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EDITORIAL NOTE
HURIA Journal Vol. 33(2), 2026

HURIA Journal continues to serve as a multidisciplinary platform for disseminating scholarship that addresses development challenges and opportunities in Tanzania, Africa and the wider Global South. Volume 33(2), 2026 brings together sixteen papers covering open and distance learning, education, information science, law, health systems, governance, agriculture, tourism, philosophy, taxation, cooperative development and digital transformation. Collectively, the contributions provide evidence for policy, practice and institutional reforms that support sustainable and inclusive development.

The papers on learner support in Open and Distance Learning, digital literacy among teachers, pedagogical competence, school arson, and digital student management systems reinforce the goals of SDG 4 (Quality Education) and UNESCO's Education 2030 Agenda. They also contribute to Agenda 2063 Aspiration 1, which emphasizes a skilled and knowledgeable citizenry. For Tanzania, these studies provide insights relevant to Vision 2050 and the 2026–2030 development planning framework through improved education quality, digital learning and institutional effectiveness.

The studies on library service marketing, legal translation and access to justice, social work ethics, and the interaction between philosophy and culture contribute to inclusive knowledge societies, social justice and cultural development. Their findings align with SDGs 10 and 16, UNESCO's cultural and knowledge-sharing agenda, and Agenda 2063's vision of people-centred development, accountable institutions and preservation of Africa's cultural heritage.

The papers on blockchain-based protection of electronic medical records and governance-driven innovation in agricultural marketing cooperatives highlight the importance of technology, innovation and institutional accountability in development. These contributions support SDGs 3, 9 and 16, the African Union Digital Transformation Strategy, and national efforts to strengthen digital public services, innovation ecosystems and evidence-based governance.

The tourism studies, oilseed export performance analysis and dairy cooperative income assessment provide practical evidence on economic

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transformation, value addition, trade competitiveness and rural livelihoods. Their findings are closely linked to SDGs 1, 2 and 8, Agenda 2063's aspiration for shared prosperity, and Tanzania Vision 2050's emphasis on industrialization, agricultural modernization, employment creation and inclusive economic growth.

The systematic review on tax compliance further contributes to strengthening domestic resource mobilization and public sector effectiveness. Together with the governance and cooperative studies, it underscores the importance of strong institutions in achieving sustainable development outcomes, consistent with SDG 16 and Africa's broader governance and accountability agenda.

In bringing together diverse disciplinary perspectives, this volume demonstrates the value of research in addressing contemporary development challenges while advancing national, continental and global development priorities. The Editorial Board trusts that the findings and recommendations presented herein will stimulate further scholarly inquiry, inform policy reforms and contribute meaningfully to sustainable development in Tanzania, Africa and beyond.

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Students' Perceptions of Programme Coordinators' Academic Support Roles in Open and Distance Learning: Evidence from the Open University of Tanzania

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Abstract
This study examined students' perceptions of programme coordinators' academic support roles at the Open University of Tanzania. Guided by Transactional Distance Theory, it focused on students' awareness of coordinators' responsibilities and their perceived communication effectiveness. A cross-sectional quantitative design was employed, involving 130 students from four regional centres. Data were collected using a structured five-point Likert scale questionnaire. Analysis incorporated descriptive statistics, correlation analysis, MANOVA, and univariate ANOVA. Findings revealed overall moderate levels of awareness and communication effectiveness among students. Postgraduate students reported the highest levels, followed by undergraduates, while non-degree students recorded the lowest mean scores. These differences indicate that perceptions vary significantly by academic level. The study recommends strengthening structured dialogue, proactive communication, and targeted support for less experienced students to reduce transactional distance and enhance academic integration in ODL environments.

Keywords: *Programme coordinators, academic support, communication effectiveness, transactional distance, open and distance learning, Open University of Tanzania*

INTRODUCTION

Effective communication between institutions and students is a critical determinant of student engagement and academic persistence in open and distance learning (ODL) contexts (Deep et al., 2025; Zeng & Xin, 2025). Communication plays a central role in reducing transactional distance, the psychological gap between learners and instructors that often manifests as feelings of isolation and loneliness, which is shaped by the level of dialogue, course structure, and learner autonomy (Abuhassna & Alnawajha, 2023; Bolliger & Inan, 2012; Chen, 2023; Moore, 1993). This study focuses on two dimensions of this communication process: students'

awareness and understanding of academic support roles, and their perceptions of communication effectiveness with support personnel.

When communication is clear and responsive, it fosters connection among learners, instructors, and the institution, enhancing students' understanding of course expectations, assessment requirements, and learning pathways (McNeill & Bushaala, 2023; Wu, 2023). Conversely, unclear communication increases transactional distance, resulting in confusion, academic anxiety, and disengagement, factors commonly associated with student dropout (Kayode, 2018; Ottenheim et al., 2025). Beyond these foundational outcomes, communication practices also influence student motivation, self-regulation, and confidence (Albelbisi et al., 2021; Bolliger & Martin, 2018). Regular feedback, well-organised instructional communication, and responsive channels such as discussion forums, emails, virtual meetings, and learning management systems enable students to monitor their progress, maintain social presence, and sustain peer connections (Hashmi et al., 2025; Odhiambo, 2024). These mechanisms are particularly critical in geographically dispersed learning contexts, where students may otherwise feel isolated. Strong communication practices thus support a holistic learning experience, integrating academic guidance with social interaction to sustain motivation and persistence (Deep et al., 2025; Garrison, 2017; Tinto, 2017).

Despite its importance, many ODL students, particularly newly enrolled individuals with lower institutional autonomy, encounter significant communication and guidance challenges (Lee et al., 2013; Simpson, 2018; Tinto, 2017). Limited access to responsive communication systems exacerbates feelings of detachment (Liu & Lin, 2024; Schweighart et al., 2024), and many struggle to identify appropriate channels for academic, administrative, and psychosocial support (Halim & Chea, 2025; Maphoto, 2024). Unlike conventional face-to-face institutions, ODL students rely heavily on mediated interactions such as emails, learning management systems, and online forums (Anderson, 2008; Dorsah & Alhassan, 2021; Garrison, 2017). When these channels are poorly coordinated, students experience uncertainty, frustration, and heightened isolation, negatively affecting motivation and persistence (Liu & Lin, 2024; Salarvand et al., 2023).

To address these challenges, ODL institutions implement structured communication and support strategies. These include official email systems and automated messaging for enrolment confirmation and

orientation schedules (Arko-Achemfuor, 2017; Liu & Lin, 2024; Panda, 2023); comprehensive orientation programmes delivered synchronously or asynchronously via video conferencing tools and learning management systems (Bozkurt & Sharma, 2020; Kahu & Nelson, 2018; Tait, 2014; UNESCO, 2020); and peer support platforms such as WhatsApp groups and discussion forums that enable community building and timely guidance (Bozkurt & Sharma, 2020; Kear, 2010). Institutional websites and learning management system dashboards also serve as centralised repositories of essential information (Bozkurt, 2017; Mpungose, 2020). Together, these strategies aim to reduce disorientation, clarify expectations, and build early engagement.

At the Open University of Tanzania (OUT), similar measures are in place. The institution maintains a network of regional and coordination centres that assist with enrolment, confirm admissions via text messages and telephone, and organise orientation sessions in partnership with academic directorates. These sessions introduce students to the Moodle learning management system, Zoom platforms, and the Academic Resource Management Information System (ARMIS) used for course and examination registration (OUT Prospectus, 2025; OUT, 2009).

Despite these efforts, studies document persistent communication challenges among OUT students, including low attendance at live sessions and uncertainty about accessing institutional resources (Hassan, 2020; Mahai, 2022; Mtae & Rangi, 2022; Salum, 2023). These challenges are particularly pronounced among students with financial, family, or work commitments that prevent attendance at orientation and face-to-face sessions (Bawa, 2016; Xavier & Meneses, 2021). Consequently, the mechanisms designed to support engagement may not fully reach those who need them most, creating gaps in awareness, preparedness, and participation (Bawa, 2016; Tait, 2014).

Within this context, programme coordinators emerge as a critical mechanism for addressing communication and support gaps. Studies indicate that effective learner support in ODL relies heavily on clearly designated coordination roles that facilitate communication, provide academic guidance, and foster academic integration (Gyurova, 2019; Kinanguka, 2025; Zuhairi et al., 2020). This perspective recognises that beyond instructional technologies, the human element remains indispensable (Chai et al., 2024; Collins et al., 2019; Pacansky-Brock et al., 2020).

From a Transactional Distance perspective, programme coordinators function to strengthen dialogue, one of the three core elements of Moore's framework, thereby reducing the psychological gap between students and the institution. They serve not merely as administrative intermediaries but as relational anchors who provide personalised interaction, timely feedback, and empathetic guidance. Without programme coordinators, ODL students would lack a vital link to academic and administrative support. These roles offer programme-specific academic assistance, clarify course-related issues, and mediate communication between students, tutors, and administrative units. As such, they function as a central communication node essential for reducing transactional distance and sustaining student engagement (Emmanuel et al., 2012; Taylor et al., 2023).

Despite the recognised importance of programme coordinators, limited empirical attention has been given to how students themselves perceive these roles within OUT. Previous OUT studies have focused on broad challenges such as technological constraints and administrative barriers (Hassan, 2020; Mahai, 2022; Mtae & Rangi, 2022; Salum, 2023). While valuable, these studies have largely emphasised the *availability* of support services rather than examining how students *understand and engage* with these services in practice. The present study addresses this gap by shifting focus from service provision to students' awareness and perceptions of communication effectiveness, with specific attention to programme coordinators as a distinct unit of analysis. In doing so, it extends existing OUT-based research beyond generalised analyses of student support services. Specifically, it offers targeted insights into the effectiveness of programme-level academic support in enhancing student engagement, reducing transactional distance, and supporting persistence.

This study empirically examines students' awareness of programme coordinators' roles and their perceptions of communication effectiveness. It thereby contributes a nuanced understanding of how human-mediated support structures function within ODL environments. Guided by this focus, the study sought to answer: How do students at the Open University of Tanzania perceive the roles of programme coordinators in supporting their academic experience? Specifically: (1) To what extent are students aware of and understand the principal roles of programme coordinators? and (2) How do students perceive the effectiveness of communication between themselves and programme coordinators? Addressing these questions is essential for evaluating learner support mechanisms at OUT

and identifying strategies to enhance communication, engagement, and persistence.

Theoretical Framework

This study was guided by Transactional Distance Theory (TDT), developed by Michael G. Moore in 1993. This is one of the most influential theoretical frameworks in open and distance learning (ODL). The theory posits that distance in education is not merely a function of physical separation between learners and instructors but rather a pedagogical and psychological space shaped by programme structure and patterns of communication. Moore conceptualised this space as transactional distance, determined by the interaction among three key elements: dialogue, structure, and learner autonomy.

In ODL institutions such as the Open University of Tanzania (OUT), students are geographically separated from institutional actors and rely heavily on mediated communication channels. However, the presence of communication technologies alone does not guarantee meaningful interaction. Instead, transactional distance is shaped by how institutional systems support clear, responsive, and purposeful communication between students and institutional representatives. As such, communication embedded within institutional support structures plays a central role in shaping students' academic experiences and perceptions of support.

While Transactional Distance Theory (TDT) encompasses dialogue, structure, and learner autonomy as its core components, this study focuses primarily on dialogue as the most relevant dimension for examining students' perceptions. Within TDT, dialogue refers to constructive and purposeful communication between learners and institutional representatives, including instructors, facilitators, and academic support personnel. It extends beyond the mere exchange of information to include clarification, feedback, guidance, and reassurance.

In this context, programme coordinators function as key intermediaries who facilitate ongoing communication between students and the institution. Through activities such as clarifying programme requirements, guiding administrative procedures, responding to student inquiries, and maintaining follow-up communication, coordinators play a key role in shaping how students experience institutional support. When such communication is perceived as clear, timely, and accessible, transactional distance is reduced. Conversely, when communication is limited, delayed,

or impersonal, psychological distance may increase despite the availability of digital platforms.

Given that this study examines students' awareness and understanding of programme coordinators' roles and their perceptions of communication effectiveness, Transactional Distance Theory provides a suitable explanatory lens. The theory enables an understanding of how institutional dialogue and role clarity influence students' perceptions of support in ODL environments. By placing programme coordinators as key facilitators of institutional dialogue and support visibility, TDT offers a coherent theoretical foundation for analysing how communication practices and role awareness shape students' academic experiences at OUT.

METHODS

This study was conducted across four regional centres of the Open University of Tanzania (OUT): Kinondoni, Iringa, Mbeya, and Rukwa. Given that OUT operates numerous regional centres nationwide, it was not feasible to include all centres in the study. Therefore, a multi-stage sampling approach was employed. In the first stage, Kinondoni Centre was purposively selected due to its large student population and strategic importance. In the second stage, three additional centres, Iringa, Mbeya, and Rukwa, were selected through simple random sampling from the remaining centres to enhance representativeness. The selection of four centres was considered sufficient to capture variability in student experiences across different geographical and institutional contexts while maintaining feasibility in data collection.

A quantitative approach using a cross-sectional research design was adopted. The study involved 130 students, with 40 drawn from the Kinondoni centre and the remaining 90 proportionately selected from Iringa, Mbeya, and Rukwa. The sample included students from postgraduate, undergraduate, and non-degree programmes. Participants were selected randomly from those available at the centres during the annual examination period, allowing access to a diverse group of students. However, this approach may introduce selection bias, as students attending examinations are more likely to be academically active and engaged. Consequently, the findings may underrepresent less active or absent students. Despite this limitation, the examination period provides a practical opportunity to access a broad cross-section of students across programmes and levels in ODL settings.

Data were collected using a structured questionnaire comprising two constructs: Awareness and Understanding (AU) and Communication Effectiveness (CE). Each construct consisted of seven items measured on a five-point Likert scale ranging from strongly disagree to strongly agree. The AU construct assessed students' knowledge and understanding of programme coordinators' roles, including awareness of their existence, responsibilities, accessibility, and contribution to students' academic experience. The CE construct examined the quality of interaction between students and programme coordinators, including responsiveness, clarity of communication, encouragement of engagement, confidence in initiating contact, consistency, provision of feedback, and the extent to which communication reduces confusion.

The questionnaire items were developed based on existing literature on learner support and communication in ODL. To ensure content validity, the instrument was reviewed by experts in open and distance learning, student support services in particular, who evaluated the relevance, clarity, and alignment of the items with the study constructs. Minor revisions were made based on their feedback. Internal consistency was assessed using Cronbach's alpha, yielding coefficients of $\alpha = .81$ for Awareness and Understanding (AU) and $\alpha = .90$ for Communication Effectiveness (CE), indicating good and excellent reliability, respectively.

Data analysis was conducted using SPSS version 24. Descriptive statistics were used to summarise overall trends in students' perceptions, while inferential analyses examined differences across student groups. Multivariate Analysis of Variance (MANOVA) was employed to assess overall differences across the two constructs, followed by Univariate ANOVA to identify specific group differences. Effect sizes were calculated to determine the practical significance of the findings, and post-hoc tests were conducted to explore group variations in greater detail.

RESULTS

This section presents the findings of the study on students' perceptions of the roles of programme coordinators in supporting their academic experience at the Open University of Tanzania. The analysis focuses on two key aspects: students' awareness and understanding of programme coordinators' roles, and their perceptions of communication effectiveness. The presentation begins with participants' background characteristics to provide context for interpreting the findings. This is followed by the results

of descriptive and inferential analyses, including multivariate and univariate tests, as well as post-hoc comparisons.

Respondents' Background Information

This section presents participants' key characteristics, including programme level, year of study, residential location, and regional centre. This information provides context for interpreting the findings and assessing their relevance and applicability to similar ODL settings. A summary of respondents' characteristics is presented in Table 1.

Table 1:
Respondents' Background Information (n=130)

Demographic Variable	Code	Category	Frequency	Percentage	Cumulative Percentage
Degree	1	Postgraduate	37	28.5	28.5
Programme	2	Undergraduate	54	41.5	70.0
	3	Non-Degree	39	30.0	100.0
Regional	1	Kinondoni	40	30.8	30.8
Centres	2	Iringa	30	23.1	53.8
	3	Mbeya	30	23.1	76.9
	4	Rukwa	30	23.1	100.0
Year of Study	1	1st Year	59	45.4	45.4
	2	2nd Year	46	35.4	80.8
	3	3rd Year	18	13.8	94.6
	4	4th Year	7	5.4	100.0
	5	5th+Year	0	0	100.0
Residential	1	Urban	52	40.0	40.0
Location	2	Semi-Urban	48	36.9	76.9
	3	Rural	30	23.1	100

***Source**: Field Data, 2025*

The majority of respondents were enrolled in undergraduate programmes (41.5%), followed by non-degree (30.0%) and postgraduate programmes (28.5%). Respondents were fairly distributed across regional centres, with Kinondoni contributing the largest share (30.8%) and Iringa, Mbeya, and Rukwa each contributing 23.1%. In terms of academic progression, most respondents were in their first year (45.4%) and second year (35.4%), with fewer students in advanced years. Regarding residential location, 40.0% of respondents resided in urban areas, 36.9% in semi-urban areas, and 23.1% in rural areas.

