

KEMI Journal of Educational Leadership and Management

KJELM

[ISSN 3079-4048]

Volume: 2 Issue: 1 | Jun-2026

Transformational leadership in school kitchen management: Enhancing food safety in learning institutions in Kenya

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Cite this article in APA

Ndaramu, G. O. (2026). Transformational leadership in school kitchen management: Enhancing food safety in learning institutions in Kenya. Kenya Journal of Educational Leadership and Management, 1(1), xx–xx. https://doi.org/10.68147/2734d3ba

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Abstract

Food safety in schools is a critical determinant of student health, well-being, and academic performance, particularly in Kenya where school feeding programs serve millions of learners daily. Despite its importance, kitchen management is often treated as a technical task rather than a leadership responsibility, leaving institutions vulnerable to hygiene lapses and inefficiencies. This study investigates how transformational leadership can enhance food safety outcomes in school kitchens. Using a mixed-methods design, qualitative interviews with administrators and quantitative surveys of kitchen staff were conducted to examine leadership styles, staff morale, and compliance with hygiene standards. Findings reveal that schools led by transformational leaders characterised by inspirational motivation, intellectual stimulation, individualised consideration, and idealised influence demonstrated higher compliance, stronger morale, and more consistent adoption of hygiene practices. Improvements were achieved through low-cost interventions such as supervision, communication, and staff recognition, alongside selective use of simple technologies. Conversely, transactional and laissez-faire approaches were associated with inconsistent compliance and reactive responses. Persistent barriers included resource constraints, policy-practice gaps, and limited leadership training. The study concludes that embedding transformational leadership principles into kitchen management strengthens food safety, institutional governance, and educational outcomes, reframing food safety as a strategic priority within school leadership.

Key terms: Transformational Leadership; Food Safety; School Kitchen Management; Technology Integration; Educational Governance

1.0 INTRODUCTION

1.1 Background of the Study

Food safety within educational institutions is a critical determinant of learner health, nutritional status, and academic continuity. Within the Kenyan context, where school feeding programs accommodate over 2.6 million learners daily, ensuring consistent kitchen hygiene is a profound operational and governance challenge. The public health consequences of oversight failures in school kitchens are severe. Empirical reports from the International Livestock Research Institute (ILRI, 2023) indicate that foodborne illnesses in Kenya exert a socio-economic and public health toll exceeding that of major chronic conditions like diabetes or tuberculosis, directly driving child stunting, institutional absenteeism, and long-term developmental delays.

The systemic vulnerability of school kitchens has been underscored by several documented public health failures. For instance, in February 2025, a severe food contamination incident at St. Thomas Aquinas Igumori Secondary School in Embu County resulted in the hospitalisation of 68 students after consuming contaminated beef, which prompted urgent national corrective directives from the Ministry of Health. Furthermore, epidemiological lapses such as the cholera outbreak linked to school meals in Nairobi demonstrated how infrastructure deficits and poor sanitation routines disrupt educational continuity. Evaluations in Machakos and Kisii counties further confirm that weak institutional supervision, fragmented procurement systems, and inadequate training for kitchen staff cause recurring food safety failures across public primary institutions.

Despite its direct connection to student welfare and institutional risk, kitchen management has traditionally been relegated to an isolated, technical operation rather than being treated as a vital component of educational governance. This study re-centres school kitchen management within the academic framework of educational leadership. It posits that transformational leadership provides a robust mechanism to bridge existing compliance gaps and cultivate an active culture of food safety. By executing visionary guidance, enhancing staff engagement, and strategically deploying accessible technological tools, educational administrators can transform kitchen environments from sites of high operational risk into safe, optimised components of institutional excellence.

1.2 Problem Statement

While national frameworks such as the National Food Safety Policy and the National School Meals and Nutrition Strategy (2022–2032) set rigorous benchmarks for institutional feeding programs, a significant policy-to-practice disconnect persists across Kenyan schools. This execution gap is characterised by fragmented procurement, irregular hygiene supervision, low kitchen staff morale, and an over-reliance on reactive management when contamination occurs.

