology Acceptance Model (TAM) and the Technology-Organisation-Environment (TOE) model, the findings indicated that indirect determinants, particularly users' perceptions of the system's usefulness and ease of use, had a positive effect on its utilisation following adoption. These findings are relevant to the present study, as they demonstrate that school managers' attitudes towards technology, influenced by perceptions of its usefulness and ease of use, play an important role in determining its application within educational contexts.

EMIS facilitates transparency, accountability, and timely access to educational data; it is a vital tool for educational planning, monitoring, and decision-making (Iwogbe et al., 2025). Despite EMIS's important role, its efficacy faces significant challenges related to

determinants such as Information and Communication Technology (ICT), school managers' efficacy, and school managers' attitudes in most developing countries. The use of EMIS in the region highlights governments' growing awareness of the need for reliable, timely, and accessible education data for planning and resource allocation. However, the use of EMIS in Sub-Saharan Africa remains hindered by structural and institutional barriers. Jallow and Sanner (2023) note that governments in the area are responsible for delivering basic services, such as education, but face resource constraints that can hinder service delivery.

Governments in Sub-Saharan Africa have embraced EMIS to enhance education data management, accountability, planning and evidence-based decision-making. Some Sub-Saharan countries, like South Africa, Ghana, Nigeria, Tanzania and Kenya, have introduced EMIS to enhance data management, accountability and evidence-based policy-making (Asio et al., 2022). But EMIS are still underutilised in Sub-Saharan Africa (SSA) due to structural and institutional constraints.

The UNESCO Institute for Statistics (Sigdel, 2022) produced a global analytical report that collectively incorporated the results from various countries, where the adoption of EMIS helped support decision-making, efficiency and equitable service delivery in education. It reflected a broader pattern in which EMIS utilisation increased when teachers' attitudes were positive. Studies across the globe have shown that positive attitudes towards EMIS and digital platforms play a crucial role in the adoption and utilisation of these systems. Davis (1989) established that perceived usefulness and ease of use are fundamental determinants of users' acceptance and usage behaviour of technology. In education, teachers' positive attitudes towards EMIS and perceived ease of use have emerged as consistent predictors of the degree to which teachers actually participate in the collection, management, and utilisation of data for data-driven policy-making in schools.

The Cabinet Secretary for Education is responsible for establishing and maintain an integrated and comprehensive Education Management Information System for basic education as provided in the Basic Education Act 2013. This provision mandated the Ministry of Education to set up EMIS as a tool for collecting and analysing data on basic education in Kenya (Ministry of Education, 2019). Key benefits of EMIS are to create a single source of truth for schools to

store, access and manage educational information, such as student enrolments, attendance, staff and collected fees.

According to Wamutoro et al. (2022), the Kenyan government implemented a policy on Education management information systems because the manual system is not effective in managing school activities. The manual system is cumbersome when managing student records, thus affecting the management of senior schools. Despite the rollout of EMIS in Kenya and heavy government investment in ICT infrastructure, its utilisation in public senior schools remains limited (Wamutoro et al., 2022). Some schools have reported receiving zero funding due to delays in submitting accurate student data through NEMIS.

Despite having a workable EMIS in Kenya, users face challenges in its utilisation, which seriously impacts the system's efficacy. Several studies in Kenya have attributed these ongoing problems to inadequate ICT infrastructure, insufficient training capacity for NEMIS users, and poor internet connectivity (Wamutoro et al., 2022). Therefore, this study established the influence of school managers' attitudes on their utilisation of EMIS in public senior schools in Nakuru County, Kenya. The focus on attitudes as the independent variable is consistent with the study title and distinguishes this study from prior work that examined multiple determinants without isolating attitudes.

The ICT in Education and Training Policy (2021) further emphasised capacity building and the promotion of a positive culture of digital data use in schools (Ministry of Education, 2021). Despite these policy efforts, empirical studies show wide variation in attitudes among school managers.

Although studies in Kenya have examined NEMIS implementation and ICT integration in different counties, limited empirical evidence exists on the specific influence of school managers' attitudes on EMIS utilisation in public senior schools in Nakuru County. It has been established in previous studies that a lack of adequate ICT infrastructure, inadequate training capacity of NEMIS users and inadequate internet connectivity limit the use of NEMIS (Akaranga & Makau, 2016; Kosgei et al., 2022; Wamutoro et al., 2022). These studies, however, did not focus on the variable of attitude among school managers as the focus. Moreover, EMIS use has been uneven in Kenya, with the majority of

schools in urban areas using the system to monitor attendance and performance, while its use in rural schools was constrained by its lack of timeliness, connectivity and training (Akaranga & Makau, 2016).