Reliability of the Study Constructs

Assessing the internal consistency of the study instruments is essential to ensure that the items within each scale reliably measure the same underlying construct. In this study, the internal consistency of the

constructs was evaluated using Cronbach's alpha. A summary of the findings is presented in Table 2.

Table 2:
Internal Consistency of Study Constructs (N = 130)

Construct	No. of Items	Cronbach's α	Interpretation
Awareness & Understanding (AU)	7	.81	Good reliability
Communication Effectiveness (CE)	7	.90	Excellent reliability

***Source**: Field Data, 2025*

The results presented in Table 2 indicate satisfactory reliability for both study constructs. The Awareness and Understanding (AU) scale demonstrated good reliability (α = .81), with corrected item-total correlations ranging from .44 to .66, indicating that all items contributed satisfactorily to the scale. The Communication Effectiveness (CE) scale exhibited excellent reliability (α = .90), with corrected item-total correlations ranging from .59 to .77. For both constructs, Cronbach's alpha did not improve if any item was deleted, supporting the retention of all items. These findings suggest that responses were consistent across items and provide confidence that the scores accurately reflect students' perceptions of AU and CE, confirming the instrument's reliability for subsequent statistical analyses.

Correlation Analysis

A Pearson product-moment correlation analysis was conducted to examine the relationship between Awareness and Understanding (AU) and Communication Effectiveness (CE). This analysis assessed the strength and direction of the association between the two constructs. The results are presented in Table 3.

Table 3
Correlation Matrix for Study Constructs (N = 130)

Variable	1	2
Awareness & Understanding (AU) - 1	-	.77**
Communication Effectiveness (CE) - 2	.77**	-

***Source**: Field Data, 2025*

As shown in Table 3, there was a strong positive correlation between the two constructs, r = .766, p < .001. This indicates that students who reported higher awareness and understanding of their Programme Coordinators also

tended to perceive their communication effectiveness more positively. The relationship is statistically significant at the 0.01 level, suggesting that it is unlikely to have occurred by chance. These findings support the conceptual link between students' understanding of coordinators and their perceptions of coordinators' communication performance.

Students' perceptions of the roles of programme coordinators in supporting their academic experience

To address the main research question, two constructs were examined: Awareness and Understanding (AU) and Communication Effectiveness (CE). The AU construct captured students' knowledge of programme coordinators' roles, while the CE construct assessed the quality of interaction between students and programme coordinators. Both constructs were measured using a structured questionnaire with items rated on a five-point Likert scale. Data were analysed using descriptive and inferential statistics. Multivariate Analysis of Variance (MANOVA) was used to assess overall differences across the two constructs, followed by Univariate ANOVA and post-hoc tests to identify specific group differences. Effect sizes were also calculated to determine the practical significance of the findings.

Descriptive Statistics

Descriptive statistics were used to summarise students' responses across the two constructs: Awareness and Understanding (AU) and Communication Effectiveness (CE). The results indicate that students demonstrated a moderate level of awareness and understanding of programme coordinators' roles ($M = 3.00$, $SD = 0.82$). This suggests that, while students have some familiarity with the roles and responsibilities of programme coordinators, their overall level of understanding is not particularly strong. The relatively small standard deviation further indicates that responses were fairly consistent across the sample.

For Communication Effectiveness (CE), the mean score was slightly higher ($M = 3.30$, $SD = 0.90$), indicating moderately positive perceptions of interactions with programme coordinators. This implies that students generally perceive communication with programme coordinators as somewhat effective in supporting their academic needs. The higher standard deviation suggests greater variability in students' experiences compared to awareness and understanding. Overall, the descriptive results indicate that students hold moderately positive, though not particularly

strong, perceptions of programme coordinators in terms of both awareness and communication effectiveness.

Multivariate Tests

Multivariate tests were conducted to examine whether the independent variables had a statistically significant overall effect on the two related dependent variables: Awareness and Understanding (AU) and Communication Effectiveness (CE). Specifically, the analysis assessed whether factors such as degree programme, year of study, residential location, and regional centre jointly influenced students' perceptions across these constructs. This approach was appropriate given the conceptual relationship between the dependent variables and the need to control for Type I error associated with multiple comparisons. The results of the multivariate tests are presented in Table 4.

Table 4:
Multivariate Tests (Pillai's Trace) for AU_Mean and CE_Mean

Effect	Pillai's Trace	F (df1, df2)	p	Partial η^2
Degree Programme Level	0.882	23.667 (4, 120)	< .001	0.441
Year of Study	0.147	1.585 (6, 120)	0.157	0.073
Residential Location	0.060	0.926 (4, 120)	0.451	0.030
Regional Centre	0.096	1.011 (6, 120)	0.422	0.048
Degree Level × Year of Study	0.093	0.587 (10, 120)	0.822	0.047
Degree Level × Residential Location	0.063	0.487 (8, 120)	0.863	0.031
Degree Level × Regional Centre	0.337	2.028 (12, 120)	0.027	0.169
Year of Study × Residential Location	0.167	1.366 (8, 120)	0.218	0.083
Year of Study × Regional Centre	0.255	1.254 (14, 120)	0.247	0.128
Residential Location × Regional Centre	0.094	0.492 (12, 120)	0.916	0.047
Degree Level × Year of Study × DRC	0.195	1.296 (10, 120)	0.032	0.180

***Source**: Field Data, 2025*

The multivariate analysis of variance (MANOVA) revealed that degree programme level had a significant multivariate effect on students' perceptions of programme coordinators across both Awareness and Understanding (AU_Mean) and Communication Effectiveness

(CE_Mean), Pillai's Trace = .882, F(4, 120) = 23.667, p < .001, partial η^2 = .441, indicating a large effect. The interaction between degree programme level and regional centres was also statistically significant, Pillai's Trace = .337, F(12, 120) = 2.028, p = .027, partial η^2 = .169. Similarly, the three-way interaction among degree programme level, year of study, and regional centres was significant, Pillai's Trace = .195, F(10, 120) = 1.296, p = .032, partial η^2 = .180, suggesting that these combined factors contributed to variations in students' perceptions.

All other main effects and interactions were not statistically significant (p > .05), indicating that year of study, residential location, and regional centre independently did not have a significant multivariate effect. Pillai's Trace was used due to its robustness to violations of homogeneity of variance, as indicated by Levene's test for AU_Mean. These results indicate that differences exist in the combined outcomes of Awareness and Understanding (AU) and Communication Effectiveness (CE). However, the multivariate test does not specify which dependent variable(s) account for these differences, necessitating follow-up univariate analyses.

Follow-Up Univariate Tests (ANOVAs)

The significant multivariate effects identified by the MANOVA were further examined using separate univariate ANOVAs for Awareness and Understanding (AU_Mean) and Communication Effectiveness (CE_Mean). These analyses pinpointed which specific dependent variables were driving the observed differences, allowing for more precise interpretation of the multivariate findings. The results of the univariate tests are summarized in Table 5.

Table 5:
Univariate ANOVAs for AU_Mean and CE_Mean

Effect	Dependent Variables	F (df1, df2)	p	Partial η^2
Degree Programme Level	AU_Mean	28.45 (4, 123)	< .001	0.48
Degree Programme Level	CE_Mean	18.76 (4, 123)	< .001	0.38
Degree Programme Level × DRC	AU_Mean	2.91 (6, 123)	0.012	0.13
Degree Programme Level × DRC	CE_Mean	2.47 (6, 123)	0.029	0.11
Degree Programme Level × Year × DRC	AU_Mean	2.14 (10, 123)	0.028	0.15
Degree Programme Level × Year × DRC	CE_Mean	1.89 (10, 123)	0.047	0.13

***Source**: Field Data, 2025*

The univariate ANOVAs, summarised in Table 5, identified which dependent variables drove the significant multivariate effects observed in the MANOVA. Results showed that degree programme level significantly influenced both Awareness and Understanding (AU_Mean) and Communication Effectiveness (CE_Mean), indicating that students' knowledge of programme coordinators' roles and their perceptions of communication effectiveness varied across non-degree, undergraduate, and postgraduate programmes.

Interaction effects involving degree programme level and regional centre, as well as the three-way interaction with year of study, were also significant for both AU_Mean and CE_Mean. However, these interactions had smaller effect sizes than the main effect of degree programme level, suggesting that contextual factors such as location and year of study influence perceptions to a lesser extent. In contrast, other independent variables, year of study, residential location, and regional centre alone, did not show significant effects, indicating minimal individual impact on students' perceptions. Overall, the univariate results confirm that degree programme level is the strongest determinant of students' awareness, understanding, and perceived communication effectiveness. These findings highlight the need to consider programme level when designing targeted ODL support and communication strategies.

Post-hoc / Pairwise Comparisons

Following the univariate ANOVAs, post-hoc tests were conducted to identify which degree programme groups differed significantly in Awareness and Understanding (AU) and Communication Effectiveness (CE). Degree programme level was the focus, as it was the only independent variable showing strong, significant effects on both dependent variables. For Awareness and Understanding (AU), Games-Howell comparisons revealed significant differences across all degree levels ($p < .001$). Postgraduate students scored higher than undergraduates (Mean Difference = 1.15) and non-degree students (Mean Difference = 1.57), while undergraduates scored higher than non-degree students (Mean Difference = 0.42). These results indicate a clear hierarchy, with postgraduates demonstrating the greatest awareness and understanding of programme coordinators' roles, followed by undergraduates, and then non-degree students. Confidence intervals for all comparisons excluded zero, confirming the statistical significance of these differences.

For Communication Effectiveness (CE), postgraduates also scored significantly higher than undergraduates (Mean Difference = 1.13, $p < .001$) and non-degree students (Mean Difference = 2.18, $p < .001$). Undergraduates scored higher than non-degree students (Mean Difference = 1.05, $p < .001$). Homogeneous subset analysis confirmed that each degree group formed a distinct category, with no overlap between groups. This establishes a clear hierarchical pattern: postgraduates perceive the highest communication effectiveness, undergraduates occupy the middle, and non-degree students report the lowest levels. Overall, the post-hoc analyses demonstrate that students' perceptions of both awareness and communication effectiveness with programme coordinators systematically increase with programme level. These findings highlight the need for targeted support for non-degree and undergraduate students in ODL contexts.

DISCUSSION OF THE FINDINGS

This study aimed to examine students' awareness and understanding of programme coordinators' roles, as well as their perceptions of communication effectiveness within an ODL context. The findings reveal moderate levels across both dimensions, offering important insights into the current state of student-coordinator dynamics and highlighting areas requiring targeted intervention.

Awareness and Understanding of Programme Coordinators' Roles

The results indicate that students demonstrated a moderate level of awareness and understanding of programme coordinators' responsibilities. While this suggests a foundational familiarity, it also signals that students' comprehension remains incomplete. This finding aligns with previous research in ODL contexts, where students often exhibit only partial awareness of available academic support structures, particularly during the early stages of their studies (Simpson, 2018; Arko-Achemfuor, 2017). Such patterns are frequently attributed to limited orientation processes and the insufficient visibility of academic support roles within distance learning environments. Conversely, structured onboarding programmes and continuous, proactive support communication have been shown to significantly enhance students' awareness of institutional roles and resources (Simpson, 2018; Tait, 2015; Zuhairi et al., 2020).

From a theoretical standpoint, these findings can be interpreted through Moore's (1993) Transactional Distance Theory, which posits that psychological and communication gaps in distance education arise from

the interplay of dialogue, structure, and learner autonomy. The moderate awareness observed in this study reflects a structural gap within the learning environment, wherein unclear definitions and communication of academic support roles contribute to increased transactional distance. When learners lack a clear understanding of who to contact for specific needs, the resulting ambiguity can impede their ability to navigate the institution effectively (Abuhassna & Alnawajha, 2023). Thus, reducing transactional distance requires deliberate efforts to clarify role expectations and embed this information throughout the student lifecycle.

Communication Effectiveness

Students' perceptions of communication effectiveness were also moderately positive, suggesting that while interactions with programme coordinators were viewed as somewhat helpful, they were not consistently strong or uniformly satisfactory. This finding is consistent with existing literature documenting variability in communication quality within ODL settings, which often depends on programme-specific practices, regional centre characteristics, or individual coordinator approaches (Xanthopoulou & Lappa, 2022; Tait, 2015). In contrast, institutions that employ structured digital communication platforms, proactive advising models, and frequent, personalised engagement typically report higher perceptions of communication effectiveness (Zuhairi et al., 2020; Arhin et al., 2025).

Notably, prior studies conducted at the Hellenic Open University (Chrysoula, 2010) reported higher perceived communication effectiveness than observed in the present study. This disparity is likely attributable to consistent tutor contact, prompt responsiveness to student inquiries, and well-established communication protocols within that context. Such comparisons underscore the critical role that institutional policies, digital infrastructure, and consistent engagement practices play in shaping students' perceptions of communication quality.

When examined through the lens of Transactional Distance Theory, the moderate communication effectiveness scores suggest that while dialogue between students and coordinators exists, it remains insufficient to fully minimise the psychological and academic distance that can characterise ODL environments (Moore, 1993; Abuhassna & Alnawajha, 2023). Effective dialogue in distance education must be responsive, sustained, and structured to reduce ambiguity and foster connection. The moderate ratings in this study indicate that current dialogue practices, while present, may

lack the consistency or depth required to bridge the transactional gap effectively.

Differences by Degree Programme Level

The findings of this study further revealed a clear and significant hierarchy in students' awareness, understanding, and perceived communication effectiveness based on their degree programme level. Postgraduate students consistently reported the highest levels, followed by undergraduate students, with non-degree students reporting the lowest. While the quantitative results establish this pattern with statistical significance, it is critical to move beyond description and interpret the underlying reasons for these differences. This interpretation is essential for developing targeted, effective support mechanisms in open and distance learning (ODL) environments. The observed hierarchy can be attributed to a confluence of factors related to academic maturity, motivational orientation, prior educational experience, and the specific nature of the student-coordinator relationship at each level.

Differences in academic maturity and experience: A primary driver of the disparities is the varying degree of academic maturity and prior experience with higher education systems. Postgraduate students, by definition, have successfully navigated an entire undergraduate degree. This journey equips them with a refined set of academic skills, including a more sophisticated understanding of university structures, administrative processes, and how to effectively seek support (Cremers et al., 2021). Their higher scores in awareness and understanding likely reflect this accumulated "institutional knowledge". In contrast, undergraduate students are still developing this knowledge base. Non-degree students, who may be taking individual courses for professional development or without the commitment to a full degree, often have the most tenuous connection to the formal university system. Consequently, they experience the lowest levels of awareness (Kahu & Nelson, 2018). This lack of prior experience makes them less familiar with the roles and responsibilities of academic support staff like programme coordinators.

Varying motivational orientations and goal clarity: The differences in perceived awareness and communication effectiveness can be linked to the distinct motivational orientations of these student groups. Postgraduate students typically exhibit a more focused, career-driven, and intrinsically motivated orientation. Their academic goals are often highly specific and directly tied to professional advancement, which fosters a more proactive approach to seeking and valuing clear, effective communication from

coordinators (Broadbent & Poon, 2015). They are more likely to perceive communication as effective if it directly serves their advanced research or career goals. Undergraduate students, while often career-oriented, may have a broader range of motivations, including social and exploratory ones, leading to a more variable engagement with formal communications. Non-degree students, whose motivation may be situational or extrinsic, for example, a single required certification, may have lower expectations or a diminished sense of belonging, making them less likely to engage deeply with institutional communications, thereby perceiving them as less effective (Kahu & Nelson, 2018; Tinto, 2017).

Differences in student-coordinator interaction and relationship: The nature of the student-coordinator relationship also varies significantly by programme level. Postgraduate students, particularly those in research-based programmes, typically have a smaller cohort size and a more sustained, individualised interaction with their programme coordinators and supervisors. This frequent, high-touch interaction naturally fosters a deeper awareness of the coordinator's role and a stronger perception of communication as effective and tailored (de Kleijn et al., 2016). For undergraduate students, interactions are often more transactional, managed through larger course structures, leading to a more generalised and less personalised relationship. Non-degree students, who may be the most transient and least integrated into a specific academic "home", often have the most fleeting or non-existent relationship with a dedicated coordinator. This relationship gap directly explains their low levels of awareness and perceived communication effectiveness (Tinto, 2017).

CONCLUSION AND RECOMMENDATIONS

This study examined students' perceptions of programme coordinators' academic support roles at the Open University of Tanzania, focusing on awareness and communication effectiveness. Findings revealed moderately positive perceptions, with significant variation across degree levels: postgraduate students reported the highest levels, followed by undergraduates, while non-degree students recorded the lowest. This hierarchy underscores the influence of academic progression on student engagement with support structures, consistent with Transactional Distance Theory.

Based on these findings, the following recommendations are made: *Institutional Recognition:* Programme coordinators play a critical role in fostering dialogue and reducing transactional distance. Their position

should be formally recognised and adequately resourced within the institutional structure. *Targeted Communication:* Accurate and accessible information regarding coordinators' roles and responsibilities must be disseminated to students, particularly during orientation and at key milestones, to ensure students understand how and when to seek support. *Tiered Support Strategies:* Given the hierarchical differences observed, institutions should adopt differentiated support approaches, prioritising intensive, proactive outreach for non-degree and undergraduate students, while maintaining responsive, personalised communication for postgraduate students.