Traditional administrative approaches treat kitchen management as a routine technical chore, leaving schools vulnerable to preventable foodborne hazards. Although high-income educational contexts rely heavily on capital-intensive smart automation to mitigate these risks, such solutions remain structurally unviable for most resource-constrained Kenyan learning institutions.

While previous research highlights the technical components of food storage, temperature monitoring, and sanitation routines, there is a distinct gap in empirical literature regarding how administrative leadership styles actively influence food handler behaviour and compliance metrics. This study addresses this exact research gap by examining the relationship between transformational leadership practices and

the optimisation of food safety outcomes in Kenyan school kitchens, establishing how leadership behaviours can compensate for infrastructure limitations to drive behavioural compliance.

1.3 Objectives of the Study

General Objective

To examine how digital skills training and artificial intelligence can be leveraged to foster inclusive educational leadership in marginalised communities.

Specific Objectives

1. To examine the role of digital skills training in fostering inclusive educational leadership.
2. To analyse how AI tools can enhance education and leadership outcomes in marginalised communities.
3. To identify barriers and opportunities for integrating digital skills and AI in marginalised educational settings.
4. To recommend strategies for policymakers, educators, and organisations to promote inclusive leadership.

1.4 Research Questions

This study was guided by the following research questions:

1. How does digital skills training empower leaders and learners in marginalised communities? This question sought to examine the extent to which digital competencies enhance educational leadership, support learner participation, strengthen decision-making processes, and improve access to educational opportunities among underserved populations.
2. What role does artificial intelligence play in enhancing inclusive educational leadership? The study explored how AI-driven tools and technologies contribute to personalised learning, educational management, data-informed decision-making, and equitable access to educational resources for diverse learners, including those with disabilities and learning challenges.
3. What barriers hinder the adoption of digital skills and artificial intelligence in marginalised communities? This question investigated the infrastructural, socioeconomic, technological, cultural, and institutional factors that limit the effective integration of digital technologies and AI in educational settings serving disadvantaged populations.
4. What best practices can ensure the effective integration of digital skills and artificial intelligence for inclusive educational leadership? The study examined leadership practices, policy interventions, capacity-building initiatives, governance frameworks, and collaborative approaches necessary for promoting sustainable, ethical, and equitable use of technology in education.

These research questions provided the framework for investigating how digital skills training and artificial intelligence can be strategically leveraged to strengthen inclusive educational leadership and improve educational outcomes in marginalised communities.

2.0 LITERATURE REVIEW

2.1 Global Perspectives on Food Safety and Leadership

Globally, food safety is recognised as a fundamental component of public health and institutional

governance. Educational institutions increasingly utilize digital temperature monitoring systems, inventory management technologies, and automated sanitation systems to improve food safety standards and reduce the risks associated with foodborne illnesses (World Health Organisation [WHO], 2022). Leadership plays a critical role in facilitating the adoption of these technologies and creating cultures of accountability within institutions that support effective food safety management (Sharma & Adeoye, 2024).

Studies have shown that transformational leaders are more effective in promoting innovation, staff engagement, and regulatory compliance than transactional leadership approaches, which often emphasise supervision and corrective actions. Transformational leadership encourages proactive problem-solving, staff empowerment, organisational learning, and continuous improvement, all of which are essential components of sustainable food safety management systems (Bass & Riggio, 2006; Sharma & Adeoye, 2024).

Several studies conducted in developed countries have demonstrated that institutions with strong leadership support achieve higher compliance with hygiene standards, food safety protocols, and quality assurance systems than institutions relying solely on procedural enforcement (Kelly et al., 2007). Effective leadership contributes to the creation of a positive organisational culture in which food safety becomes a shared responsibility rather than an isolated technical function (WHO, 2022).

2.2 Food Safety in African Educational Institutions

School feeding programmes remain central to efforts aimed at reducing child malnutrition, improving school attendance, and enhancing educational outcomes across Africa. However, many educational institutions continue to face challenges related to food safety as a result of inadequate infrastructure, weak policy implementation, insufficient staff training, and limited financial resources (African Union as cited in Samuel, 2024).