A study in Turbo Sub-County, Uasin Gishu County, revealed progress in record management and monitoring in the area but noted some challenges, including poor internet connectivity and a funds shortage (Kosgei et al., 2022). The findings from such contexts, however, were not transferable to the study area of Nakuru County, where empirical studies were limited. Findings from Nairobi and Kericho counties were consistent with those reported by Ouma et al. (2013), who reported that many public secondary schools in Kenya lacked adequate readiness for e-learning, reflecting broader challenges in ICT integration. ICT training is inadequate, and there is a lack of motivation among school managers to use ICT. However, most of these studies have concentrated on implementing EMIS or on the integration of ICT in general, rather than specifically on the influence of school managers' attitudes on EMIS utilisation. This study, therefore, addressed this gap by examining the influence of school managers' attitudes on their utilisation of EMIS in public senior schools in Nakuru County, Kenya.

LITERATURE REVIEW

This section reviews empirical studies on the utilisation of Education Management Information Systems (EMIS) and the factors that influence their effective use in educational institutions. The review draws on evidence from global, regional and Kenyan contexts, with particular attention to studies examining school managers' attitudes and the utilisation of EMIS.

School Principals' Attitudes and Utilisation of EMIS

A study by Arar et al. (2023) in Cairo, Egypt, found that principals' attitudes towards EMIS positively influence its adoption and use in public secondary schools. This study was based on a quantitative research design, and 120 principals were selected for data collection using a Technology Acceptance Model (TAM)- based questionnaire. The study also revealed that perceived usefulness, ease of use, and subjective norm have a significant influence on principals' attitudes toward EMIS.

The studies reviewed have demonstrated that attitudes towards technology and EMIS are important determinants of the adoption and utilisation of

technology. Most of the studies, however, tend to be either general studies on the use of ICT or administrative studies on the outcomes, and do not isolate school managers' attitudes in the school management process. In addition, theoretical perspectives are not well integrated, and there is no mixed-methods approach to exploring attitudes in depth in real school environments to utilise EMIS. The identified gaps highlight the need for a study in Nakuru County to explore the effects of school managers' attitudes on the use of EMIS in public senior schools in a context-specific way.

Deputy Principals' Attitudes and Utilisation of EMIS

Deputy principals oversee academic affairs, maintain disciplinary records, manage students' performance data, and implement necessary academic interventions. Their attitudes significantly influence the use of EMIS. The role of the Deputy Principal in an educational institution is also unique, as the Deputy Principal is often delegated authority to organise the day-to-day operations of the institution, including attendance, exams, reporting, students' records, and timetabling. Therefore, the Deputy Principal's views on EMIS may be important for its actual uptake. Across Sub-Saharan Africa, governments and development partners have undertaken various initiatives to strengthen EMIS to improve educational planning, accountability, and decision-making. These donations have enabled the creation of digital data, but questions about the best way to use EMIS remain in many schools. Typical challenges include insufficient training, technical support, and infrastructure problems, and, foremost among these, poor attitudes or resistance from users (UNESCO, 2021; Atis & Zelezny-Green, 2024).

Mwaura (2024), in a correlational quantitative study involving 186 participants in government senior schools in Nyeri County, found that training has a positive impact on attitudes towards the use of EMIS. The quantitative approach used helped provide statistical data. Still, it would not have enabled the study to explore how factors such as the technical support challenge may impact deputy principals' attitudes towards EMIS in their roles. Gachoki and Mutisya (2026) employed a design-based implementation research approach in their study of subnational education systems in Kenya. The findings revealed that leadership and a positive data culture significantly influenced the effective utilisation of EMIS, suggesting that planning and decision-making processes improve when school managers adopt constructive attitudes toward EMIS. While the study emphasised

county-level leadership and ICT staff, deputy principals' perspectives were less explored. The findings from Nairobi and Kericho counties were in line with Wamutoro et al. (2022), who found that continued mentorship and institutional support were major drivers of school managers' positive attitudes and practice towards EMIS. This supports the use of a convergent parallel design in the study, since the views of respondents from urban and rural schools were compared and combined. Therefore, the study aimed to bridge these methodological, contextual, and analytical gaps by applying a convergent parallel mixed-methods design to investigate the influence of school managers' attitudes on the use of EMIS in public senior schools in Nakuru County, Kenya.