Synthesis and Implications

The moderate levels of awareness and communication effectiveness identified in this study reflect systemic gaps in ODL support structures. Institutions cannot rely on students acquiring an understanding of academic support roles informally; rather, this information must be embedded into structured orientation, continuous advising, and consistent communication channels. Similarly, improving communication effectiveness demands not only appropriate digital tools but also clear protocols that ensure timely, personalised interactions. These findings affirm Transactional Distance Theory as a valuable diagnostic framework for ODL contexts. By identifying areas where dialogue is insufficient or structural roles remain ambiguous, institutions can implement targeted interventions to reduce transactional distance. The observed differences across degree levels are not statistical artefacts but meaningful distinctions rooted in students' academic maturity, motivation, and institutional connectedness. Moving beyond generalised support models toward tiered, context-sensitive strategies will enable ODL institutions to deploy resources efficiently, delivering intensive support to those with the greatest need while sustaining the advanced engagement postgraduate students value.

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Enhancing The Quality of Library Services Through Effective Marketing Strategies: A Revisit of Public Libraries in Tanzania

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Abstract
Public libraries in Tanzania face increasing challenges in demonstrating their value and reaching diverse communities, effectively. This study explored the current state of strategic marketing implementation in Tanzanian public libraries by analyzing public library services marketing strategies, determining effectiveness of public library services marketing strategies and contrasting issues hindering effectiveness of marketing of public library services. The study was conducted at the four regional libraries which are located in Dar es Salaam, Dodoma, Mwanza and Arusha. Using a convenience sampling strategy, 46 librarians out of 70 available librarians completed an online questionnaire survey and semi-structured interviews were conducted to four key informants of the libraries, purposively. Descriptive statistics were presented through tables, graphs, and charts. The findings revealed high familiarity with marketing concepts (93.5%) strong recognition of technology's role in marketing (87.0%), specific benefits from marketing programs (91.3%) and enhanced marketing effectiveness resulted from partnership coll4aboration (87.0%). However, significant implementation challenges found were; reporting difficulties in strategic marketing execution, (78.3%) requirements of additional trainings support and reaching diverse communities (60.9%). While Tanzanian library professionals demonstrate marketing awareness, substantial gaps exist in implementation, training, and evaluation. Addressing these deficiencies through targeted professional development and systematic assessment methods could significantly enhance library service quality.

Keywords: *Public libraries, library marketing strategies, library service quality enhancement, Tanzania Library Services Board*

INTRODUCTION

Tanzania Library Services Act was passed in 1975 to provide legal power to Tanzania Library Services Board (TLSB) for carrying out library services in the country. This corporate body is an administrative organ which is an overall management of public libraries services and endowed functions is to oversee and execute matters related to establishment, equip, manage and maintain of public libraries in the United Republic of Tanzania. Other functions are to administer librarianship activities, provide library services both in rural and urban areas and plan and coordinate library and documentation services in the country.

Throughout its lifespan the TLSB has achieved its goals and functions to a high extent. Many libraries have been established and maintained. One aspect which has been a matter of consideration to the TLSB is an issue related to marketing of library services of potential customers who are in distinctive categories (Mubofu & Mambo, 2025; Lyakurwa, & Luambano, 2019; and Wema, (2024). American Marketing Association (2013) defined marketing as "the activity, set of institutions and processes for creating, communicating, delivering, and exchanging offerings that have value for customers, clients, partners, and society at large". Effectiveness of public library services marketing strategies in Tanzania are still inadequate according to studies by Mubofu & Mambo, (2024); Lyakurwa, & Luambano, (2019) and Wema, (2024) because there are remaining critical issues which still need solutions.

Before promotion, the library should ensure that the services and products it is promoting are cutting-edge. Marketing is very important to public libraries because it makes users aware of the services offered by public libraries. Public libraries usually use advertising, exhibitions, and the Internet to market their library services to make users aware of the services provided (Adedokun & Zulu, 2022; and Choi, & Joo, 2021). However, library services are not known to the majority of society.

For a long time, libraries around the world have been marketing their resources and services using different approaches to enhance their access and use (Potter, 2012; Lyubenov, 2024; Ademilua & Halliso 2024). These approaches have undergone various changes as a result of the advent of continuous changes in Information and Communication Technologies (ICTs) (Parihar & Amte, 2024).

Promoting library services and resource use via various media is referred to as marketing in the library (Deshapriya, & Senevirathne, 2023). Olorunfemi and Ipadeola (2018) stated that marketing in the case of libraries is necessary to offer benefits to users' wants, reduce barriers to use and access, persuade and inform the users, and carefully plan to satisfy users' needs effectively. And almost 60 percent of the libraries are not aware of the benefit of the library marketing. (Nowrin, Mostofa & Akter, 2020). User satisfaction is the end point result of all library services. Public libraries users now have higher expectations from the library. The onus now also lies on the library to ensure that users make adequate utilization of the materials provided.

Dada, Nwachukwu & Babarinde, (2025), in their studies on challenges in marketing information resources and services in federal university libraries in Nigeria, concluded that the main issues hindering effective marketing of library services were insufficient funding, erratic power supply, inadequate infrastructure, such as photocopiers, computers, and air conditioners, lack of staff, low staff computer literacy, and a lack of professional marketing training.

Public library services marketing strategies are still issues under continuous studies due to the nature of social changes and changes in the information communication technologies (Deshapriya, & Senevirathne, 2023). A lot of studies have been conducted to find out how the public libraries could still be relevant to the need of the communities in which they are located. Since the advent of the worldwide webs in early 2000s where the knowledge society began to get interconnected through Internet there is a paradigm shift from usage of printed library books. The use of Web 2.0 tools and social media applications has lessened library visiting tendencies (Lediga, & Fombad, 2018; Mojapelo, 2020). Information specialists and stakeholders have been engaged in finding strategies which could enhance usability of public libraries by analyzing public library services marketing strategies, determining effectiveness of public library services marketing strategies and contrasting issues hindering effectiveness of marketing of public library services. Regardless of all research efforts of finding solutions to diminishing number of public library users the issue has been persisting and becoming more severe. It is from this point of view this study was conducted in Tanzanian public libraries perspectives to find out new insights in order to enhance the quality of library services through effective marketing strategies.

The main objective of this study was to explore Tanzanian public library services marketing strategies. In order to get full insight of the study the following specific objectives guided the study, these were;

i) To analyze public library services marketing strategies
ii) To determine effectiveness of public library services marketing strategies
iii) To contrast issues hindering effectiveness of marketing of public library services

LITERATURE REVIEW

Strategies Used in Marketing in Public Libraries

Parihar & Amte, (2024), Young et al., (2021) and Lynch, et al., (2022); identified public presentation, direct marketing, advocacy, bulletins, newsletters, readers' awareness training, display strategy, library web page, lectures, library tours, and use of Web 2.0 tools as strategies for promoting library information products and services. Adekunmisi (2017), emphasized that the use of Web 2.0 applications has made online information accessible anytime, anywhere, thereby allowing libraries to bring library services and resources to the doorstep and the convenience of library patrons.

Bamigbola (2013) noted that e-mails, telephone, library websites, faculty / departmental meetings, and selective packaging of relevant information to users were prominent among marketing strategies used by selected university libraries in Nigeria. Edewor, Okite-Amughoro, Osuchukwu, and Egreajena (2016) found that library publications (memos, bulletins, and newsletters), orientation programs, websites, flyers, and posters are key strategies used across the libraries in marketing library services, but the usage of social media is low.

Parihar & Amte, (2024), equally encourage libraries to use social media tools to enable community-based input, interaction, content sharing, discussion, and collaboration. Matoli, (2021), observed that social media applications help their users to acquire interconnections among the library members and remix the library services and products to make them visible in a wider way. Tools such as Facebook, LinkedIn, Blog, and Twitter are being used to establish relationships, connections, and sharing knowledge with user groups, to enhance libraries, and to provide information services (Choi, & Joo, 2021). Social networking sites were being used by several libraries and were perceived to help promote library services and interact with students. However, the implementation of these sites by library staff

was found to be challenged by limited time and perceived inadequacy of the staff to keep pace with the development of technology.

The Usefulness of Marketing Strategies Used in Public Libraries

Marketing library and information services is a process of exchange and a way to improve the relationship between the library and its users. The aim of library marketing is to provide information on products and information services available in a particular library at the right time through user priorities, expectations, individuality, responsiveness, relationship, competencies, professional skills, value-added services, and quality of services (Adekunmisi, 2017).

Effective marketing strategies improve users' awareness and promote the use of library holdings and services, and consequently, the value of the library and the image of the library personnel. Marketing is thus essential to overcome these and guarantee the existence and survival of libraries (Matoli, 2021).

Fujiwara, Lawton & Mourato, (2022) in their study reveals that the marketing aims to identify the client base, determine their wants, needs, and demands, and fulfill them by delivering the appropriate products and services. The main focus is on user satisfaction, promotion of information resources, creation for the demand of information, maximum use of information, improving the image and status of library and professionals, shrinking budget of library and information services.

The main focus of marketing is the client, and the goal is client satisfaction (Fujiwara, Lawton & Mourato, 2022). Library marketing enables libraries to compete favorably in the dynamic world, particularly with other information providers and it creates an avenue in libraries that nurtures customer consciousness among librarians and also increases library resource usage.

Challenges Facing the Marketing Strategies of Public Library Services

Okafor, (2020), posits that most librarians do not promote library resources, services, and products effectively due to a lack of training and poor knowledge of marketing tools and techniques, as well as fear of commercial publicity. The problem of funding in libraries constitutes a setback and the highest sabotage to the ability of libraries in Nigeria to design and deliver high-profit services. Some librarians see marketing as

manipulative, unprofessional, a waste of time and resources (Agboke & Effiong, 2020; Ademilua & Halliso, 2024).

MATERIALS AND METHODS

This study was conducted at the Tanzania Library Service Board regional libraries at DSM, Dodoma, Mwanza, and Arusha Regional Library. The sample was selected conveniently, whereby the study participants were available and requested to fill in the survey questionnaire during the data collection. The sample size for this study was 46 respondents who completed the online survey out of seventy (70) librarians available in the official WhatsApp group of TLSB employees. According to Bailey (2008), a minimum sample size of 30 is normally sufficient for studies in which descriptive statistical analysis is to be done.

The study adopted the cross-sectional research design, whereby data for the study were collected at one point in time. In a cross-sectional study, the investigator measures the outcome and the exposures in the study participants at the same time (Setia, 2016). A structured questionnaire method for data collection which consisted of ten questions with four stages of Likert Scales was designed and adopted in a Google Form. The link containing the questions was shared with the TLSB employees for them to fill in their responses. The link stayed active for two weeks to allow the participants to respond to the questions. Thereafter, the link was closed to allow the researcher to continue with the analysis. Data from the survey was exported to Microsoft Excel for data cleaning, coding, and analysis. For easy visualization, the descriptive data were presented in graphs, tables, and pie charts. Semi structured interviews were conducted to respondents selected in a purposive sample which was represented by one respondent from each of the four public libraries whereby face to face conversations to each of the key informants during interviews. Interview guide included research variables like; usefulness of marketing strategies, familiarity with marketing strategies, strategic marketing implementation, effectiveness of marketing strategies, efficiency of marketing strategies, utilization of ICT in marketing strategies, need for training and support on marketing strategies, library user groups outreach. These variables were purposely selected to explore the extent of enhancement of effective marketing strategies in provision of public library services which are under TLSB umbrella. In the analysis the variables were arranged into themes, summarized, grouped, coded and interpreted. The general responses were scaled into five levels which are; very high, high, moderate, low and very low.

Ethical considerations and data analysis techniques

Assurance to all participants in the study that any information they would provide would be treated as confidential and would not be used anywhere for any other reason other than the initial reason for which it was sought was provided. Ensuring privacy along the research process was essential to create safe and comfortable environments to participants to share their thoughts, experience and sensitive information. Care was taken to ensure that all works referred to in this study were acknowledged to so as to avoid cases of plagiarism.

RESULTS AND DISCUSSION

Response Rate

In order to collect data for this study, a survey questionnaire was distributed to 46 respondents and four semi structured interviews were conducted to purposive sample which was represented by one respondent from each public library. However, only 45 respondents correctly answered the poll, so their answers can be examined further. This is equivalent to 97.8 percent of all respondents as shown in Table 1. According to Creswell & Creswell (2018), the researcher considered the data adequate to move forward with the study because the response rate is higher than the generally recognized cutoff point of 50 percent for survey-based research. Refer to Table 1 for further details.

Table 1:
Response Rate

Total Respondents (N)	Completed Surveys (n)	Response Rate (%)	Incomplete Surveys	Incomplete Response Rate (%)	Minimum Acceptable Response Rate (%)
46	45	97.8	1	2.2	50

Familiarity with Marketing Strategies

In order to determine the familiarity and awareness of library staff concerning the marketing strategies they used in public libraries, respondents were asked to indicate their familiarity with the strategies. The responses are summarized in Table 2.

Table 2:
Familiarity with Marketing Strategies

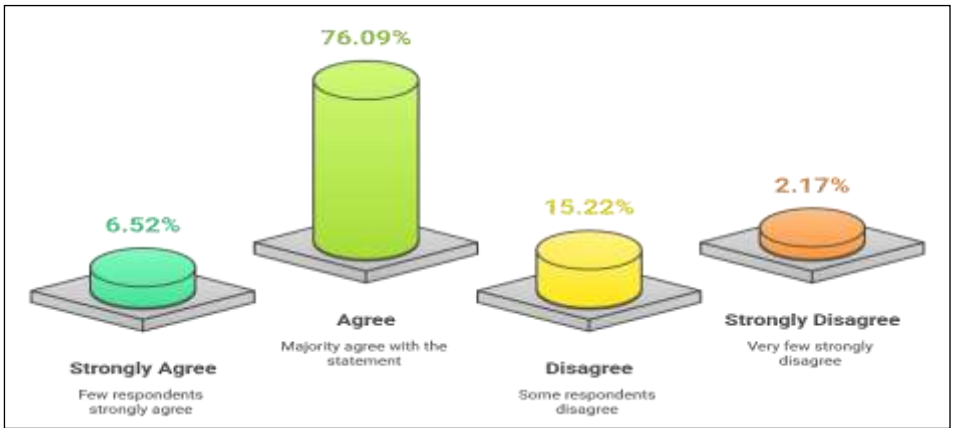
Response	Frequency	Percentage
Strongly Agree	8	17.4
Agree	35	76.1
Disagree	3	6.5
Strongly Disagree	0	0.0
Total	**46**	**100.0**

The data reveals that the overwhelming majority of library staff (93.5%) are familiar with marketing strategies used in public libraries, with 76.1 percent agreeing and 17.4 percent strongly agreeing with this statement. This high level of familiarity aligns with contemporary research indicating that library professionals increasingly recognize the importance of marketing in modern library operations. The minimal disagreement (6.5%) suggests that professional development in marketing concepts has been largely successful, though leaders of public libraries are increasingly aware of the importance of using marketing techniques and strategies to make their service more effective and to boost the library's clientele.

Employment of Specific Marketing Strategies

Respondents were asked to indicate if the marketing strategies employed by their library are effective in increasing library usage. The responses are summarized in Figure 1.

Figure 1:
Employment of Specific Marketing Strategies



The majority of respondents (82.6%) indicated that their libraries employed specific marketing strategies. Research indicates that while awareness of

marketing importance has grown, actual implementation varies significantly based on institutional resources and support. Effective marketing can improve the usage and utility of library services and products, yet the 17.4 percent who report no specific strategies highlight ongoing challenges in translating marketing knowledge into practice. This implementation pattern reflects the evolving landscape of library marketing, where marketing encompasses a range of activities, including digital marketing, social media engagement, community outreach, and partnerships (Deshapriya, & Senevirathne, 2023).

Effectiveness of Marketing Strategies

Respondents were asked to indicate the effectiveness of marketing strategies employed by their libraries. The responses are summarized in Table 3.