The Food and Agriculture Organisation (FAO) and other international agencies have emphasised the need for leadership reforms to strengthen food hygiene standards and safe food handling practices within school feeding programmes. Transformational leadership has been identified as particularly effective in resource-constrained environments because it encourages staff commitment, innovation, and problem-solving even when institutional resources are limited (Samuel, 2024).

Evidence from East African pilot programmes further demonstrates that leadership-focused interventions, including staff motivation, community participation, and targeted supervision, can significantly improve hygiene standards and reduce contamination risks in school kitchens. These findings reinforce the view that food safety challenges require both technical and leadership solutions (Samuel, 2024).

2.3 Food Safety and Educational Leadership in Kenya

Kenya has made significant investments in school feeding initiatives through the National School Meals and Nutrition Strategy (2022–2032), which seeks to improve learner nutrition and educational participation. Despite these efforts, implementation remains inconsistent across schools due to funding constraints, weak monitoring systems, fragmented procurement structures, and inadequate capacity among food handlers (Kamau et al., 2024; UNICEF, 2025).

Several food contamination incidents reported in Kenyan schools have highlighted the need for stronger leadership and accountability mechanisms in school kitchen management. For example, the 2025 food poisoning incident at St. Thomas Aquinas Igumori Secondary School and previous outbreaks linked to school meals revealed weaknesses in hygiene supervision, food handling practices, and institutional oversight (International Livestock Research Institute, 2023; UNICEF, 2025).

Research by Kiilu and Mugambi (2019) found that many schools face difficulties in enforcing food safety standards because of limited training opportunities, inadequate supervision, and weak institutional support systems. Similarly, Ngere (2010) reported that poor sanitation practices and insufficient monitoring contributed significantly to food safety risks in schools. These findings suggest that leadership plays an important role in creating systems that promote compliance and accountability (Kiilu & Mugambi, 2019; Ngere, 2010).

Onesmus (2020) emphasized that strict adherence to food storage requirements, cooking temperatures, sanitation procedures, and hygiene monitoring is essential for preventing foodborne illnesses in institutional kitchens. The study identified leadership support, staff training, and regular supervision as critical determinants of food safety compliance. These factors closely align with the fundamental principles of transformational leadership, suggesting that leadership approaches can significantly influence food safety outcomes in school kitchens (Onesmus, 2020).

Furthermore, policy analyses indicate that although national frameworks exist, a substantial gap remains between policy formulation and implementation. Weak leadership structures, insufficient monitoring, and limited staff motivation continue to undermine the effectiveness of food safety policies in many schools (Nairobi City County Government, 2025; UNICEF, 2025). Consequently, there is a need to examine how transformational leadership can bridge these gaps and contribute to the development of safer and more accountable food management systems within educational institutions (Bass & Riggio, 2006; Burns, 1978).

2.4 Research Gap

Although existing studies have examined food safety practices, school feeding programmes, and policy implementation challenges in educational institutions, limited research has explored the relationship between leadership styles and food safety outcomes in school kitchens. Most studies concentrate on technical aspects such as food storage, sanitation, procurement systems, and infrastructure requirements (Kiilu & Mugambi, 2019; Ngere, 2010).

Furthermore, while Transformational Leadership Theory has been widely applied in studies of educational management and organisational performance, its application in school kitchen management remains underexplored in the Kenyan context (Bass & Riggio, 2006; Burns, 1978).

This study therefore addresses this gap by examining how transformational leadership practices influence food safety culture, staff motivation, compliance with hygiene standards, and overall food safety outcomes in Kenyan school kitchens. By situating food safety within the broader framework of educational leadership and governance, the study contributes to both educational management literature and food safety scholarship.

4.0 Methodology

4.1 Research Design

This study employed a mixed-methods research design, integrating both qualitative and quantitative approaches to provide a holistic understanding of how transformational leadership influences food safety in school kitchen management. The combination of methods allowed for triangulation of data, enhancing validity and depth of findings.