Class Teachers' Attitudes and Utilisation of EMIS

According to the results of regional studies, teachers' attitudes are among the important factors influencing EMIS application. However, the perception of EMIS as a bureaucratic process may also decrease interest in engaging with and adopting EMIS (Atis & Zelezny-Green, 2024). Accordingly, a cross-sectional study conducted by Kebebe and Regassa (2024) in Ethiopia found that respondents who had an EMIS teacher were more likely to use EMIS frequently. Other factors, such as the quality of training, feedback mechanisms, and technical support, were also found to be key components influencing teachers' willingness to participate in EMIS in the studies. Tossy (2026) conducted a mixed-methods study with 312 teachers and school heads in Tanzania, using questionnaires and interviews. The research revealed that users with a positive attitude towards EMIS were able to use it more efficiently, especially when they were trained and provided with technical support.

In Kenya, the National Education Management Information System (NEMIS), introduced in 2018, and the ICT in Education and Training Policy (Ministry of Education, 2021) emphasise the need to strengthen EMIS and enhance digital competencies among education personnel to support evidence-based decision-making. Even with this measure, research shows differences in teacher attitudes and EMIS use among counties, related to differences in infrastructure, training, and administrative support. The study sought to address these gaps through a convergent parallel mixed-methods approach. The study collected and analysed quantitative and qualitative data concurrently to examine how school managers' attitudes shape EMIS use in public senior schools in Nakuru County, Kenya.

Theoretical Framework

Utilisation needs to be understood in relation to the individual and the environment, in the context of Educational Management Information Systems (EMIS). However, the use of EMIS is not limited to the availability of the technology; it also relies on users' skills, confidence, understanding, and attitude toward using the system, as well as the support available to do so. Hence, the present study is based on Social Cognitive Theory (SCT) and the Technology Acceptance Model (TAM), which are used to explain the use of EMIS in public senior schools in Nakuru County, Kenya. The theoretical framework is particularly relevant to the study of school managers' attitudes towards EMIS.

Technology Acceptance Model (TAM 2)

The Technology Acceptance Model (TAM) was developed by Davis (1989) to explain how individuals accept and use information technologies. The model identified two fundamental beliefs: perceived usefulness (PU), the extent to which an individual believes using a system will improve job performance, and perceived ease of use (PEOU), the extent to which the individual expects the system to require minimal effort. These beliefs shape users' attitudes toward information technology and, in turn, their behavioural intention and actual system use, as Davis (1989) suggests. TAM provides an important foundation for explaining the acceptance or rejection of information systems, has been widely applied in organisational and educational technology research, and remains a basic model in this field today. The original TAM is extremely useful in explaining perceived usefulness. Still, it has come under criticism for offering a relatively narrow range of explanations for the factors that impact perceived usefulness and users' intentions to use technology. The model neglected to consider the social and cognitive dynamics through which users develop perceptions of a technological system's usefulness. These constraints were identified by Venkatesh and Davis (2000), and an extension of the original TAM, called TAM2, was created. TAM2 added some social influence processes, as well as some cognitive instrumental processes, to expand the explanation of technology acceptance, while retaining the main concept that perceived usefulness affects the intention to use technology.

According to TAM2, users' intentions to use and perceptions of the system are influenced by social and cognitive factors. The subjective norm of the social influence process is included, as well as the voluntariness

of that process. Subjective norm refers to the extent to which important others believe that an individual should use a particular technology, as determined by important others. Voluntariness and image are related to the perceived obligation to use the technology, and image refers to the perceived benefits of the technology to the user's standing within a social/organisational group. Job relevance, output quality, result demonstrability, and ease of use are the cognitive instrumental processes. These constructs relate to how users evaluate the technology's suitability for the task, its capacity to produce high-quality products, the usefulness and benefits of using the technology, and the ease with which it can be used without exerting much effort. The processes allow TAM2 to provide a more complete explanation of why a user finds a technology useful and why they intend to use it (Venkatesh & Davis, 2000).

TAM2 is relevant to the current study because, beyond the technology being available in public senior schools, it is how school managers perceive and react to the technology in their work environment. School managers are more likely to value and use EMIS if they think it is relevant to their work, useful and reliable, able to report and make decisions, and easy to operate. Similarly, managers in the school or education system may have opinions on the use of EMIS within the school and education system. Similarly, expectations of the school and education system might also influence school managers' expectations of EMIS. All these factors can affect their acceptance of the system and their involvement in regular school management practices. The theory thus provides a basis for explaining the user acceptance aspect of EMIS use. The theory is also related to the study's focus on the attitudes of school managers towards EMIS.