Table 3:
Effectiveness of Marketing Strategies

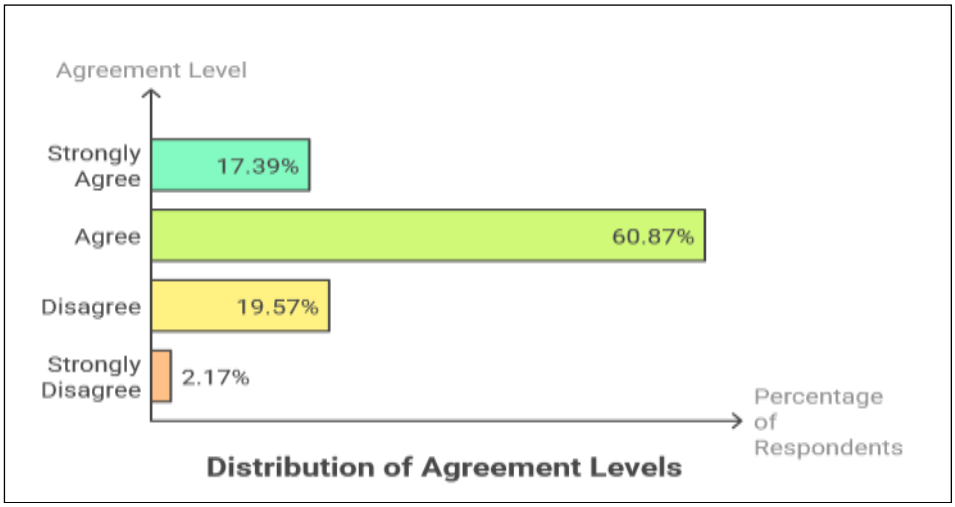
Response	Frequency	Percentage
Strongly Agree	4	8.7
Agree	32	69.6
Disagree	10	21.7
Strongly Disagree	0	0.0
Total	**46**	**100.0**

A substantial majority (78.3%) of respondents believed that their marketing strategies were effective in increasing library usage. However, 21.7 percent of the respondents disagreed with the effectiveness of their current strategies, indicating room for improvement in marketing execution. This effectiveness pattern aligns with contemporary research showing mixed results in library marketing outcomes. The significant minority expressing disagreement may reflect challenges in measuring marketing effectiveness or inadequate strategy implementation. Public libraries have a significant role in supporting educational initiatives by providing access to diverse and quality resources through strategic marketing, suggesting that effectiveness often depends on alignment with community needs and proper execution.

Challenges in Implementing Marketing Strategies

Respondents were asked to indicate challenges in implementing marketing strategies. The responses are summarized in Figure 2.

Figure 2:
Challenges in Implementing Marketing Strategies



A resounding 78.3 percent of respondents admit to having major difficulties when putting marketing strategy into practice. In contrast to the previously mentioned familiarity with marketing principles, a large percentage of reported obstacles suggest that knowledge does not always convert into successful execution. Recent research has extensively highlighted the difficulties libraries have when implementing marketing. Library marketing strategy studies have been shown to be inadequate, with present techniques having flaws and issues. Implementation obstacles still exist even though it is acknowledged that library marketing includes partnerships, social media interaction, digital marketing, and community involvement. Although marketing aids libraries in increasing their reputation, exposure, and accessibility, effective implementation is nevertheless hampered by the real-world issues of staff training, resource allocation, and technological integration. 21.7 percentage who do not perceive significant challenges may represent libraries with better resources or more established marketing programs. These findings coincide with research by (Choi, & Joo, 2021).

Reaching Diverse User Groups

Respondents were asked to indicate whether marketing efforts successfully reach diverse user groups, including underserved communities. The responses are summarized in Table 4.

Table 4:
Reaching Diverse User Groups

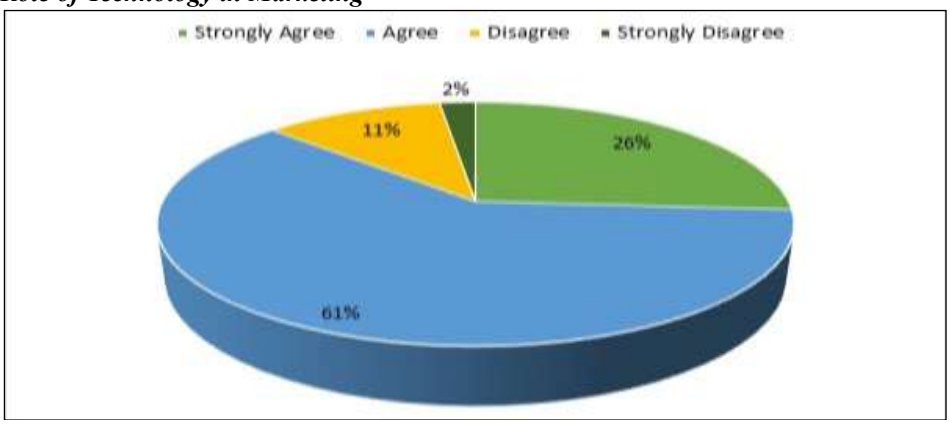
Response	Frequency	Percentage
Strongly Agree	2	4.4
Agree	26	56.5
Disagree	18	39.1
Strongly Disagree	0	0.0
Total	**46**	**100.0**

Only 60.9 percent of respondents think that their marketing campaigns effectively target underserved neighborhoods and other diverse user groups, while 39.1 percent disagreed. This is a crucial area for library marketing efforts to address, as it had the lowest positive answer rate of any survey item. The problem of marketing to underserved and diverse communities is still a recurring problem in library services. Libraries must collect and evaluate relevant data in order to comprehend community priorities and establish relationships with non-library patrons. Even while partnerships and community outreach are elements of library marketing, the evidence indicates that many libraries find it difficult to successfully engage a variety of demographics. The substantial percentage of disagreement (39.1%) indicates that libraries need to develop more inclusive and culturally responsive marketing strategies to effectively serve all community members.

Role of Technology in Marketing

Respondents were asked to indicate the role of technology in library marketing and outreach activities. The responses are summarized in Figure 3.

Figure 3:
Role of Technology in Marketing

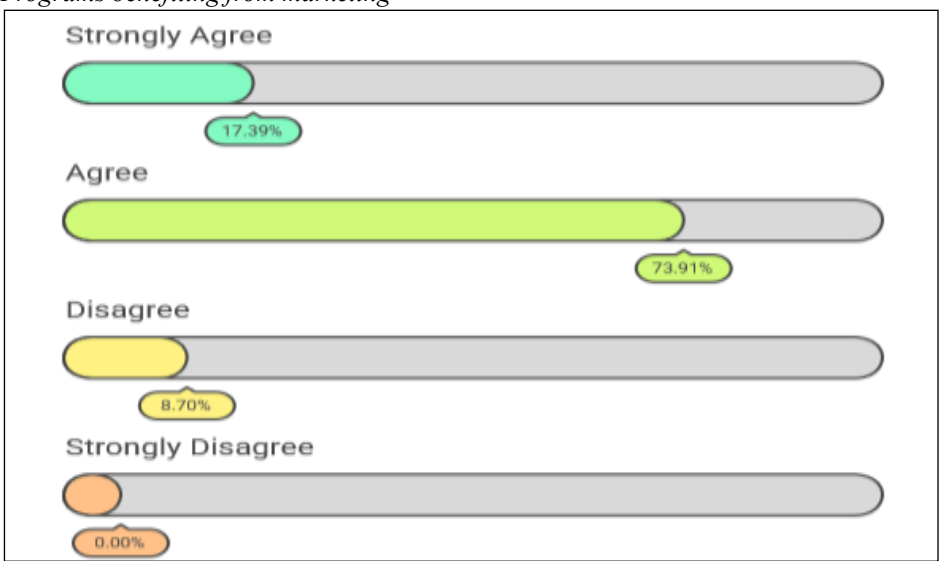


The total of 60.9 percent of respondents agreed and 26.1 percent strongly agreed that technology plays a crucial role in their library's marketing and outreach efforts. This strong appreciation of technology's value is a reflection of the digital revolution taking place in marketing strategies and library services (Otolo, 2022). It is well acknowledged in current research and practice that technology plays a crucial role in library marketing. Given the speed at which digital technology is developing and the increasing need for services that are focused on the needs of users, the subject of how to successfully apply marketing methods in libraries has gained significant attention. Today's library marketing includes social media interaction and digital marketing as essential elements of all-encompassing outreach plans. Though some may still have trouble implementing it or lack the necessary technological resources for successful digital marketing efforts.

Programs Benefiting from Marketing

Respondents were asked to indicate the programs benefiting from marketing. The responses are summarized in Figure 4.

Figure 4:
Programs benefiting from marketing



Findings showed 91.3 percent of respondents said that marketing activities have greatly benefitted some of their library's programs or services. This reaction suggests that marketing methods tend to provide observable outcomes for particular library programs when they are put into practice. According to studies, good marketing can raise the visibility, accessibility,

and reputation of libraries by enhancing the use and usefulness of their services and goods (Lyakurwa, & Luambano, 2019). Digital marketing, social media interaction, and community outreach are examples of library marketing initiatives that have been successful in increasing awareness and encouraging participation in particular programs.

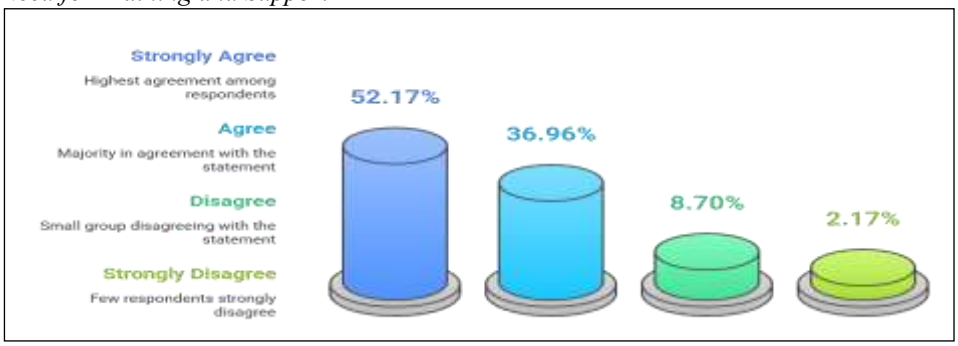
Assessment of Efficiency of Library Service Marketing Strategies

Findings indicated that in library management practices, a significant weakness is the absence of systematic ways for evaluating marketing effectiveness. Library marketing strategy study includes flaws, according to studies, such as inadequate evaluation techniques for gauging marketing efficacy. It further shows that marketing enhances a library's reputation, accessibility, and exposure, moderate number of libraries lack appropriate evaluation techniques, which is a major obstacle to proving return on investment and refining marketing tactics.

Need for Training and Support

Respondents were asked to indicate if librarians in the library need more training or support to improve marketing efforts. The responses are summarized in Figure 5.

Figure 5:
Need for Training and Support



The highest level of strong agreement among all survey questions, with 52.2 percent strongly agreeing and 37.0 percent agreeing, indicates that librarians need more training or support to improve marketing efforts. The high demand for marketing training and support reflects the changing needs of modern library practice and the gap between current skills and emerging needs. The rapid evolution of digital technology and the growing demand for user-centered services have created new challenges in implementing effective marketing strategies that require specialized knowledge and skills

(Young et al., 2021). Although library leaders are becoming more and more aware of the importance of marketing techniques and strategies, the shift from awareness to effective implementation requires significant professional development. Given the low level of disagreement (10.9%), it appeared that almost everyone acknowledges the training deficit, underscoring the pressing need for organized professional development initiatives in library marketing.

Collaboration Benefits

Respondents were asked to indicate that collaboration with other institutions (e.g., schools, community centers) has enhanced our library's marketing efforts. The responses are summarized in Table 5.

Table 5:
Collaboration Benefits

Response	Frequency	Percentage
Strongly Agree	19	41.3
Agree	21	45.7
Disagree	6	13.0
Strongly Disagree	0	0.0
Total	**46**	**100.0**

Collaboration with other organizations has improved their library's marketing efforts, according to a significant 87.0 percent of respondents, with 45.7 percent agreeing and 41.3 percent strongly agreeing. The overwhelming positive reaction to institutional cooperation is indicative of the increasing understanding that partnerships are crucial to successful library marketing campaigns. Given that cooperation increases the accessibility and efficacy of marketing initiatives, partnerships are a fundamental component of modern library marketing. Libraries have successfully encouraged lifelong learning and community engagement through strategic collaborations and expansion beyond conventional limits. Institutional relationships enable libraries to engage with community organizations and non-library customers, which is necessary for effective marketing tactics.

Table 6:
Semi-structured interview findings from the four regional libraries

Variables	Scale				
	Very high	High	Moderate	Low	Very low
Familiarity with marketing strategies			√		
Strategic marketing implementation		√			
Effectiveness of marketing strategies			√		
Efficiency of marketing strategies				√	
Utilization of ICT in marketing strategies			√		
Need for training and support on marketing strategies			√		
Library user groups outreach			√		
Collaboration benefits	√				

From Table 6 the findings from the semi structured interview indicate that the condition of public libraries services marketing through enhanced strategic marketing is generally still moderate. These hindering issues imply that there are insufficient funding, erratic power supply, inadequate infrastructure, such as photocopiers, computers, and air conditioners, lack of staff, low staff computer literacy, and a lack of professional marketing training. According to (Parihar & Amte, 2024; Young et al., 2021; and Lynch, et al., 2022), this condition has resulted into moderate condition public presentation, direct marketing, advocacy, bulletins, newsletters, readers' awareness training, display strategy, library web page, lectures, library tours, and use of Web 2.0 tools as strategies for promoting library information products and services.

CONCLUSION

This study provides valuable insights into the current state of marketing strategies implementation among public libraries in Tanzania, revealing a complex landscape of awareness, challenges, and opportunities. The findings demonstrate that while library professionals in Tanzania possess a high level of familiarity with marketing strategies and strongly recognize

the importance of technology in marketing efforts, significant gaps exist between knowledge and effective implementation. They also, revealed substantial challenges in implementing marketing strategies, indicating that theoretical understanding does not automatically translate into successful practical application. Three key areas requiring immediate attention are; professional development, inclusive outreach, and systematic evaluation. The data revealed an unprecedented demand for training and support. Nevertheless, the study identified significant shortcomings in reaching diverse user groups, highlighting the need for more inclusive and culturally responsive marketing approaches. These findings collectively suggest that while Tanzanian public libraries recognize the value of marketing and have experienced its benefits, systematic improvements in training, inclusive outreach strategies, and evaluation frameworks are essential for maximizing the potential of marketing efforts to enhance library service quality.

RECOMMENDATIONS

Developing a strategic promotional plan will boost the level of the library's patronage. There is need to adopt marketing of library resources and services, such as promotion of resources, user awareness, improving the library's reputation, and marketing the services to generate quantity. Based on the key findings of this study, three critical recommendations emerge to enhance the effectiveness of marketing strategies in Tanzanian public libraries:

Establish Comprehensive Professional Development Programs in Library Marketing

The Tanzania Library Service Board should develop and implement systematic professional development programs focused on theoretical and practical marketing knowledge and skills. These programs should encompass digital marketing techniques, social media engagement strategies, community outreach methods, and partnership development. The training should be delivered through multiple formats, including workshops, online courses, and peer-to-peer learning networks, to accommodate diverse learning preferences and geographical constraints.

Develop Inclusive Marketing Strategies for Diverse Community Engagement

Libraries management teams should conduct comprehensive community needs assessments to better understand the specific requirements and preferences of underserved populations. These strategies include creating

multilingual marketing materials, partnering with community organizations that serve diverse populations, and developing targeted outreach programs that address barriers to library access.

Implement Systematic Marketing Assessment and Evaluation Frameworks

The Tanzania Library Service Board should create, implement, monitor and evaluate comprehensive assessment tools that include both quantitative metrics (such as program attendance, service usage statistics, and community reach) and qualitative measures (such as user satisfaction surveys and community feedback). These frameworks should be implemented consistently across all regional libraries to enable comparative analysis and best practice sharing.

Limitations

There were some limitations which were encountered and consequently affected the research process, these limitations were;

- Observation, documentary review, and focus group discussion methods were not used in data collection in all of the four public libraries because the participants claimed that their timetables were occupied with various tasks.
- Only that literature written in English language were reviewed

Hence, due to the sampling strategy and methods of data collection applied the findings cannot be generalised to all Tanzanian public libraries

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Legal Translation and Access to Justice in Tanzania and Ghana: Challenges and Future Directions

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Abstract
This paper examines the role of translation in enhancing legal language communication in Tanzania and Ghana, two multilingual contexts where language significantly affects access to justice. Legal translation is essential for safeguarding linguistic rights, facilitating participation in legal proceedings, and ensuring fairness within judicial systems. Using a qualitative analytical approach, the study explores the significance of legal translation, identifies key challenges such as complex legal terminology, inadequate training of legal translators, and insufficient policy support and proposes long-term solutions including specialized translator training, legal language policy reforms, and the adoption of translation technologies. The study is contextualized within recent legal developments in Tanzania, particularly the 2020 introduction of Kiswahili as the language of court proceedings at all judicial levels. While this policy aimed to improve accessibility, the continued reliance on English legal texts has limited effective communication for many court users, thereby intensifying the need for accurate translation of legal statutes and documents from English into Kiswahili. Guided by Skopos Theory, which emphasizes purpose-driven translation, the study draws on data collected through questionnaires and interviews. The findings demonstrate that effective legal communication in both Tanzania and Ghana depends largely on the availability of functional, context-sensitive, and professionally managed translation practices. The study concludes that strengthening legal translation is essential for achieving inclusive and equitable justice systems.

Keywords: *Translation, law, legal language, ordinary language, effective communication.*

INTRODUCTION

Translation is the practice of transferring ideas and written messages from the language of one culture to the language of another culture (Catford, 1965). Translation as an exercise is a process that requires skills, expertise, experience, theoretical and practical knowledge. Translation plays a crucial role in enabling communication among people from diverse cultures, professions, backgrounds, histories, contexts, and linguistic communities. In society, many professions employ language in specialized ways that may depart from the ordinary semantic meanings of words. Fields such as medicine, engineering, law, education, linguistics, and literature each develop their own technical vocabularies, structures, and stylistic conventions. These specialized forms of language are meaningful and fully intelligible primarily within their respective professional communities.