4.2. Study Population and Sampling

The target population comprised school administrators who included principals, deputy principals, and

kitchen supervisors. It also went deep to reaching out to the direct staff who deal with food preparation, production and presentation, i.e., the kitchen brigade (cooks, food handlers, and support personnel)

A stratified random sampling technique was used to select a representative sample of 30 schools across Kenya, including both public and private institutions from urban and rural settings. Stratification ensured diversity in school size, funding levels, and administrative structures.

4.3 Data Collection Methods

The research employed both qualitative and quantitative aspects.

In regards to Qualitative Component, Semi-structured interviews were conducted with school administrators to explore leadership styles, decision-making processes, and attitudes toward food safety and technology adoption.

Secondly, interview guides were developed based on the dimensions of Transformational Leadership Theory (Burns, 1978; Bass, 1985), focusing on inspirational motivation, intellectual stimulation, idealised influence, and individualised consideration.

Quantitative Component: Structured questionnaires were administered to kitchen staff to assess knowledge and practices related to food safety, training levels and frequency, use of technological tools (digital thermometers, automated inventory systems, etc.) and perceptions of leadership support and supervision.

The questionnaire included both closed-ended and Likert-scale items, enabling statistical analysis of trends and correlations.

4.4 Data Analysis

Qualitative data from interviews were transcribed and analysed thematically using NVivo software, with codes aligned to transformational leadership dimensions and food safety principles.

Quantitative data were analysed using SPSS, employing descriptive statistics, cross-tabulations, and regression analysis to identify relationships between leadership practices and food safety outcomes.

4.5 Ethical Considerations

Informed consent was secured from all participants. Confidentiality and anonymity were maintained throughout the study, and participation was voluntary.

Limitations

The study was limited to schools in Kenya and may not fully capture regional variations across East Africa. Self-reported data may be subject to bias, particularly in assessing leadership behaviour and food safety compliance. Technological adoption was measured based on availability and usage, not technical proficiency or long-term impact.

5.0 Findings and Discussion

Leadership Styles and Food Safety Culture

Interviews revealed that schools led by administrators who embody transformational leadership traits such as inspirational motivation, individualised consideration, and intellectual stimulation demonstrated stronger food safety cultures. These leaders fostered accountability and teamwork, even in contexts with limited resources. Simple practices such as consistent supervision, clear communication, and role

modelling hygiene standards proved more effective than reliance on advanced technologies.

5.0 FINDINGS

5.1 Leadership Styles and Food Safety Culture

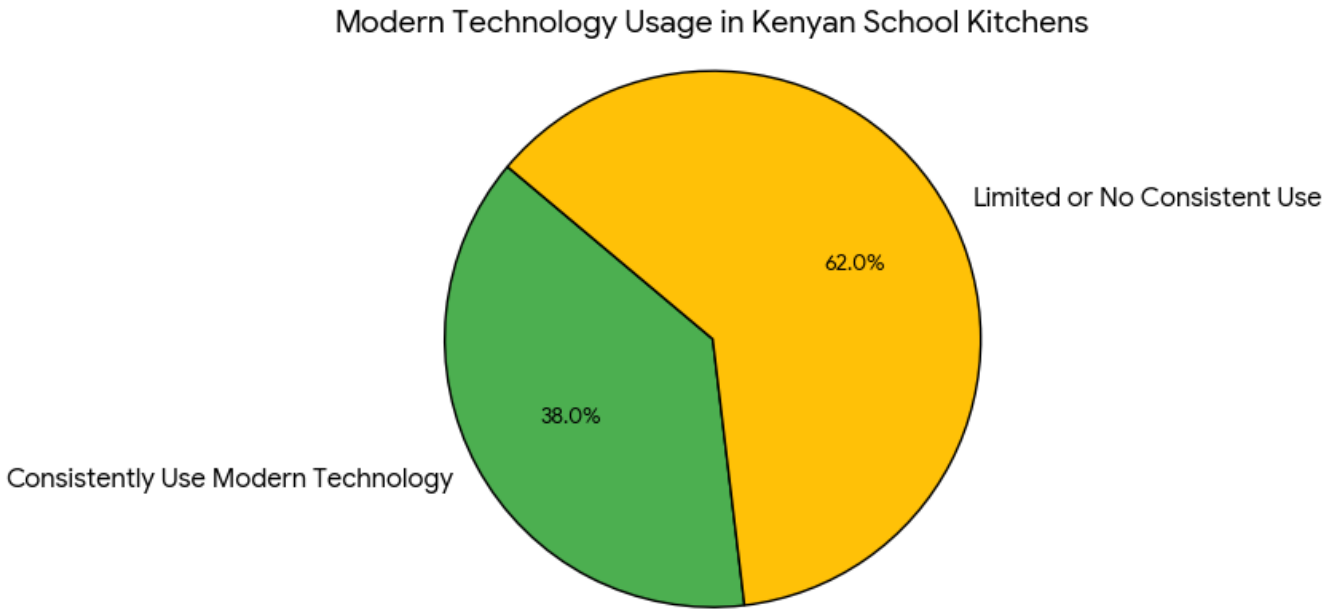
Interviews revealed that schools led by administrators who demonstrated transformational leadership traits, including inspirational motivation, individualised consideration, and intellectual stimulation, exhibited stronger food safety cultures. These leaders fostered accountability, teamwork, and compliance with hygiene standards even in resource-constrained environments. Simple practices such as consistent supervision, clear communication, and role modelling of hygiene standards were reported to be effective in promoting food safety compliance.