While attitude is more directly connected with the original TAM, the overall TAM2 technology-acceptance logic of users' beliefs regarding usefulness, relevance and usability of an information system to influence the acceptance and intention to use it is preserved. Within the scope of this study, positive attitudes towards EMIS may indicate school managers' awareness of the system's usefulness, relevance, and benefits for administrative activities. Conversely, negative perceptions of the system will reduce the regularity of interactions with it. Therefore, the theoretical framework of TAM2 is useful for the study of technology perception and acceptance processes in utilising EMIS. TAM2 explains acceptance and intention to use EMIS, while Social Cognitive

Theory (SCT) explains the self-efficacy and reciprocal determination that underpin school managers' confidence and competence in using the system. The combined application of these theoretical perspectives enables a broader understanding of how individuals' attitudes and sense of efficacy contribute to the use of EMIS

Social Cognitive Theory

Social Cognitive Theory (SCT), developed by Albert Bandura (1986), can be used to explain human actions in terms of personal, environmental, and behavioural factors. Self-efficacy is a key tenet of the theory and refers to an individual's belief in their ability to organise and execute the actions required to achieve a particular outcome. Outcome expectations represent an individual's beliefs about the results that may arise from engaging in a particular behaviour, whereas environmental factors refer to the social and physical conditions within which the behaviour occurs and that may shape its expression. The theory of social cognition is applicable in the context of school administrators' efficacy. To make the best use of EMIS, school leaders need to be confident and competent in using the system to enter, retrieve, verify and interpret data, and to produce reports. The mixed-methods design employed in this study complements TAM2 by allowing for both the quantitative measurement of attitudes and the qualitative exploration of self-efficacy, outcome expectations and environmental factors that influence EMIS utilisation. This integration ensures that the study captures both the acceptance-related constructs of TAM2 and the efficacy-related constructs of SCT.

METHODOLOGY

The study adopted a convergent parallel mixed-methods design to examine the influence of school managers' attitudes on the utilisation of Education Management Information Systems (EMIS) in public senior schools in Nakuru County, Kenya. The design enabled the collection of quantitative and qualitative data concurrently, with the findings subsequently integrated to provide a comprehensive understanding of school managers' attitudes towards EMIS utilisation. The study was conducted in Nakuru County, which has 11 sub-counties and 384 public senior schools. The accessible population comprised principals, deputy principals and class teachers in the public senior schools, together with the County Director of Education (CDE) and 11 Sub-County Directors of Education (SCDEs). The accessible population was 1,558 respondents, comprising 384

principals, 394 deputy principals, 768 class teachers, one CDE and 11 SCDEs.

A combination of purposive and statistical sampling procedures was used. The CDE and 11 SCDEs were purposively selected because of their roles in the administration and implementation of EMIS, while principals, deputy principals and class teachers were selected using Nassiuma's (2000) sampling procedure. The initial calculated sample comprised 142 principals, 144 deputy principals and 174 class teachers. An anticipated non-response rate resulted in target samples of 191 deputy principals and 191 class teachers. However, only 62 principals participated in the study due to geographical constraints, scheduling difficulties and non-participation by some selected principals.

Questionnaires and semi-structured interview schedules were used as the primary instruments for data collection. The questionnaires were administered to principals, deputy principals, and class teachers to generate quantitative information on their attitudes towards EMIS and the extent to which the system was utilised. The attitude items assessed respondents' perceptions of the usefulness and user-friendliness of EMIS, willingness to use the system, perceived value of EMIS in school management and their disposition towards encouraging its use. Semi-structured interviews were conducted with the CDE, SCDEs and principals to obtain qualitative information on their experiences and perceptions of EMIS, particularly the factors shaping their attitudes and how these attitudes related to their use of the system. The instruments were developed in accordance with the study objective and informed primarily by the Technology Acceptance Model 2 (TAM2), which provides a framework for understanding users' acceptance and utilisation of technology.

The instruments were pretested in five public schools outside the study area to assess the clarity, relevance and suitability of the items. Content, construct and face validity were established through expert review by the researchers' supervisors and other relevant experts. Reliability of the questionnaire items measuring school managers' attitudes was assessed using Cronbach's alpha coefficient. The attitude scale yielded a coefficient of 0.844, exceeding the commonly accepted threshold of 0.70 and indicating satisfactory internal consistency.

Analysis of the quantitative data involved descriptive measures and inferential statistical procedures.

Respondents' attitudes towards EMIS were summarised using frequencies, percentages, means, and standard deviations. Pearson's correlation coefficient was used to evaluate the relationship between school managers' attitudes and EMIS utilisation. Simple linear regression was subsequently performed to assess the predictive contribution of managers' attitudes to EMIS utilisation.

For the qualitative component, interview responses were subjected to thematic analysis based on the six-phase procedure outlined by Braun and Clarke (2006). The quantitative and qualitative results were subsequently brought together to establish areas where the findings converged, differed, or complemented one another in explaining EMIS utilisation in relation to school managers' attitudes.