Language plays a central role in the administration of justice. In multilingual societies such as Tanzania and Ghana, legal communication often takes place in languages that are not the first language of most citizens. Ghana's legal system operates primarily in English, while Tanzania uses both English and Kiswahili. Despite Kiswahili's wide usage, English remains dominant in statutes and higher courts. This linguistic imbalance creates barriers to effective participation in legal processes and necessitates reliable translation mechanisms. Legal translation involves the transfer of legal meaning from one language to another while preserving accuracy, intent, and legal force. Unlike general translation, legal translation requires specialized knowledge of legal systems, terminology, and sociocultural contexts. Errors in legal translation may lead to miscarriages of justice, violation of rights, or invalid legal decisions. Therefore, examining the future of legal translation in Tanzania and Ghana is both timely and necessary.

The decision by the Government of the United Republic of Tanzania to introduce Kiswahili as the language of the courts and legal proceedings, later endorsed by Parliament, represented a major advancement in the status and official use of Kiswahili. Scholars of Kiswahili, legal professionals, and members of the wider community widely viewed this decision as a groundbreaking reform aimed at improving transparency and accessibility in the justice system. Before this reform, English was exclusively used in the drafting of court judgments, a practice that left defendants unable to fully understand the decisions made in their cases. As Kiswahili serves as both the national language and the primary medium of

communication in Tanzania, the continued use of English in court judgments effectively restricted many citizens' right to understand legal proceedings and verdicts. In this context, language acted as a significant obstacle to effective legal communication. Nevertheless, the shift toward Kiswahili also generated concern, particularly because the majority of statutory laws are originally written in English. For Kiswahili to function effectively within the legal system, existing laws must be translated into Kiswahili or newly formulated in that language. This process is essential for developing precise and standardized legal terminology that supports accurate judgment writing in Kiswahili. Furthermore, consultations with legal experts revealed apprehensions that legal discourse is inherently technical and may lose its precision if approached as ordinary language. As a result, legal translation requires comprehensive knowledge of legal terminology, especially in cases where terms carry different or ambiguous meanings in everyday usage. While existing studies have examined legal language and translation in individual national contexts, limited attention has been given to comparative analyses within African multilingual legal systems. This paper therefore adopts a comparative approach to examine Tanzania and Ghana, highlighting both shared challenges and context-specific differences in legal translation practices. By doing so, the study contributes to legal translation scholarship by moving beyond general advocacy for linguistic accessibility and offering empirically grounded insights into how translation can be strengthened to improve access to justice in multilingual societies.

LITERATURE REVIEW

Scholarly work in forensic linguistics and translation studies consistently affirms that language is not merely a vehicle for legal meaning but a constitutive element of law itself. Legal norms, procedures, and rights are constructed, interpreted, and enforced through language, making linguistic accessibility central to the administration of justice. Gibbons (2003) characterizes legal language as highly specialized, marked by technical terminology, archaic expressions, and complex syntactic patterns. While such features aim to ensure precision and legal certainty, they simultaneously render legal discourse inaccessible to laypersons, thereby excluding non-specialists from meaningful participation in legal processes. This tension between precision and accessibility has been widely acknowledged, yet much of the literature stops short of examining how translation can strategically mediate this divide in multilingual legal systems.

From the standpoint of legal interpreting and translation, Mikkelson (2016) foregrounds comprehension as a prerequisite for a fair trial, arguing that linguistic access is inseparable from due process. Her work underscores legal interpreters and translators who function as critical guarantors of justice rather than auxiliary service providers. Similarly, Hale (2014) emphasizes that inadequately trained interpreters and translators can significantly distort legal outcomes, particularly in adversarial systems where credibility and nuance are crucial. While these studies convincingly establish the importance of legal translation, they focus primarily on courtroom interpreting in Western contexts, leaving underexplored the broader role of translation in shaping legal communication beyond the courtroom, especially in African jurisdictions.

Sociolinguistic perspectives further illuminate the relationship between language, power, and law. Crystal (2010) argues that the privilege of dominant or official languages within legal institutions systematically marginalizes speakers of other languages, reinforcing existing social inequalities. This argument resonates with Bourdieu's (1991) notion of linguistic capital, which suggests that access to institutional power is closely tied to mastery of legitimized language varieties. In legal contexts, this dynamic means that linguistic competence in official languages often determines one's ability to claim rights, understand legal obligations, and engage effectively with the justice system. However, these analyses tend to emphasize diagnosis over solutions, offering limited guidance on how translation practices might evolve to counteract such structural inequalities.

African scholarship provides a critical lens on the colonial legacy of language use in law. Ngũgĩ wa Thiong'o (1986) critiques the continued dominance of colonial languages in African governance and legal systems, arguing that such practices alienate most citizens and undermine democratic participation. This critique is echoed by Mazrui and Mazrui (1998), who contend that reliance on ex-colonial languages in legal and administrative domains perpetuates elitism and limits public engagement. In Tanzania, the 2020 decision to adopt Kiswahili in court proceedings represents a significant policy shift aimed at addressing these concerns. However, as scholars such as Massamba (2013) and Mwansoko (2019) observe, the effectiveness of such reforms depends heavily on the availability of accurate and standardized legal translations, an area that remains insufficiently developed.

Empirical studies across Africa reveal a persistent gap between language policy and judicial practice. Kamwangamalu (2013) and Banda (2009) note that although many African states recognize indigenous or national languages in principle, courts continue to operate predominantly in English or other colonial languages due to institutional inertia and limited resources. This results in ad hoc translation practices, reliance on untrained interpreters, and inconsistent terminology, all of which compromise legal certainty and fairness. While these studies identify structural challenges, they rarely engage with forward-looking questions about how translation can be institutionalized, professionalized, and technologically enhanced to meet future legal communication needs.

Notably, comparative research on legal translation in East and West Africa remains sparse. Existing studies tend to focus on single-country contexts, often overlooking the shared challenges and divergent policy trajectories of countries such as Tanzania and Ghana. Furthermore, little attention has been paid to the future-oriented dimensions of legal translation, including translator training, terminology development, language policy reform, and the integration of translation technologies. This gap is particularly significant given ongoing legal reforms and increasing linguistic diversity in both countries.

Against this backdrop, the present study addresses a critical gap in the literature by examining the future of translation for efficient legal language communication in Tanzania and Ghana. By focusing on the importance of legal translation, the challenges currently faced, and potential long-term solutions, the study moves beyond descriptive accounts to propose translation as a strategic tool for enhancing access to justice. In doing so, it contributes to scholarship on legal translation in multilingual societies and provides a comparative African perspective that is largely absent from existing research.

Theoretical Framework

This paper is anchored in the theories of linguistic justice and functional equivalence in translation, with Christiane Nord's Text Analysis Theory serving as the principal analytical framework. Together, these perspectives provide a robust foundation for examining the future of translation for efficient legal language communication in Tanzania and Ghana. Linguistic justice emphasizes equal access to public services regardless of individuals'

linguistic backgrounds. In legal contexts, this principle is particularly salient, as the use of language directly affects citizens' ability to understand legal processes, exercise their rights, and participate meaningfully in judicial proceedings. In multilingual societies such as Tanzania and Ghana, the continued dominance of English in legal communication has contributed to linguistic exclusion, especially for individuals who primarily use Kiswahili or other local languages. Linguistic justice therefore offers a normative justification for strengthening legal translation as a means of promoting access to justice, transparency, and fairness within legal institutions.

While linguistic justice explains the necessity of legal translation, it does not sufficiently address how legal meaning should be transferred across languages. For this reason, the study also draws on functional equivalence theory, which prioritizes the accurate transfer of meaning and legal intent rather than literal word-for-word correspondence. Legal texts are highly specialized and performative, and mistranslation may lead to misinterpretation, procedural unfairness, or distortion of legal outcomes. Functional equivalence is therefore particularly relevant to legal translation, as it allows translators to adapt linguistic forms while preserving legal force and communicative purpose.

Within this functionalist orientation, the study adopts Christiane Nord's Text Analysis Theory as its primary framework. Developed in the 1980s, Nord's model responds to the need for a translation-oriented approach that systematically accounts for text function, audience, and socio-cultural context (Nord, 2005). The theory is especially suitable for legal translation because it foregrounds communicative purpose and institutional context rather than formal linguistic equivalence alone.

According to Nord (1997, as cited in Munday, 2012), Text Analysis Theory is built on three interrelated components: the translation brief, source-text analysis, and the functional hierarchy of translation problems. The translation brief plays a critical role in legal translation by defining the intended function of the target text, its audience, and the conditions of use. In Tanzania and Ghana, legal texts may be translated for courtroom proceedings, legal consultation, or public understanding, making clear translation briefs essential for effective communication.

Source-text analysis enables translators to identify key linguistic, legal, and cultural features that must be preserved to maintain legal intent. This is particularly important when translating from English into Kiswahili, given differences in legal terminology, discourse conventions, and institutional practices. Through systematic analysis of content, structure, register, and cultural assumptions, Nord's model supports informed translation decisions that enhance clarity and functional adequacy.

The functional hierarchy of translation problems further strengthens the applicability of Nord's theory. Nord distinguishes between documentary translation, which reflects the source legal culture, and instrumental translation, which allows the target text to function independently within the target legal system. For the future of legal translation in Tanzania and Ghana, instrumental translation is especially relevant, as translated texts must be accessible and effective within local legal contexts. Overall, Nord's Text Analysis Theory provides a comprehensive and practical framework for examining the challenges and prospects of legal translation. Its emphasis on function, context, and audience aligns closely with the study's aim of identifying sustainable strategies for improving legal language communication and promoting inclusive justice systems in Tanzania and Ghana.

RESEARCH METHODOLOGY

This study was conducted in Dar es Salaam in the United Republic of Tanzania and Accra, Ghana, and employed a qualitative research design to examine the role of translation in legal language communication. Participants included lawyers, professional translators, Kiswahili students, and lecturers, selected purposively based on their relevance to legal translation and language use in legal contexts. The sample was distributed across the two countries to enable meaningful comparison. Participants in Tanzania primarily included legal practitioners and professional translators, while participants in Ghana included Kiswahili students, lecturers, and translators. This distribution was intended to capture both professional and academic perspectives on legal translation.

The study adopts a comparative qualitative design, allowing for the identification of similarities and differences between Tanzania and Ghana in terms of legal translation practices, challenges, and institutional contexts. In Dar es Salaam, lawyers and professional translators were provided with selected legal texts to translate into Kiswahili. This was done to examine

how technical legal meanings are rendered by practitioners who engage with legal language either professionally or in practice. At the University of Ghana, final-year (Level 400) Kiswahili students and Kiswahili lecturers were also given legal texts to translate in order to assess their understanding of legal translation and its importance in facilitating access to justice.

In total, the study involved 10 lawyers from Tanzania, 10 professional translators from Tanzania and Ghana, and 15 Kiswahili students from the University of Ghana and 15 native speakers of Kiswahili from the University of Dar es Salaam. Data were collected through translation tasks, questionnaires, and semi-structured interviews. Lawyers were asked to identify legal terms which differ in meaning from everyday usage and to translate these terms into Kiswahili as they would explain them to their clients. Professional translators as well as the native speakers (students) and Kiswahili students from University of Ghana were also tasked with translating selected English legal texts into Kiswahili to reveal translation challenges. Questionnaires also contained structured items designed to gather respondents' views on the importance of translating legal texts from English into Kiswahili.

The collected data were analysed using a qualitative content analysis approach. Translated texts were examined comparatively to identify patterns in lexical choice, meaning transfer, equivalence, and loss or shift of meaning across translations produced by lawyers, translators, and students. The data were analysed using thematic content analysis. First, all responses and translated texts were carefully reviewed to identify recurring patterns. These patterns were then coded into categories such as legal terminology challenges, grammatical complexity, and policy-related issues. The coded data was subsequently compared across the two countries to identify similarities and differences in experiences and practices. Responses from questionnaires and interviews were similarly coded thematically to capture participants' perceptions of legal translation, its challenges, and its role in enhancing access to justice. No specialized qualitative analysis software was used; instead, close reading and iterative comparison were adopted to ensure depth and accuracy of interpretation.
Ethical responsibility was observed throughout the study. Participation was voluntary, and respondents were informed of the purpose of the research prior to data collection. Anonymity and confidentiality were ensured by excluding participants' names and identifying details from the analysis and presentation of results. All legal texts used in the study were either publicly

available statutes or instructional materials commonly used for academic and professional purposes. The researcher ensured that translations were analysed strictly for academic purposes and that participants' responses were reported accurately and responsibly to avoid misrepresentation.

RESULTS AND DISCUSSION

This section presents and discusses the findings of the study in relation to the future of translation for efficient legal language communication in Tanzania and Ghana. Drawing on data obtained from questionnaires, interviews, and translation tasks administered to the respondents. The analysis examines how legal translation currently functions, the challenges it faces, and the prospects for improvement. The discussion is informed by the theoretical framework of linguistic justice and functionalist translation theory, particularly Nord's Text Analysis Theory, which emphasizes purpose, audience, and communicative function in translation. The findings are presented thematically to enhance analytical clarity and to support a structured comparison between Tanzania and Ghana.

The analysis is organized around three interrelated themes that reflect the core objectives of the study. First, it examines the importance of translating legal language, highlighting how translation facilitates access to justice, enhances legal awareness, and promotes effective communication between legal institutions and the public in multilingual contexts. Attention is given to the role of Kiswahili as a medium for legal communication and its potential to bridge the gap between formal legal discourse and ordinary language use.

Second, the section explores the challenges involved in translating legal texts, including the complexity of legal terminology, structural differences between English and Kiswahili, limited availability of specialized legal translators, and institutional and policy constraints. These challenges are discussed in relation to respondents' experiences and existing scholarly literature, demonstrating how linguistic and systemic factors continue to hinder effective legal communication.

Finally, the discussion focuses on proposed solutions and future directions, drawing from respondents' suggestions and best practices identified in translation studies. These include specialized training in legal translation, clearer language policies, collaboration between legal professionals and translators, and the strategic use of translation technologies. Together, these

themes provide a comprehensive understanding of the current state and prospects of legal translation in Tanzania and Ghana, positioning translation as a critical tool for achieving efficient, inclusive, and just legal communication.

The Importance of Legal Translation

It is widely acknowledged that, before the introduction of Kiswahili in legal proceedings in Tanzania, English was the primary language used in the legal system. This article therefore aims to examine the significance of translating legal language from English into Kiswahili. Information was gathered through interviews between the researchers and various respondents, including legal practitioners, members of the public, and stakeholders in translation. The interviews were structured around the following guiding questions:

i) Is there a need to translate legal language?
ii) What makes the translation of legal language from English into Kiswahili important?

Table 1:
Importance of Translating Legal Language from English into Kiswahili

No.	Respondents	Number	Said Yes	Said No	Don't Know
1	Lawyers	10	5	3	2
2	Translators	10	10	0	0
3	Natives	15	10	3	2
4	Kiswahili Students (UG)	15	12	2	1
	TOTAL	**50**	**37**	**8**	**5**

The findings indicate strong support for legal translation across all participant groups in both Tanzania and Ghana. However, while translators unanimously recognized its importance, a small proportion of legal practitioners expressed reservations, suggesting possible differences in professional orientation between legal and linguistic experts. This highlights the need for greater interdisciplinary collaboration in both countries.

Translation of legal texts is essential because it helps eliminate communication barriers in the understanding of justice. When legal proceedings are conducted in a language that the accused does not understand, it becomes difficult for them to comprehend how their rights were acquired or denied. Translation therefore plays a key role in

simplifying the interpretation of legal processes and enabling individuals to understand and recognize their rights.

Translation helps to eliminate ambiguity surrounding rights granted through the courts or the law. When the language used in legal processes is not understood by the recipient of justice, uncertainty arises regarding the nature and scope of those rights. As a result, an individual may be awarded a right without fully understanding it or the legal provisions on which it is based.

Translation serves as a vital link between clients, courts, the law, and legal processes, as effective communication depends on the use of language that is clear and comprehensible to all parties involved. For instance, when a client does not understand the language in which a judgment is written or delivered, it becomes difficult for them to grasp its meaning unless it is translated by someone with legal expertise.

Translation facilitates legal work and service delivery for clients by making legal language more accessible. When legal texts are translated, legal practitioners are better able to explain and clarify clients' rights. For instance, if a legal service provider has limited proficiency in English, interpreting the law becomes challenging and may result in inaccurate judgments or legal decisions.

Challenges in Legal Translation

The analysis revealed several interrelated challenges affecting legal translation in both Tanzania and Ghana. These challenges are discussed under three main categories: linguistic complexity, terminological differences, and institutional limitations. The analysis further revealed that translating legal texts is a demanding task that goes beyond ordinary language transfer, as it requires a deep understanding of legal terminology, legal systems, and contextual meaning. Differences between legal concepts in source and target languages, the presence of specialized and technical terms, and the risk of semantic ambiguity emerged as key challenges. Additionally, the lack of standardized legal terminology in the target language further complicates the translation process. The findings of this study therefore highlight the multifaceted nature of legal translation and underscore the need for specialized training and careful methodological approaches when translating legal texts.