5.2 Practical Food Safety Measures

Quantitative findings showed that only 38% of schools consistently used modern food safety technologies such as digital thermometers and automated inventory systems. However, schools characterised by transformational leadership demonstrated greater compliance with fundamental hygiene protocols, including:

- Proper handwashing and surface sanitation.
- Safe food storage and cooking temperature monitoring.
- Regular cleaning schedules.
- Staff accountability and compliance checks.

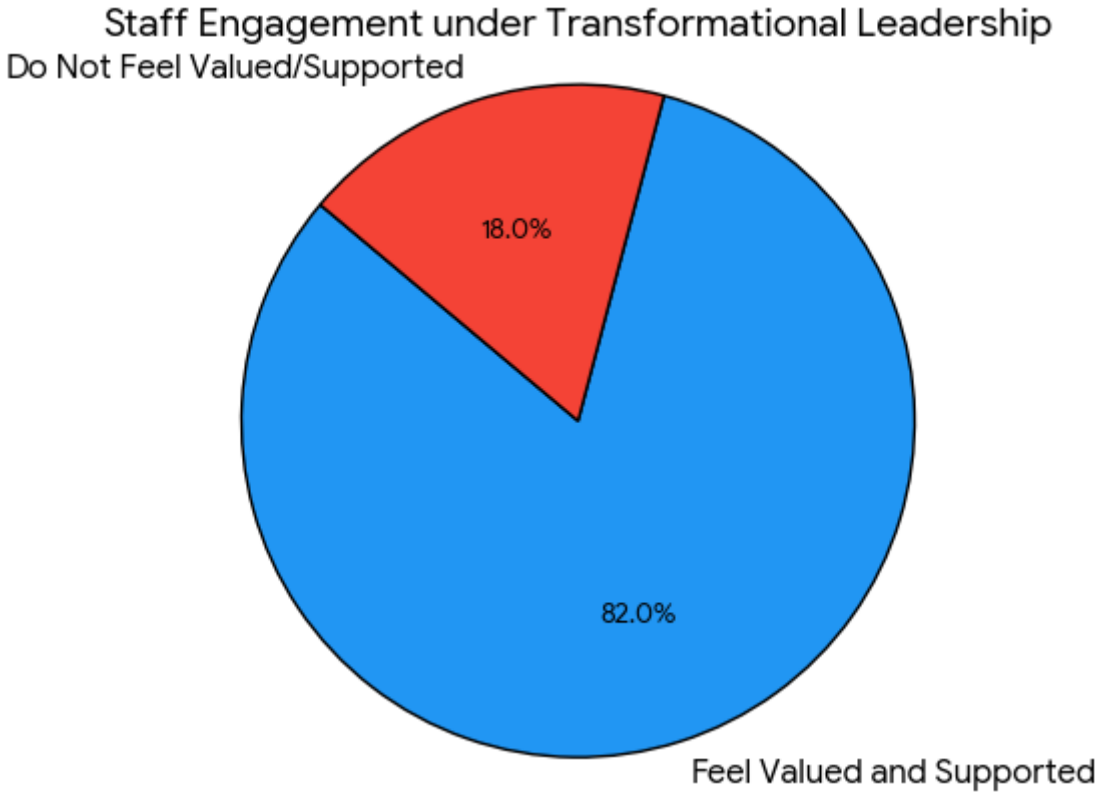
These findings indicate that effective leadership promotes adherence to food safety practices regardless of technological limitations.