Ethical approval was obtained from the Kabarak University Research Ethics Committee, while research authorisation was obtained from the National Commission for Science, Technology and Innovation (NACOSTI) and the relevant education authorities. Permission was also obtained from the participating schools. Respondents were informed of the purpose of the study and participated voluntarily after providing informed consent. Participant confidentiality and anonymity were protected at every stage of the research process, including data collection, analysis, and reporting. Participants were assured that they retained the freedom to withdraw from the study at any stage without incurring any negative consequences.

RESULTS AND DISCUSSION

Demographic Characteristics of the Participants

The study collected demographic information from class-teacher respondents, including age, gender, teaching

experience, and school category. The majority of class teachers (49.7%) fell within the 25–34-year age bracket, followed by 40.1 per cent in the 35–44-year age bracket. Male teachers constituted 61.1 per cent of the sample, while female teachers accounted for 38.9 per cent. Class teachers had varied teaching experience, with 43.9 per cent having between one and five years and 29.9 per cent having six to ten years. Male deputy principals comprised 51.3 per cent of the sample, while female deputy principals accounted for 48.7 per cent. This near-equal representation was a notable improvement over the gender imbalance observed among class teachers. The majority of deputy principals (69.7%) were aged 45–54 years, followed by 21.1 per cent aged 35–44 years, and only 2.0 per cent under 35 years. The majority of deputy principals (49.3%) had more than 15 years of teaching experience, 43.4 per cent had 11 to 15 years, and only 7.2 per cent had 6 to 10 years. Male principals constituted 56.5 per cent of the sample, while female principals accounted for 43.5 per cent. The majority of principals (58.1%) were aged 45–54 years, followed by 37.1 per cent aged 55 years and above, and only 4.8 per cent aged 35–44 years. The vast majority of principals (85.5%) had more than 15 years of teaching experience, while 14.5 per cent had between 11 and 15 years. No principal had fewer than eleven years of experience. Class teachers served as secondary informants in this study, providing contextual data on EMIS utilisation, while the analysis primarily focused on school managers' attitudes.

Descriptive Statistics: School Managers' Attitudes

Deputy principals rated statements related to their attitudes toward EMIS. Table 1 presents deputy principals' responses to statements about their attitudes to effective EMIS utilisation.

Table 1: School Managers' Attitudes on Effective EMIS Utilisation: Deputy Principals' Response

Statement	SD (1)	D (2)	N (3)	A (4)	SA (5)	Mean	SD
I believe all school managers should use EMIS	0 (0.0%)	9 (5.9%)	31 (20.4%)	71 (46.7%)	41 (27.0%)	3.95	0.84
EMIS is good for generating student academic reports	1 (0.7%)	13 (8.6%)	39 (25.7%)	56 (36.8%)	43 (28.3%)	3.84	0.96
EMIS is good for keeping students' discipline records	3 (2.0%)	14 (9.2%)	35 (23.0%)	59 (38.8%)	41 (27.0%)	3.80	1.01
I am willing to use EMIS regularly in my duties	4 (2.6%)	10 (6.6%)	47 (30.9%)	47 (30.9%)	44 (28.9%)	3.77	1.03
EMIS is user-friendly	10 (6.6%)	39 (25.7%)	44 (28.9%)	35 (23.0%)	24 (15.8%)	3.16	1.17
I would not encourage other school managers to use EMIS	13 (8.6%)	36 (23.7%)	52 (34.2%)	33 (21.7%)	18 (11.8%)	3.05	1.13
I find little value in using EMIS for school management	20 (13.2%)	37 (24.3%)	46 (30.3%)	36 (23.7%)	13 (8.6%)	2.90	1.16

Note: N = 152. SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, SA = Strongly Agree. Percentages may not sum to 100 due to rounding.

The deputy principals' attitudes towards EMIS are summarised in Table 1. Overall, 73.7 per cent agreed with the statement 'I believe all school managers should use EMIS,' which recorded the highest mean score (3.95) "I believe all school managers should use EMIS". The next most popular answer was, "EMIS is good for producing student academic reports" (mean 3.84, 65.1% agreement). The scores for "EMIS is good for keeping students' discipline records" were 3.80 (65.8% agreement). "I am willing to use EMIS regularly in my duties" had a mean of 3.77 (59.8% agreement). The high scores suggest that deputy principals have positive attitudes towards EMIS and its potential benefits.

The overall impression school managers have of the value of EMIS is positive; however, their impression of its usefulness in practice is less positive. The statement "I would not encourage other school managers to use EMIS" had a mean of 3.05 and a third of respondents disagreed. 33.5% agreed that "I find little value in using

EMIS for school management" (mean 2.90). The user-friendliness of EMIS was rated at 3.16 (38.8% agreement).