Linguistic and Grammatical challenges

Legal language is often characterised by complex sentence structures, including long clauses and embedded constructions, which make translation difficult. This challenge was particularly evident among less experienced translators, who tended to rely on literal translation, leading to distortion of meaning. This article observes that legal sentence structures are often complex and difficult to translate. Legal sentences are typically characterized by lengthy structures, embedded clauses, and specialized syntactic patterns that differ significantly from those used in ordinary language. As a result, the meaning conveyed by legal sentences may not be immediately apparent and can easily be misinterpreted if translated literally.

Moreover, legal sentences are carefully constructed to express precise legal intentions, obligations, and conditions. Any slight grammatical misinterpretation or restructuring during translation may alter the intended legal meaning. When a translator lacks sufficient knowledge of legal language and its grammatical conventions, there is a high risk of distorting the original message. This can lead to ambiguity, misrepresentation of legal provisions, or even incorrect legal outcomes. Therefore, a strong understanding of both grammatical structures and legal discourse is essential for accurate and reliable legal translation. These challenges were observed across both countries, although they were more pronounced among students and non-professional translators, indicating the role of training and experience.

Terminological and Semantic Challenges

A central challenge identified in this paper concerns the translation of legal terminology, particularly the divergence between legal and ordinary meanings of commonly used words. Unlike general language, legal discourse assigns highly specific and context-bound meanings to terms in order to ensure precision, consistency, and enforceability. This creates a fundamental difficulty for translators, as linguistic equivalence alone is insufficient to guarantee accurate transfer of legal meaning.

The findings indicate that many translation errors arise not from lack of language proficiency, but from misinterpretation of legal concepts embedded in seemingly familiar terms. Words such as *consideration*, *charge*, *appeal*, and *sentence* illustrate this problem. While these terms exist in everyday language, their legal meanings are significantly more

restricted and functionally defined within particular areas of law. For instance, *consideration* in contract law refers to something of value exchanged between parties, rather than the general notion of careful thought. Similarly, *charge* denotes a formal criminal accusation, not merely an informal claim or request. When such distinctions are overlooked, translations may appear linguistically correct but fail to convey the intended legal effect.

This pattern reflects a deeper structural issue: legal language prioritises semantic precision, whereas ordinary language allows flexibility and context-dependent interpretation. In everyday communication, meanings are often negotiated and inferred, but in legal contexts, ambiguity must be minimised to avoid multiple interpretations. As a result, legal terms operate within tightly controlled semantic boundaries established through statutes, judicial decisions, and legal practice. Translators must therefore engage not only with the linguistic form of a term but also with its institutional function and legal implications.

The data further reveal that this challenge is amplified in multilingual settings such as Tanzania and Ghana, where translation frequently involves transferring legal concepts from English into Kiswahili or other local languages. In many cases, direct equivalents for specialised legal terms do not exist, forcing translators to choose between approximation, explanation, or borrowing. Each of these strategies carries risks. Approximation may dilute meaning, explanation may reduce textual efficiency, and borrowing may limit accessibility for non-expert audiences. The absence of standardised legal terminology in the target language compounds this problem, leading to inconsistency across translations and potential misunderstanding among users of legal texts.

The implications of these findings extend beyond technical translation difficulties. Misinterpretation of legal terminology can affect how individuals understand their rights, obligations, and legal options, thereby undermining access to justice. This is particularly evident among non-specialists, who are more likely to rely on ordinary language interpretations when engaging with legal texts. The study therefore suggests that terminological challenges are not merely linguistic but also epistemic, reflecting differences in how legal knowledge is structured and communicated.

To illustrate these issues, Tables 2 and 3 present examples of terms whose legal meanings diverge significantly from their everyday usage. These examples demonstrate that the challenge lies not only in identifying equivalent words but in accurately representing the underlying legal concepts. Effective legal translation thus requires an interpretive approach grounded in legal knowledge, rather than a purely lexical or dictionary-based method. Hence, the findings highlight that terminological and semantic challenges constitute a core obstacle to effective legal translation in both Tanzania and Ghana. Addressing this issue requires more than linguistic competence; it demands specialised training, the development of standardised terminology resources, and closer collaboration between legal and language professionals. Without such interventions, the risk of producing translations that are linguistically fluent but legally inadequate remains high.

Table 2:
Comparison of Legal Meanings and Ordinary Meanings of Selected Legal Terms

Legal Term	Legal Maeaning	Ordinary Meaning
Charge	A formal accusation made against someone in a court of law.	To accuse someone of something informally.
Appeal	A request made to a higher court to review and change the decision of a lower court.	To ask someone for help or request something earnestly.
Bail	Temporary release of an accused person awaiting trial, often with conditions.	Payment or deposit for a guarantee, not necessarily legal.
Sentence	The punishment assigned by a court to someone convicted of a crime.	Any statement or line of words in general speech.
Appeasement	(Rare in law) – sometimes used in historical treaties; generally, not a legal term.	To pacify or satisfy someone.
Claim	A formal demand for something as a right in a legal context.	To say something is true or to assert ownership in everyday speech.

Table 3:
Contrast Between Ordinary Usage and Legal Usage of Common Legal Terms

Word / Term	Meaning in Ordinary Language	Meaning in Legal Language
Consideration	Thoughtfulness or careful thinking about something	Something of value (money, service, promise, etc.) exchanged between parties to form a binding contract
Charge	To ask for payment or to accuse someone informally	A formal criminal accusation brought by the state against an individual

Party	A social gathering or celebration	A person or entity involved in a legal case or contract
Reasonable	Sensible or fair according to common sense	A legal standard based on what an average, prudent person would do in similar circumstances
Execute	To carry out a task or plan	To formally sign and complete a legal document, or in criminal law, to carry out a death sentence
Void	Empty or meaningless	Legally invalid and without legal effect from the beginning
Subject	Topic	A person affected by a legal action
Sentence	A group of words forming a complete thought	The punishment formally imposed by a court after a conviction

The examples presented in the tables above demonstrate that reliance on ordinary meanings can lead to inaccurate translation. This challenge was observed across both Tanzania and Ghana, particularly among non-specialist participants. These examples demonstrate that although legal terms often resemble everyday words, their legal meanings are more precise and context-bound. Without familiarity with these specialized meanings, laypersons may misinterpret legal texts or proceedings, which reinforces the importance of clarity, explanation, and accurate translation in legal communication.

Conceptual and Legal System Challenges

Beyond linguistic and terminological issues, the study identified deeper conceptual challenges in translating legal notions such as liability. These challenges arise not merely from differences in wording, but from the way legal meaning is constructed and applied within specific legal systems. In legal contexts, liability denotes a formally defined and enforceable responsibility grounded in established frameworks such as contract, tort, or criminal law. In contrast, in ordinary language, the term is typically understood in a broader and less technical sense, often referring to general blame or fault. This divergence creates a significant risk of misinterpretation when legal concepts are transferred across languages without adequate attention to their legal function.

The findings suggest that misinterpretation of liability is not simply a linguistic error but a conceptual one. When individuals rely on everyday

meanings, they may fail to grasp the legal consequences attached to the term. For instance, interpreting liability as mere moral responsibility obscures its legal implications, including the possibility of sanctions, compensation, or enforceable obligations. This has practical consequences for how legal actors and laypersons understand rights, responsibilities, and outcomes within legal processes.

This challenge is particularly evident in the comparative context of Tanzania and Ghana. In Tanzania, the increasing use of Kiswahili in legal proceedings has heightened the need to express complex legal concepts in a language that is widely understood but still developing its specialised legal register. In Ghana, where English remains the dominant legal language, the challenge manifests differently, as non-English speakers must rely on translation or interpretation to access legal meaning. In both contexts, the absence of fully standardised conceptual equivalents complicates the accurate transfer of legal ideas such as liability. Moreover, the findings indicate that conceptual misunderstandings are more prevalent among non-specialist participants, suggesting that legal knowledge plays a critical role in translation accuracy. Translators who lack familiarity with legal reasoning may produce linguistically coherent but legally inadequate interpretations. This underscores the limitation of viewing legal translation as a purely linguistic task.

Generally, the analysis demonstrates that conceptual challenges in legal translation stem from differences in legal systems, interpretive frameworks, and levels of expertise. Addressing these challenges requires integrating legal knowledge into translation practice and developing context-sensitive approaches that account for both linguistic and institutional dimensions of meaning. Such efforts are essential for ensuring clarity, fairness, and effective access to justice in multilingual legal systems.

Table 4:

Legal and Ordinary Interpretations of Liability-Related Terms

Word	Liability in Legal Language	Liability in Ordinary Language
Breach	Failure to fulfil a legal duty, creating liability. *Example:* Breach of contract made the seller liable.	Breaking or violating something informally. *Example:* "He breached the rules of the game."
Damages	Monetary compensation awarded by a court for loss or injury caused by liability. *Example:* The company paid	Physical harm or general loss. *Example:* "The storm caused a lot of damage to houses."

	damages for breach of contract.	
Fault	A legal basis for liability based on wrongful conduct. *Example:* The court found the defendant at fault for the accident.	A mistake or error. *Example:* "It was my fault I arrived late."
Negligence	Failure to exercise the standard of care required by law, resulting in harm and legal liability. *Example:* A hospital is liable due to medical negligence.	Carelessness or lack of attention. *Example:* "Breaking the cup was just negligence."
Liable	Legally responsible for an act or omission and subject to legal consequences. *Example:* An employer is liable for injuries suffered by an employee at work.	Likely or expected to do something, or loosely responsible. *Example:* "He is liable to forget his keys."

These examples show how liability-related terms have precise legal meanings that differ from their everyday usage, which can cause confusion if legal language is interpreted using ordinary meanings.

Strategies for Improving Legal Translation

The findings of this paper demonstrate that challenges in legal translation in Tanzania and Ghana are not only linguistic but also institutional and professional in nature. Addressing these challenges therefore requires a coordinated and multi-dimensional approach. The following strategies are proposed to improve the quality, consistency, and effectiveness of legal translation in both contexts.

Training and Education

A central finding of this paper is that many translation challenges stem from insufficient integration of legal knowledge into language training. This suggests that improving legal translation requires a shift from general language instruction to specialised, interdisciplinary education. Universities and higher learning institutions in both Tanzania and Ghana should therefore develop dedicated programmes in legal translation and court interpreting that combine linguistic competence with foundational legal training. Such programmes should equip learners with knowledge of legal systems, legal terminology, and procedural practices, enabling them to engage with legal texts beyond surface-level interpretation.

The comparative findings indicate that while Tanzania's policy shift towards Kiswahili has increased demand for trained legal translators, Ghana faces a parallel challenge in preparing language professionals to mediate between English and local languages. In both cases, the absence of structured training pathways contributes to inconsistencies in translation quality. Introducing standardised curricula would therefore help bridge this gap.

In addition, continuous professional development should be institutionalised to ensure that practitioners remain responsive to evolving legal and linguistic contexts. Regular workshops, certification programmes, and refresher courses can reinforce best practices, particularly in areas such as legal drafting, interpretation techniques, and ethical standards. This approach recognises that legal translation is not a static skill but one that requires ongoing refinement in response to changes in law and language use.

Policy Reform

The study further reveals that many of the challenges identified persist due to limited policy direction and institutional support. In both Tanzania and Ghana, legal translation is often practised in an ad hoc manner, without clear regulatory frameworks governing its provision. This suggests that improving translation practices requires deliberate policy intervention.

Governments should adopt comprehensive language access policies that formally recognise translation and interpreting as essential components of the justice system. Such policies should specify when translation is required, identify priority languages, and establish standards for service delivery. In Tanzania, where Kiswahili has been introduced in legal proceedings, policy efforts should focus on ensuring that this shift is supported by systematic translation of statutes and legal materials. In Ghana, policy reform should address the continued reliance on English by creating mechanisms for translating legal information into widely spoken local languages.

Equally important is the allocation of resources for implementation. Without adequate funding, even well-designed policies are unlikely to produce meaningful change. Investment in translation services, training programmes, and institutional infrastructure is therefore critical. By

embedding translation within legal policy frameworks, both countries can move from reactive practices to structured and sustainable systems of language access.

Professionalisation

Another key issue identified in the study is the lack of professional regulation in legal translation. The findings indicate that translation tasks are sometimes undertaken by individuals without specialised training, increasing the risk of inaccuracies and inconsistencies. This highlights the need to formalise legal translation as a recognised professional field.

Professionalisation can be achieved through the establishment of certification and accreditation systems that define minimum standards for practice. Only qualified translators with demonstrated competence in both language and law should be entrusted with legal translation tasks. This would enhance accountability and improve the overall reliability of translated materials.

The study also underscores the importance of interdisciplinary collaboration. Legal translation should not be treated as an isolated linguistic activity but as a process that requires input from both translators and legal professionals. Involving lawyers in the review and validation of translations can help ensure that legal meaning is accurately conveyed and aligned with existing legal frameworks. This is particularly important in complex cases where misinterpretation could have significant legal consequences.

Furthermore, professionalisation should include the development of ethical guidelines and quality assurance mechanisms. Translators must be aware of the legal implications of their work and adhere to standards that prioritise accuracy, confidentiality, and impartiality. Strengthening professional structures in this way would contribute to more consistent and credible translation practices in both Tanzania and Ghana.

Terminology Development

The findings of this paper highlight the absence of standardised legal terminology as a major barrier to effective translation. In multilingual contexts, the lack of agreed equivalents for legal terms leads to inconsistency and increases the risk of misinterpretation. Addressing this

issue requires deliberate efforts to develop and standardise legal terminology.

One key strategy is the creation of comprehensive legal dictionaries and terminology databases that provide clear definitions and standardised equivalents across languages. Such resources would serve as essential reference tools for translators, lawyers, and other stakeholders, promoting consistency in the use of legal language. In Tanzania, this is particularly important for supporting the development of Kiswahili as a legal language, while in Ghana it can facilitate translation into local languages.
Terminology development should be a collaborative process involving linguists, legal experts, and translation practitioners. This ensures that terms are not only linguistically appropriate but also legally accurate. Regular updates are also necessary to reflect changes in legislation and emerging legal concepts. In addition to dictionaries, the development of digital term banks and computer-assisted translation tools can further enhance consistency and efficiency. However, such tools should complement, rather than replace, human expertise, given the complexity of legal meaning.

CONCLUSION

This paper has demonstrated that legal translation challenges in Tanzania and Ghana are primarily rooted in three interrelated areas: terminological ambiguity, conceptual misunderstanding, and institutional limitations. The findings show that difficulties in translating legal meaning arise not only from linguistic differences but also from the specialised nature of legal concepts and the absence of standardised terminology. In both countries, participants struggled particularly with terms whose legal meanings diverge from everyday usage, confirming that translation errors are often conceptual rather than purely linguistic.

The comparative analysis further reveals that while these challenges are common to both contexts, their manifestations differ. In Tanzania, the increasing use of Kiswahili in legal proceedings has intensified the demand for accurate and standardised translation, exposing gaps in terminology development and professional training. In Ghana, the continued dominance of English creates barriers for non-English speakers, highlighting the need for structured translation mechanisms to support access to legal information. These differences indicate that improving legal translation requires context-specific interventions grounded in shared principles.

Based on these findings, the study emphasises that strengthening legal translation depends on four key areas: specialised training, clear policy frameworks, professional regulation, and systematic terminology development. Addressing these areas would enhance the accuracy, consistency, and accessibility of legal communication. Ultimately, the study establishes that effective legal translation is central to achieving linguistic justice in multilingual societies. By aligning translation practices with legal and institutional realities, Tanzania and Ghana can improve access to justice and ensure that legal systems are more inclusive, transparent, and functionally effective.

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Digital Literacy Profiles of Secondary School Teachers in Tanzania and their Relationship with Technology-Enhanced Lesson Design Competences

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Abstract
This study examines the digital literacy profiles of secondary school teachers in Tanzania, concentrating on two primary dimensions of digital literacy: Information and Data Literacy (IDL) and Digital Content Creation (DC). Data from 251 teachers were employed, utilizing a cross-sectional quantitative design and person-centered cluster analysis to identify various digital literacy profiles. Three levels of digital literacy emerged: low, moderate, and high. Correlational analyses were subsequently carried between digital literacy profiles and teachers' capacity to formulate technology-enhanced lessons across five domains: Pedagogical-Technology Integration, Content-Technology Alignment, Student-Centered Technology Design, Assessment-Evaluation Integration, and Adaptive Lesson Planning. Multivariate, correlational, and regression analyses demonstrated statistically significant and practically relevant associations between digital literacy and lesson design proficiency. Digital Content Creation emerged as the strongest statistical predictor of lesson design competence. The results indicate variability in teachers' digital literacy profiles. These findings suggest that professional development strategies may benefit from being tailored to these differences and the current digital literacy among teachers. The implication of these findings for Tanzania's education policy and the professional development of teachers is discussed.