5.3 Staff Engagement and Supervision

The study established that 82% of kitchen staff in schools with transformational leadership reported feeling valued and supported. These schools exhibited higher levels of compliance with hygiene

standards compared to schools where staff engagement was limited. Leaders who provided continuous guidance, encouragement, feedback, and recognition were more successful in motivating compliance than those relying primarily on periodic training workshops.



5.4 Challenges in Implementation

Despite the positive influence of transformational leadership, several challenges were identified:

- Resource constraints that limited infrastructure improvements and acquisition of food safety equipment.
- Policy-practice gaps resulting from inconsistent implementation of national food safety guidelines.
- Limited access to structured food safety training programmes.
- Inadequate technological resources for monitoring and record keeping.

These challenges continued to affect food safety management across many schools.

6.0 DISCUSSION

6.1 Transformational Leadership and Food Safety Compliance

The findings suggest that transformational leadership contributes significantly to the development of positive food safety cultures in school kitchens. Consistent with Transformational Leadership Theory, leaders who inspire, support, and engage staff create environments where food safety becomes a shared responsibility rather than merely an operational requirement. These findings align with Bass and Riggio (2006) and Burns (1978), who argue that transformational leaders influence behavioural change by motivating followers toward common organizational goals.

6.2 Leadership as a Substitute for Resource Constraints

An important finding of the study is that leadership commitment can partially compensate for limited technological and infrastructural resources. Schools with transformational leaders demonstrated stronger compliance with hygiene standards despite low adoption of modern food safety technologies. This suggests that leadership practices such as supervision, communication, and accountability are critical determinants of food safety performance.

6.3 Implications for Educational Governance

The findings indicate that food safety should be viewed not merely as a technical function but as a strategic educational leadership responsibility. Embedding transformational leadership principles into school kitchen management can strengthen institutional governance, improve staff motivation, enhance compliance with food safety regulations, and ultimately contribute to learner health and academic success.

7.0 CONCLUSION AND RECOMMENDATIONS

7.1 Conclusion

Food safety in schools is both a public health and leadership concern. The study established that transformational leadership positively influences food safety culture, staff motivation, and compliance with hygiene standards. Schools led by transformational leaders demonstrated stronger accountability systems and safer food handling practices despite resource limitations.

The study concludes that transformational leadership should be integrated into school kitchen management as a strategic governance approach for improving food safety, learner welfare, and educational outcomes.

7.2 Recommendations

7.2.1 Leadership Development

School administrators should receive targeted training on food safety leadership and supervision.

7.2.2 Strengthening Compliance Monitoring

County education and health officers should conduct regular inspections using standardized monitoring tools.

7.2.3 Investment in Basic Hygiene Infrastructure

Schools should prioritize provision of clean water, handwashing facilities, and basic food safety equipment.

7.2.4 Community Participation

Parents, school boards, and local health authorities should actively participate in monitoring food safety practices.

7.2.5 Gradual Technology Integration

Schools should adopt affordable technologies such as food thermometers and simple inventory systems before investing in advanced solutions.

8.0 CONTRIBUTION TO KNOWLEDGE

This study contributes to educational leadership literature by demonstrating that transformational leadership is an effective mechanism for strengthening food safety in school kitchens. It extends existing food safety research beyond technical compliance by showing how leadership behaviors influence staff motivation, accountability, and hygiene culture. The study further provides evidence that leadership interventions can enhance food safety outcomes even in resource-constrained educational environments.

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