These findings indicate that while school managers appreciate the potential benefits of EMIS, many experience challenges in its actual use. The results imply that improving training, technical support, and system usability is essential for enhancing the effective utilisation of EMIS in public secondary schools.

Inferential Statistics: Regression Analysis for Attitude

A simple linear regression was performed with attitude composite mean score as the predictor. The regression equation was:

$$Y = \beta_0 + \beta_3 X_3 + \varepsilon$$

Where Y = Effective EMIS Utilisation, X_3 = School Managers' Attitudes, β_0 = constant, β_3 = slope coefficient, ε = error term. Table 2 presents the regression results.

Table 2: Regression Results for Influence of School Managers' Attitudes on Their Effective Utilisation of EMIS

Component	Statistic / Coefficient	Value
Model Fit	R	0.493
	R ²	0.243
	Adjusted R ²	0.238
	Std. Error of Estimate	0.60233
ANOVA	Regression Sum of Squares	17.503
	Regression df	1
	Regression Mean Square	17.503
	Residual Sum of Squares	54.419
	Residual df	150
	Residual Mean Square	0.363
	Total Sum of Squares	71.923
	Total df	151
	F	48.245
	Sig. (p)	0.000
	(Constant) Unstandardised B	-0.124
Coefficients	Std. Error	0.531
	T	-0.233
	Sig. (p)	0.816
	95% CI Lower	-1.173
	95% CI Upper	0.926
	Attitude Composite Mean (17 items) – Unstandardised B	1.039
	Std. Error	0.150
	Standardised Beta	0.493
	T	6.946
	Sig. (p)	0.000
	95% CI Lower	0.743
	95% CI Upper	1.335

Predictor: Attitude. Dependent Variable: Effective EMIS Utilisation. Note: B = Unstandardised coefficient; Beta = Standardised coefficient.

The regression analysis produced a statistically significant model, $F(1, 150) = 48.245$, $p < 0.05$. The model yielded an R^2 of 0.243, indicating that attitude accounted for 24.3 per cent of the variance in effective EMIS use. The model-adjusted R^2 of 0.238 indicated that the model would still account for approximately 23.8 per cent of the population's variance. The R^2 value of 0.243 was lower than that for ICT Infrastructure (0.344) and ICT efficacy (0.395), suggesting that attitude was a weaker predictor than ICT Infrastructure and efficacy.

The estimated regression equation for testing the influence of school managers' attitudes on their effective utilisation of EMIS is:

$$Y = -0.124 + 1.039X_3$$

Where Y is the predicted effective EMIS utilisation score and X_3 is the attitude composite score. The constant ($B = -0.124$) was not statistically significant ($p = 0.816$). The slope coefficient ($B = 1.039$, $p < 0.05$) indicated that for each one-unit increase in the attitude composite score, effective EMIS utilisation was predicted to increase by 1.039 units.

The unstandardised coefficient of 1.039 meant that a school where managers scored one point higher on attitudes would be predicted to score 1.039 points higher on effective EMIS utilisation. This effect was slightly smaller than that of ICT infrastructure (1.392) and efficacy (1.231).

The standardised beta coefficient of 0.493 ($p < 0.05$) indicated that a one standard deviation increase in

attitudes was associated with a 0.493 standard deviation increase in effective EMIS utilisation. This was the smallest standardised coefficient among the three simple regression models, confirming that attitude had the weakest individual influence on EMIS utilisation.

The attitude coefficient had a 95 per cent confidence interval extending from 0.743 to 1.335. Because the interval excluded zero, the coefficient was statistically significant. The interval was wider than those for ICT infrastructure and efficacy, indicating slightly less precise estimation, though still acceptable.

Cohen's f^2 for the model was calculated as $f^2 = R^2 / (1 - R^2) = 0.243 / 0.757 = 0.321$. According to Cohen's (1988) conventions, an f^2 of 0.321 is between medium (0.15) and large (0.35), leaning toward large. This indicated that attitude had a moderate-to-large effect on EMIS utilisation, though smaller than that of ICT infrastructure and efficacy.

Qualitative Findings: Attitudes Toward EMIS

The qualitative findings identified four sub-themes regarding attitudes towards EMIS: general positive attitudes, usability frustrations, perceived benefits, and compliance orientation.