Keywords: *Digital literacy, technology-enhanced lesson design, teacher competence, cluster analysis, digital content*

INTRODUCTION

Digital literacy has become a central component of education in the 21st century. This is because changes around the world are making classrooms more connected, with more multimedia resources, and with teachers who focus on the needs of their students. These changes make big differences in the roles of teachers and students in the classroom and the subjects they study, encouraging the need to integrate new ways of teaching and learning (Lubuva, Ndibalema, & Mbwambo, 2022). Digital literacy in teaching and learning encompasses more than the acquisition of fundamental technical skills; it involves transforming pedagogy, assessment, and knowledge accessibility to foster equitable learning outcomes, especially in low- and middle-income countries (World Bank, 2025; UNESCO, 2018). Consequently, teachers' proficiency in employing digital tools for instructional objectives is increasingly acknowledged as the cornerstone for successful classroom technology integration and consequently improving student engagement and learning outcomes (Olurinola, Kibga, & Mtenzi, 2023; Loisulie, 2025).

In the Tanzanian context, the integration of technology into teaching is not simply about providing teachers with tools; it is about enhancing their ability to design technology-rich learning experiences that align with curricular goals (Lubuva, Ndibalema, & Mbwambo, 2022; Mtebe & Raphael, 2018). Teachers who combine technical skills with pedagogical design strategies are more likely to create interactive, learner-centred activities and adapt resources effectively to meet diverse students' needs (Kafyulilo et al., 2015).

However, while numerous studies report improvements in lesson design through hands-on training, iterative feedback, and active learning approaches, the ability to create meaningful digital content and integrate technology into the curriculum remains highly dependent on the teachers' digital literacy profiles. Identifying heterogeneous teacher digital literacy profiles is crucial for tailoring professional development programs that meet teachers where they are and accelerate their progression from basic tool usage to innovative pedagogical integration (Lubuva et al., 2022; Loisulie, 2025). Given the vast diversity in teachers' skills, access to resources, and confidence, a one-size-fits-all approach to professional development in Tanzania is unlikely to yield sustained improvements. Research suggests that context-sensitive, differentiated training programs

have a significantly greater potential for impact (Ngodu, Ndibalema, & William, 2024).

This study examines the digital literacy profiles of secondary school teachers in Tanzania and analyzes the correlation between these profiles and their proficiency in designing technology-enhanced lessons. Three fundamental inquiries will be addressed: What are the digital literacy profiles of Tanzanian secondary school teachers? How do these profiles connect to teachers' ability to plan lessons that use technology? What do these results mean for the creation of programs for professional development? By empirically linking digital literacy profiles to lesson design competence, the study aims to inform differentiated professional development strategies that are contextually relevant and pedagogically meaningful.

Unlike previous studies that predominantly utilised variable-centred approaches like correlation and regression analyses to examine relationships between digital literacy and instructional practices (e.g., Koehler and Mishra, 2009; Kafyulilo et al., 2015; Lubuva et al., 2022), this study adopts a person-centred approach using cluster analysis to identify distinct digital literacy profiles among teachers. This approach provides a more nuanced understanding of heterogeneity in teachers' competencies and enables the development of targeted and differentiated professional development strategies (Magnusson, 1998; Trevisan et al., 2023). By linking these profiles to technology-enhanced lesson design competence, the study extends existing research and offers contextually relevant insights for educational practice and policy in Tanzania.

This study contributes to the growing body of literature on teacher digital competence by adopting a profiling approach that informs differentiated instructional support strategies.

Context of the Study

Digital Literacy and ICT Integration in Sub-Saharan Africa

Digital transformation of education in Sub-Saharan Africa is challenged by a significant gap existing between what politicians want and what really happens in the classroom. Several nations have developed national ICT-in-education policies.

However, despite all the efforts, challenges like inconsistent electricity, insufficient internet connectivity, not enough gadgets, and teacher training

systems that don't have enough money affect their effective implementation (Ngao & Sang, 2024). The COVID-19 epidemic made this implementation failure even more evident by indicating how many people weren't ready or even not able for digital and distant learning (Dzingirai, 2023).

The digital divide is not simply about being able to get to the internet. Teachers still have problems using technology in their lessons because they don't know the way to utilize it, their schools don't provide them enough help, and their professional learning communities aren't working (Buragohain, 2023). Research in African contexts underscores that sustained ICT integration necessitates synchronized investment in infrastructure, enhancement of teacher skills, and the delivery of pedagogically consistent digital content (Msafiri, Kangwa, & Cai, 2023).

Tanzanian Context

Tanzania has strongly committed itself to implement the ICT policy in schools. The National Digital Education Strategy (2024/25 -29/30), showed that Tanzania institutionalised seven pillars of TCPD that every teacher should continue to learn and master which are infrastructure and access, ICT integration in the curriculum, digital content development, digital assessment, human resource and capacity building, innovation, research and entrepreneurship and emerging technologies as targets to enhance competence of teachers in the use of ICT in the teaching (MoEST, 2024/25–2029/30). Initiatives like changing the curriculum to focus on skills and integrate information and communication technologies (ICT) into secondary education as part of broader efforts to modernize teaching and learning (MoEST, 2024/25–2029/30). Likewise, some donor funded programs have given teachers digital devices and encouraged secondary schools to use learning management systems (Ngodu et al., 2024).

However, despite increased investment in infrastructure and teacher training initiatives, classroom-level technology integration remains uneven and that teacher's ability to integrate technology pedagogically remains limited (Mtebe & Raphael, 2018; Kafyulilo & Fisser, 2019). Challenges related to infrastructure like, unreliable electricity and limited access to broadband, keep making it hard to use digital resources on a regular basis, especially in rural and peri-urban schools (Mwifunyi & Kibinda, 2016; Ngeze, 2017). Moreover, inadequate pre-service and in-service training and preparation of the teachers hinder their access into pedagogically enriching learning experiences (Kafyulilo et al., 2015).

A gap is still existing in systematically profiling teachers' digital literacy and linking those profiles to proven measures of technology-enhanced lesson design competence. This study fills that gap.

Purpose, Objectives, and Research Questions

Purpose

The purpose of this study was to examine digital literacy profiles among secondary school teachers in Tanzania and examine how these profiles are associated with teachers' competence in designing technology-enhanced lessons.

Specific Objectives

1. To identify and characterize digital literacy profiles among secondary school teachers in Tanzania based on Information and Data Literacy against Digital Content Creation competencies.
2. To examine differences in technology-enhanced lesson design competence across identified digital literacy profiles.
3. To examine the extent to which Information and Data Literacy and Digital Content Creation predict teachers' technology-enhanced lesson design competence.

Research Questions

1. What digital literacy profiles characterize secondary school teachers in Tanzania based on their Information and Data Literacy and Digital Content Creation competencies?
2. How do teachers' technology-enhanced lesson design competencies differ across identified digital literacy profiles?
3. To what extent do Information and Data Literacy and Digital Content Creation predict teachers' technology-enhanced lesson design competence?

METHODS

Research Approach and Design

This study employed a quantitative research approach utilizing cluster analysis to identify distinct digital literacy profiles among secondary school teachers in Tanzania. Cluster analysis is a multivariate statistical technique that groups individuals into homogeneous subgroups based on similarities in their characteristics (Everitt et al., 2011). This person-centered analytical approach is particularly appropriate for identifying naturally occurring

patterns in complex datasets and has been widely used in educational research to develop teacher typologies (Magnusson, 1998; Trevisan et al., 2023).

A cross-sectional survey design was adopted where data was collected at a single time in order to capture teachers' self-reported digital literacy and lesson design competencies. Despite its weakness for making casual inferences, a cross-sectional design was deemed efficient for describing population characteristics and examining relationships between variables (Creswell & Plano Clark, 2018).

Validated measurement instruments and rigorous statistical analysis procedures were used to ensure the reliability and validity of the findings.

Participants

The study sample consisted of 251 secondary school teachers from diverse regions of Tanzania. The sampling frame consisted of secondary school teachers from selected regions representing diverse geographical and institutional contexts in Tanzania. Stratified random sampling ensured representation across school types (public and private) and locations (urban, peri-urban, and rural), and levels of teaching experience thereby enhancing the generalizability of the findings. This sampling strategy was intended to reflect the diversity of the Tanzanian secondary teacher population and improve the generalizability of the results.

Sample Characteristics

The study's total sample size was 251 secondary school teachers sampled from urban, peri-urban, and rural secondary schools in several regions of Tanzania, including Dar es Salaam, Dodoma, Arusha, Mwanza, Tanga, and Mbeya. About 70% of the teachers came from public secondary schools, and about 30% came from private secondary schools reflecting the national teacher's distribution (MoEST ESMIS, 2023). The only requirement for inclusion was teaching experience which was broken down into groups of first-year teachers and teachers with more than 20 years of experience (M = 8.4 years, SD = 6.2 years). The teachers taught a wide range of subjects, such as math, science, languages, the arts, and vocational subjects.

58% of the respondents were male teachers, and 42% were female teachers. This is in line with national statistics for secondary school teachers in Tanzania (World Bank, n.d.). The inclusion criteria mandated that participants be currently employed as full-time secondary school educators

and possess access to at least fundamental digital devices (computer or tablet) either in an educational setting or personally. Teachers who were on long-term leave were excluded.

Procedures

Data collection took place from April to June 2024, during the 2024 academic year. The research team worked with regional education offices and school administrators to make it easier and allow access to the participating schools. The institutional review board gave its ethical approval, and everyone who took part in the study gave their informed consent.

Data Collection Process

Recruitment and Orientation

Heads of Schools were contacted for explanations about the study objectives and request permission to recruit teacher participants. Information sessions were conducted at participating schools to inform teachers about the study and invite voluntary participation.

Survey Administration

A comprehensive digital survey was administered to participating teachers using an online platform accessible via electronic devices including computers, tablets, and smartphones. For schools with limited internet connectivity, offline versions of the survey were provided on tablets, with data synchronized when connectivity was available.

Survey Completion

Teachers completed the survey during designated times, typically during professional development sessions or after school hours. The survey took approximately 30-40 minutes to complete. Research assistants were available to clarify questions and provide technical support as needed.

Data Quality Assurance

Real-time monitoring of response completeness was done, and participants were reminded to fill in any missing items before submitting their answers. We looked at the data to see if it was consistent and if there were any outliers. We then looked into and fixed any problems. All answers were kept private and anonymous. Each participant was given a unique identification code, and their personally identifiable information was kept

in secure, password-protected databases separate from their survey answers.

Measures

The measurement instruments used in this study were adapted from established frameworks, particularly the DigComp 2.0 framework for digital competence (Vuorikari et al., 2016) and the TPACK framework for technology integration (Koehler & Mishra, 2009). Items were contextualized to reflect classroom practices in Tanzanian secondary schools. The instrument development process involved aligning items with theoretical constructs and ensuring content relevance to teaching and learning contexts. The survey evaluated two fundamental constructs: digital literacy and proficiency in technology-enhanced lesson design. To reduce central tendency bias and get more accurate answers, all items used 6-point Likert scales (Garland, 1991).

Digital Literacy

A digital literacy framework (DigComp 2.0) was adapted to measure teachers' digital literacy in Tanzania (Vuorikari et al., 2016): Two dimensions were measured:

I.Information and Data Literacy (IDL)

This dimension looked at how well teachers could browse, search, filter, evaluate, and manage digital information and data. Five items measured these skills like:

- ✓ Ability to search for and locate relevant educational resources online
- ✓ Competence in evaluating the credibility and reliability of digital information sources
- ✓ Skills in organizing and storing digital educational materials systematically
- ✓ Ability to retrieve and reuse digital data for instructional purposes
- ✓ Understanding of data privacy and protection in educational contexts

The selection of Information and Data Literacy (IDL) and Digital Content Creation (DC) was theoretically grounded in the DigComp 2.0 framework, where these domains represent foundational and applied dimensions of digital competence (Vuorikari et al., 2016). IDL captures teachers' ability to access, evaluate, and manage digital information, while DC reflects higher-order competencies involving the creation and adaptation of instructional materials. These two dimensions were selected because they are directly linked to instructional design practices and are empirically

measurable within classroom contexts. Focusing on these domains also allowed for a parsimonious yet meaningful profiling of teachers' digital capabilities in relation to technology-enhanced lesson design.

Digital Content Creation (DC)

This part looked at how well teachers could make, change, and use digital content for teaching. Five items evaluated competencies, including the capacity to develop digital instructional materials (presentations, documents, multimedia).

- ✓ Ability to create digital instructional materials (presentations, documents, multimedia)
- ✓ Skills in editing and modifying existing digital educational resources
- ✓ Competence in integrating different types of digital content into cohesive learning materials
- ✓ Understanding of copyright and licensing issues related to digital content
- ✓ Ability to use digital tools creatively to support student learning

A 6-point Likert scale (1 = Not at all competent to 6 = Extremely competent) was used to rate five items for each dimension. The composite scores for IDL and DC were found by averaging the responses to each item. Higher scores meant that the person was more digitally literate. For both dimensions, internal consistency reliability was high (Cronbach's $\alpha = 0.89$ for IDL and $\alpha = 0.87$ for DC).

Lesson Design Competence

Five constructs based on the TPACK framework and instructional design principles (Koehler & Mishra, 2009; Kafyulilo et al., 2015) were used to measure how well teachers could create technology-enhanced lessons.

i) Pedagogical-Technology Integration (PTI): Five items evaluated teachers' proficiency in effectively incorporating technology into pedagogical practices, encompassing the selection of suitable technologies for specific learning objectives, the design of technology-mediated learning activities, and the facilitation of technology-enhanced student interactions ($\alpha = 0.88$).

ii) Content-Technology Alignment (CTA): Five questions tested teachers' ability to use technology in a way that is consistent with the curriculum, accurately represent content through digital media, and make subject matter easier for students to understand ($\alpha = 0.86$).

iii) Student-Centered Technology Design (SCTD): Five questions asked teachers how well they could design lessons that use technology to get students involved, meet different learning needs, and help students work together using digital tools ($\alpha = 0.90$).

iv) Assessment-Evaluation Integration (AEI): Five items measured how well teachers could use digital tools for both formative and summative assessment, give feedback through technology, and judge how well students learned in technology-rich settings ($\alpha = 0.85$).

v) Adaptive Lesson Planning (ALP): Five items assessed teachers' capacity to dynamically modify technology-enhanced lesson plans in response to student requirements, technical limitations, and educational objectives, showcasing resilience in the face of technological difficulties ($\alpha = 0.87$).

6-point Likert scales (1 = Strongly disagree to 6 = Strongly agree) were used to rate all of the lesson design competence items. The scores were then averaged for each construct to get a composite score.

Data Analysis Procedure

Data analysis was done in a few different ways using SPSS version 28.0 and R statistical software.

Preliminary Analysis

Descriptive statistical analysis was carried out in order to calculate the mean, standard deviation, range, skewness, and kurtosis for each of the variables. Thereafter, the missing data were identified and seem to be very small (less than 2%) and cases with missing values were thrown away. Further, the assumptions for multivariate analysis, such as normality, linearity, and multicollinearity were made and the tests for multicollinearity was done and found that the Variance Inflation Factor values were between 2.85 and 3.12 and the tolerance values were between.32 and.35.Considering the idea from Vandenberg and Lance (2000) these levels of multicollinearity are acceptable.

Cluster Analysis

K-means cluster analysis was conducted to find different digital literacy profiles based on IDL and DC scores. Multiple criteria like the elbow method, silhouette coefficients, and interpretability were used to determine

the best number of clusters. Cluster solutions with 2 to 5 clusters were considered and the 3-cluster solution was chosen because it fits the data well and made sense from a theoretical point of view. A Split-sample validation and bootstrap resampling were used to see how stable the clusters were.

Profile Characterization

Analysis of variance (ANOVA) was employed in order to identify the disparities between digital literacy profiles on the IDL and DC dimensions. Post-hoc comparisons using Tukey's HSD test revealed significant differences among profile groups. To find out the magnitude of the differences between the profiles, Cohen's d and eta-squared were calculated.

Correlation Analysis

Pearson correlation coefficients were used to look at the two-way relationships between the digital literacy dimensions (IDL and DC) and the lesson design competence constructs (PTI, CTA, SCTD, AEI, ALP). We looked for patterns and how strong the links were in the correlation matrices. The Bonferroni correction was used to adjust the significance levels for a number of comparisons.

Comparative Analysis

We used ANOVA and MANOVA to look at the three digital literacy profiles in relation to lesson design competence constructs. Post-hoc tests showed which profiles were very different on each competence dimension. Profile plots were made to show how the skills for designing lessons differ between different digital literacy profiles.

Regression Analysis

Multiple regression analyses were carried out to examine the efficacy of the digital literacy dimensions (IDL and DC) in predicting each construct of lesson design competence. The standardized regression coefficients showed how each aspect of digital literacy added to the whole picture. For each regression model, we gave model fit statistics like R^2, adjusted R^2, and F-statistics. The significance level for all of the statistical tests was $\alpha = 0.05$, and effect sizes were used to explain what practical significance meant.