General Positivity

Although there are difficulties, EMIS is perceived as useful, and many managers have positive attitudes towards it. The County Director of Education gave an overview:

Attitudes are mixed, and some school leaders have welcomed EMIS and view it as a useful management tool; they use the data to inform their decisions, and they encourage their staff to use the system appropriately, but others see it as another bureaucratic requirement from the Ministry that they have to meet to avoid being penalised (CDE-01)

A principal at an extra-county school explained how his attitude evolved with time:

Attitudes change when people are given the support they need -- when I first started using EMIS, I hated it, found it confusing and time-consuming. Still, as I started using it more, I began to understand its logic, and now I couldn't do school without it (P-RG-06)

Frustration with Usability

While overall satisfaction was high, there was some discontent with certain features on the EMIS platform. One of the sub-county school principals explained his dismay:

The system is frustrating because our Internet is slow and the pages take too long to load. The menus are not intuitive, and I can't find all the information I need. I have started to resent having to use it. I do it because I must, not because I want to (P-KS-04)

These findings are consistent with the DHIS2 (2024) report, which noted that many EMIS platforms are not user-friendly, deterring stakeholder engagement, particularly at the regional and local levels, and that EMIS data often lack the granularity, timeliness, and credibility needed to provide useful insights.

Perceived Benefits

Those managers who had overcome the early hurdles saw substantial gains in EMIS. A principal from an extra-county school explained the positive aspects of decision-making:

I use EMIS data to inform student placement, resource, and teacher deployment decisions. Before EMIS, these decisions were made on a guess-and-gimme basis. Now they are based on evidence. I can see which subjects' students are struggling with, which teachers are achieving the best results, and which classes have attendance problems (P-RG-06)

These findings are consistent with those of Hidayat et al. (2025), who applied the Technology Acceptance Model to EMIS 4.0 in a faith-based school context and found that both attitude and intention significantly predicted actual system use, affirming the relevance of TAM for understanding EMIS adoption.

Compliance Orientation

Despite recognition of benefits, many managers adopted a compliance-oriented attitude, using EMIS only because they were required to. A Sub-County Director confirmed that compliance orientation was widespread:

Many principals see EMIS as something they do for the Ministry, not something that helps them manage their schools. They enter the data because they will be penalised if they do not. They do not use the data for their own decision-

making. They do not download the reports or analyse the trends (SCDE-GL-04)

A principal from a county school described the compliance mindset:

I complete the EMIS forms because the sub-county director will call me if I am late. That is my motivation: avoiding a phone call. Not improving school management. Not making better decisions. Just avoiding trouble (P-ML-02)

The quantitative and qualitative findings for Objective 3 converged. The regression analysis showed that attitude accounted for 24.3 per cent of the variance in effective EMIS utilisation ($R^2 = 0.243$, $\beta = 0.493$, $p < 0.05$), with a moderate-to-large effect size ($f^2 = 0.321$). This was the smallest R^2 among the three determinants, indicating that attitude was a weaker predictor than infrastructure or efficacy. The qualitative findings explained why. The quantitative data showed that while 73.7 per cent of deputy principals agreed that "all school managers should use EMIS," only 38.8 per cent found EMIS user-friendly. Only 32.3 per cent stated that they would not encourage other school managers to use EMIS. The qualitative findings explained this apparent contradiction: managers believed in the concept of EMIS but were frustrated by the specific implementation (P-KS-04: slow loading, non-intuitive menus, unavailable helpdesk). Class teachers' responses were used to triangulate these findings but were not analysed as a primary variable.

Discussion

The findings of this study provide compelling evidence that school managers' attitudes are a significant but relatively weaker determinant of effective EMIS utilisation in public senior schools in Nakuru County, Kenya. The quantitative results revealed that attitude accounted for 24.3 per cent of the variance in effective EMIS utilisation ($R^2 = 0.243$, $\beta = 0.493$, $p < 0.05$), with a moderate-to-large effect size ($f^2 = 0.321$). This made attitude the weakest individual predictor among the three determinants examined (ICT infrastructure, efficacy, and attitude).

The descriptive statistics showed that deputy principals had generally positive attitudes towards EMIS, with high mean scores for statements about the system's value for generating academic reports (mean 3.84), keeping discipline records (mean 3.80), and the belief that all school managers should use EMIS (mean 3.95).

However, the statement "EMIS is user-friendly" received a lower mean score of 3.16, with only 38.8 per cent agreement. This indicates that while managers recognise the potential benefits of EMIS, they experience challenges with its usability.

The qualitative results provided rich explanations for this apparent contradiction. Managers believed in the concept of EMIS but were frustrated with the specific implementation, including slow loading times, non-intuitive menus, and an unavailable helpdesk. The compliance orientation described by SCDE-GL-04 and P-ML-02 explained why positive attitudes toward EMIS as a concept did not automatically translate into effective use. Managers who viewed EMIS as a bureaucratic requirement rather than a management tool were less likely to use it effectively.

The findings accord with the Technology Acceptance Model proposed by Davis (1989), which suggests that users' perceptions of a system's usefulness and ease of use influence their attitudes, subsequently affecting their intention to use and actual use of the system. The weaker predictive power of attitude relative to infrastructure and efficacy suggested that positive attitudes alone were insufficient to drive effective EMIS utilisation in the presence of significant infrastructure deficits and low managerial confidence. Ibrahim et al. (2025) found that in Ghanaian senior high schools, a high percentage of teachers (92.1%) believed attendance at EMIS training was encouraging and positive, yet implementation challenges persisted. The finding suggested that although interventions that focus on attitude are helpful, they should be coupled with strengthened infrastructure and effectiveness to make EMIS use more significant.

The qualitative findings also revealed that attitudes could change over time with persistent use and adequate support. The principal from an extra-county school (P-RG-06) described his evolution in attitude from hate to appreciation, attributing his change to continued use and to a supportive colleague. This case illustrated that attitudes were malleable and that negative firsthand experiences did not have a lasting impact on utilisation outcomes. This finding has important implications for intervention design, suggesting that sustained support and positive experiences with the system can transform initial negative attitudes.

The compliance orientation observed among some managers is particularly concerning. When managers

view EMIS as a compliance requirement rather than a management tool, they are less likely to use the system for strategic decision-making. This finding aligns with the work of Onsomu et al. (2025), who found that while EMIS adoption is influenced by technological, organisational, and environmental factors, user attitudes remain a critical determinant of successful implementation, particularly in developing educational contexts.

The findings also support those of UNESCO (2021) and Atis and Zelezny-Green (2024), which identified inadequate training, limited technical support, and system-related challenges as key barriers to effective EMIS utilisation in Sub-Saharan Africa. They also agree with Asio et al. (2022), who found that positive attitudes towards EMIS are more likely to translate into effective utilisation when users receive sufficient training and technical support.

CONCLUSION AND RECOMMENDATIONS

Conclusion: Based on the findings, the study drew the following conclusions. The attitudes of the school management had a moderate positive influence on the use of EMIS. The majority of managers had positive attitudes towards EMIS and felt that all school managers should use it. But positive attitudes alone weren't enough to drive effective use with infrastructure deficits and low efficacy.

School managers appreciated the potential benefits of EMIS for generating academic reports, keeping discipline records, and supporting school management. However, many experienced challenges with system usability, including slow loading times, non-intuitive menus, and limited technical support. These challenges contributed to a compliance orientation among some managers, who viewed EMIS as a bureaucratic requirement rather than a management tool.

The study also found that attitudes were malleable and could change over time with persistent use and adequate support. Managers who received training, technical support, and positive experiences with the system developed more positive attitudes toward the system and used it more effectively.

Recommendations: The study recommends that the government invest further in improving the usability of the EMIS platform. Specific enhancements should include user-friendly interface design to minimise the

number of clicks required to perform routine functions, in-system tutorials and help features that provide step-by-step guidance, functionality for uploading videos and other multimedia content to student records, and mechanisms that allow regular data updates without technical difficulties. The Ministry of Education should also establish a long-term programme of continuous professional development for school managers on the use of EMIS. Such a programme should move beyond the one-day training model, which may be insufficient for sustained competence, and incorporate regular refresher courses, school-based mentorship in which confident users support less confident colleagues, hands-on practice sessions, and the development of local EMIS champions in each school at least twice a year.

The Ministry should further address challenges related to technical support by providing adequate ICT personnel to support EMIS implementation at the sub-county level. The study recommends the appointment of at least one dedicated ICT officer in each sub-county to provide technical assistance. The study further reports that seven ICT officers are currently serving 11 sub-counties, a staffing level that the County Director considered inadequate. The Ministry should also facilitate the use of ICT-trained teachers as first-line technical support within schools and establish a feedback mechanism to strengthen the connection between data submission and the subsequent use of EMIS data. In addition, the Ministry should demonstrate the practical value of EMIS to school managers by providing regular feedback on data quality, demonstrating how EMIS data can support school-level decision-making, and recognising schools that use the system effectively. Such measures could help shift the orientation towards EMIS from compliance-based use to more strategic utilisation.

Further research should examine the relationship between EMIS utilisation and student learning outcomes, as the current study focused on factors associated with EMIS utilisation rather than its effects on educational quality. Research should also examine EMIS utilisation over time as infrastructure develops and training programmes are implemented. Because the current study used a cross-sectional design, it primarily examined associations at a single point in time. Longitudinal research that follows the same schools over two or three years and assesses EMIS utilisation before and after interventions, such as infrastructure investment, training programmes and usability improvements, could provide stronger evidence regarding changes over time and the effects of such

interventions. Finally, comparative studies across counties in Kenya should be undertaken to determine whether the factors identified in Nakuru County are also evident in counties with different levels of infrastructure, training opportunities and socio-economic conditions.

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