RESULTS

Digital Literacy Profiles

Based on the data collected for examining the teachers' Information and Data Literacy (IDL) and Digital Content Creation (DC) scores, the cluster analysis revealed three distinct digital literacy profiles among them . The three-cluster solution was chosen because it met the best statistical standards (silhouette coefficient = 0.58) and could be explained in terms of theory. Table 1 shows what each profile looks like,

Table 1:
Teachers' Digital Literacy Profile Characteristics

Luster	Profile Label	N	(%)	IDL Mean	(SD)	DC Mean	(SD)
0	Low Digital Literacy	29	11.6%	2.821	(0.718)	2.186	(0.754)
1	Moderate Digital Literacy	121	48.2%	3.825	(0.432)	3.641	(0.475)
2	High Digital Literacy	101	40.2%	4.665	(0.326)	4.556	(0.453)

Note: IDL = Information and Data Literacy; DC = Digital Content Creation. All measures on 6-point Likert scales.

Profile Descriptions

Cluster 0: Low Digital Literacy Profile (11.6%, n = 29)
Teachers in this profile had scores that were lower than average on both digital literacy dimensions. Their average IDL score of 2.82 (SD = 0.72) and DC score of 2.19 (SD = 0.75) show that they aren't very good at managing information and making digital content. Most of these teachers said they had trouble finding and evaluating online educational resources, organizing digital materials in a logical way, and making or changing digital instructional content. A lot of the teachers in this group didn't have easy access to digital devices or the internet, and most of them hadn't had much formal training in how to use technology in the classroom.

Cluster 1: Moderate Digital Literacy Profile (48.2%, n = 121)
This was the biggest profile, making up almost half of the sample. Teachers in this profile had average scores of 3.83 (SD = 0.43) for IDL and 3.64 (SD = 0.48) for DC, which means they were somewhat competent in both areas of digital literacy. These teachers had basic digital skills, such as being able to find educational resources online, organize digital files, and make simple digital teaching materials like presentations and documents. But they said they had trouble with harder tasks like critically evaluating digital

information sources, understanding copyright issues, and creatively combining different types of digital content.

Cluster 2: High digital literacy profile(40.2%, n = 101)
Teachers in this profile had better than average digital literacy in both areas, with average scores of 4.67 (SD = 0.33) for IDL and 4.56 (SD = 0.45) for DC. All of the digital literacy areas that were tested showed that these teachers were very good at them. These included advanced strategies for searching for and evaluating information, organizing digital resources in a systematic way, creating content in a creative way, and knowing about digital rights and data privacy. Many teachers in this profile had taken part in more than one professional development program that focused on educational technology. They also said they used digital tools in their teaching on a regular basis.

Statistical Comparisons Between Profiles
Results from a One-way ANOVA indicated significant differences among the three profiles in both dimensions of digital literacy: IDL, $F(2, 248) = 287.45$, $p < .001$, $\eta^2 = 0.70$; DC, $F(2, 248) = 312.18$, $p < .001$, $\eta^2 = 0.72$. Using Tukey's HSD test for post-hoc comparisons, we found that all pairwise differences between profiles were statistically significant ($p < .001$) and Cohen's d ranged from 2.15 to 3.42 indicating large effect sizes. These results imply that the three profiles are indeed separate groups of teachers with very different levels of digital literacy skills. The big effect sizes indicate that the differences between profiles are not only statistically significant, but also important in real life.

Relationship Between Digital Literacy and Lesson Design Competence
Correlation Analysis
Results from Pearson correlation tests showed that there was strong positive relationship between all five lesson design competence constructs and the digital literacy dimensions (IDL and DC) (all $p < .001$). The full correlation matrix can be found in Table 2.

Table 2:
Correlations Between Digital Literacy Dimensions and Lesson Design Competence Constructs

Variable	1	2	3	4	5	6	7
IDL							

DC		.812***					
PTI	.698***	.721***					
CTA		.672***	.695***	.856***			
SCTD	.701***	.733***	.823***	.798***			
AEI			.668***	.781***		.775***	
		.645***			.802***		
ALP	.683***	.702***		.809***		.813***	.767***
					.784***		

Note: N = 251. IDL = Information and Data Literacy; DC = Digital Content Creation; PTI = Pedagogical-Technology Integration; CTA = Content-Technology Alignment; SCTD = Student-Centered Technology Design; AEI = Assessment-Evaluation Integration; ALP = Adaptive Lesson Planning. *** $p < .001$

From the analyses, several patterns emerged as follows:

1. There is a strong link between the different aspects of digital literacy. IDL and DC were very closely associated ($r = .812$), which means that teachers who are good at information and data literacy are also likely to be good at making digital content.
2. Substantial links to lesson design skill: IDL and DC both had significant positive relationships with all five dimensions of lesson design competency, with correlation coefficients between .645 and .733. DC and SCTD had the largest association ($r = .733$), which means that instructors' ability to create digital content is especially crucial for planning lessons that are centered on students and use technology.
3. Inter-correlations among lesson design constructs: The five lesson design competency constructs were very closely associated ($r = .767$ to .856), which means that these skills tend to grow together as part of a set of integrated pedagogical technological skills.
4. Comparable predictive relationships: IDL and DC both revealed comparable patterns of connection with lesson design competency characteristics. In most cases, the correlations for DC were a little higher. This means that being able to make and change digital content may be even more vital than being able to read and write.

A Comparison Based on Digital Literacy Profile

Multivariate analysis of variance (MANOVA) was conducted to determine the variations in lesson design competency between the three digital literacy profiles. The entire MANOVA was statistically significant, with Wilks' $\lambda = 0.23$, $F(10, 488) = 52.34$, $p < .001$, and $\eta^2 = 0.52$. This means that there were big disparities in lesson design skills between the different profiles.

Subsequent ANOVAs for each lesson design competency component indicated significant profile differences across all five constructs (all $p < .001$). Table 3 shows the means and standard deviations for each construct by profile, as well as the results of the ANOVA.

Table 3:
*Lesson Design Competence by Digital Literacy Profile**

Construct	Low Profile		Medium Profile		High Profile		F	η^2
	M	SD	M	SD	M	SD		
PTI	2.47	(0.68)	3.72	(0.51)	4.81	(0.47)	298.45***	0.71
CTA	2.61	(0.72)	3.68	(0.54)	4.73	(0.49)	264.12***	0.68
SCTD	2.53	(0.71)	3.76	(0.53)	4.87	(0.45)	312.67***	0.72
AEI	2.68	(0.75)	3.65	(0.57)	4.65	(0.52)	234.89***	0.66
ALP	2.59	(0.70)	3.71	(0.55)	4.76	(0.50)	278.34***	0.69

Note: N = 251 (Low = 29, Moderate = 121, High = 101). PTI = Pedagogical-Technology Integration; CTA = Content-Technology Alignment; SCTD = Student-Centered Technology Design; AEI = Assessment-Evaluation Integration; ALP = Adaptive Lesson Planning. All measures on 6-point Likert scales. *** $p < .001$

Through Tukey's HSD test, post-hoc comparisons revealed statistically significant pairwise differences between profiles for all five lesson design competence constructs (all $p < .001$). Effect sizes for differences between adjacent profiles (Low vs. Moderate, Moderate vs. High) ranged from $d = 1.85$ to 2.67, indicating very large practical differences.

Key Findings

1. Progressive competence development: Teachers with a High digital literacy profile were much more competent in all five lesson design constructs than those with a Moderate or Low profile. In the same way, teachers in the Moderate profile did much better than those in the Low profile on all of the constructs.
2. Consistent pattern across constructs: The link between digital literacy profiles and lesson design competence was very strong across all five constructs, with effect sizes (η^2) ranging from 0.66 to 0.72. This indicates that digital literacy exerts a significant impact on various aspects of technology-enhanced lesson design.
3. Largest differences in SCTD: The biggest effect size was for Student-Centered Technology Design ($\eta^2 = 0.72$). This supports the finding that digital literacy, especially content creation skills, is very important for designing technology-enhanced activities that are learner-centred.

4. Substantial competence gaps: Teachers in the Low digital literacy profile scored roughly 2.2 to 2.3 points lower (on a 6-point scale) than their counterparts in the High profile in all lesson design constructs. This is almost 40% of the scale range, which shows that teachers who are not very good with technology have big problems with designing lessons that use technology.

Regression Analysis

We did multiple regression analyses to see unique contribution of IDL and DC in predicting each lesson design competence construct. Table 4 shows the standardized regression coefficients and other statistics for the model.

Table 4:
*Multiple Regression Analyses Predicting Lesson Design Competence from Digital Literacy Dimensions**

Dependent Variable	IDL β	DC β	R^2	Adjusted R^2	F
PTI	.287***	.512***	.569	.566	163.47***
CTA	.301***	.487***	.538	.534	144.23***
SCTD	.278***	.531***	.592	.589	179.56***
AEI	.312***	.445***	.495	.491	121.34***
ALP	.295***	.489***	.543	.539	147.12***

Note: N = 251. IDL = Information and Data Literacy; DC = Digital Content Creation; PTI = Pedagogical-Technology Integration; CTA = Content-Technology Alignment; SCTD = Student-Centered Technology Design; AEI = Assessment-Evaluation Integration; ALP = Adaptive Lesson Planning. *** $p < .001$

From the analyses, several significant trends were revealed as follows:

1. Significant variance explained: The two digital literacy dimensions together explained 49.5% to 59.2% of the variance in lesson design competence constructs. This suggests that digital literacy is strongly associated with teachers' ability to design technology-enhanced lessons.
2. Each dimension adds something unique: In all of the regression models, both IDL and DC made statistically significant unique contributions to predicting lesson design competence, even when controlling for the other dimension. This means that both IDL and DC are independently important for a teacher to design lessons.
3. DC has stronger effects: In all five models, DC had higher standardized regression coefficients (β = .445 to .531) than IDL (β = .278 to .312). This pattern suggests that being able to create digital content may be especially important for planning technology-based lessons. However,

being able to find and use information (Information literacy) is also very important.

4. The regression model accounted for the greatest variance in Student-Centered Technology Design (SCTD) (R^2 = .592), consistent with the correlation and ANOVA findings. This supports the notion that digital literacy is essential for creating technology-enhanced, learner-centered activities.
5. Practical importance: The high amounts of variance explained and the high standardized regression coefficients show that the connections between digital literacy and lesson design competence are not only highly significant but also useful in real life. Teachers' ability to plan lessons utilizing technology is significantly influenced by how well they are able to use technology.

DISCUSSION OF THE FINDINGS

Interpretation of Digital Literacy Profiles

The three unique digital literacy profiles, the Low (11.6%), Moderate (48.2%), and High (40.2%) profiles identified among Tanzanian secondary school teachers offers significant insights into the diversity of digital competencies within the teaching workforce. This distribution indicates that a significant minority of teachers possess high digital literacy skills, nearly half exhibit only moderate competencies, and a small yet notable group shows considerable deficiencies in digital literacy.

The 11.6% of teachers in this profile have Low Digital Literacy Profile with a mean score on both the IDL and DC dimensions below 3.0. This implies that these teachers don't have the basic digital skills they need to use technology effectively in the classroom; therefore, they face troubles using technology in their classrooms This profile probably includes teachers who work in rural or poorly funded schools where they lack access to digital devices and the internet. It also includes teachers who have been in the field for a long time and started working before digital technologies became common in schools (Mwifunyi & Kibinda, 2016; Ngeze, 2017).

The difficulties encountered by this group encompass not only technical skills but also confidence and self-efficacy in utilizing technology. Studies in analogous contexts indicate that teachers with limited digital literacy frequently encounter anxiety regarding technology utilization and may deliberately evade the integration of digital tools into their instruction, despite the availability of resources (Mtebe & Raphael, 2018). This

behavior of avoiding things can consequently lead to difficulties in learning new skills.

(48.2%) which is almost half of the teachers fall under the Moderate Digital Literacy Profile: This situation is both a problem and a chance for Tanzania's education system. These teachers have basic digital skills that allow them to use technology, but they haven't yet learned the advanced skills needed to use technology in new ways in the classroom. They can do simple things like look for online resources, make simple presentations, and organize digital files, but they have trouble with more difficult tasks like critically evaluating digital information, integrating creative content, and understanding digital rights and privacy issues.

Teachers who fit this profile are likely open to opportunities for professional development and may gain a lot from targeted interventions that build on the skills they already have. The scores in this profile are not very different from each other (SD = 0.43 to 0.48), which suggests that there is a lot of diversity. Some teachers are close to becoming highly digitally literate, while others may need to work on their basic skills.

High Digital Literacy Profile

The 40.2% of teachers in this profile are very good at both areas of digital literacy, with average scores above 4.5 on the 6-point scale. These teachers know how to use technology effectively and efficiently to help their students learn. They can think critically about digital information, create and change different types of digital content, and understand important topics like data privacy, copyright, and being a good digital citizen.

The scores in this profile don't change much (SD = 0.33 to 0.45), which means that all the teachers in this group are good with technology and could be technology leaders and mentors in their schools. Research in professional learning communities report that teachers with these capabilities can help their coworkers use technology in the classroom by coaching them, sharing resources, and planning lessons together (Ngao & Sang, 2024).

Comparative Perspective

The distribution of teachers across these three profiles aligns with findings from other developing countries in Sub-Saharan Africa and Asia, where digital literacy among teachers typically exhibits a similar distribution, comprising a small cohort facing significant challenges, a large moderate

group, and a considerable contingent of digitally proficient teachers (Buragohain, 2023; Dzingirai, 2023). Tanzania's relatively large High-profile group (40.2%) compared to some other countries in the region may be associated with the recent governments' efforts to encourage the use of ICT tools by giving teachers tablets and improving ICT infrastructure in schools (MoEST, 2024/25-2029/30).

Digital Literacy and Pedagogical Competence

The revealed strong relationship between the two variables, teachers' digital literacy profiles and lesson design competence constructs proves that digital literacy is a basic technical skill needed by all teachers for effective pedagogical technology integration. The results of a correlation coefficient ranged from .645 to .733 and the large effect sizes ($\eta^2 = 0.66$ to 0.72), indicates that teachers' digital literacy is significantly associated with their ability to design technology-enhanced lessons.

However, results from the regression analyses show that digital literacy explains for 49.5% to 59.2% of the difference in lesson design competencies. This indicates that factors beyond digital literacy are also associated with variations in how technology is used in schools. Some of them may include knowledge about how to teach, information about the subject, beliefs about how to learn and teach, factors in the school environment, and access to resources (Mtebe & Raphael, 2018). Future studies should look into how these factors and digital literacy work together to affect how teachers use technology in the classroom.

TPACK Framework Perspective

The results of the analyses correspond with the Technological Pedagogical Content Knowledge (TPACK) framework, which asserts that successful technology integration necessitates the synthesis of technological knowledge, pedagogical knowledge, and content knowledge (Koehler & Mishra, 2009; Kafyulilo et al., 2015). Information and Data Literacy and Digital Content Creation are two of the digital literacy skills that were looked at in this study. They are both important parts of technological knowledge in the TPACK framework. The strong connections between lesson design competence constructs show that you need to know a lot about technology in order to build integrated TPACK competencies.

Digital Content Creation as a Critical Competency

The consistently higher regression coefficients for Digital Content development compared to Information and Data Literacy across all lesson design competency constructs show how important it is to be able to create content. Teachers who demonstrate stronger digital content creation skills tend to report higher levels of competence in designing technology-enhanced lesson plans that use technology to help students learn. This study has important things to say about how professionals can grow. It shows that teachers' development programs should put emphasis on developing skills for hands-on content creation activities instead of just on information literacy or use technology.

In particular, Digital Content Creation and Student-Centered Technology Design are strongly related ($r = .733$, $\beta = .531$). This underscores the need for a teacher to have content creation skills in order to develop tech-based activities that help students learn. Teachers who possess content creation skills are better at creating and developing lessons that are unique to each student, giving them different ways to learn the same thing, and make them active participants during the lesson (Kafyulilo & Fisser, 2019).

Progressive Competence Development

Teachers with a High digital literacy profile scored about 2.2 to 2.3 points higher than teachers with a Low profile on constructs that measure lesson design competency. This indicates a favorable correlation between digital literacy and the utilization of educational technology. According to stage models of technology adoption, teachers go through different stages of using technology, from not using it at all to coming up with new ways to use it (Puentedura, 2006). This trend goes along with that. Before teachers can use technology in the classroom, they need to learn the basics of digital literacy. But the fact that teachers with a Moderate digital literacy profile (scores between 3.65 and 3.76 on lesson design characteristics) were very good at what they did shows that teachers don't need to be experts in digital literacy before they start using technology in the classroom. This study shows that some immediate professional development programs can help teachers become more digitally literate, instead of teachers having to be tech-savvy before they can use technology in the classroom (Ngao & Sang, 2024).

Contextual Factors in Tanzania

The findings of this study must be interpreted within the specific context of Tanzania's education system and the challenges facing technology integration in Sub-Saharan African countries more broadly. The following

contextual factors shape the digital literacy profiles observed and their implications for lesson design competence:

Problems with Infrastructure

The government is investing highly into ICT infrastructure, however many schools in Tanzania still have serious infrastructure problems hindering effective ICT integration in the teaching and learning. Studies indicate that majority of schools in Tanzania are facing problems like unpredictable electricity, poor internet access, not enough devices, and lack of technical help (Mwifunyi & Kibinda, 2016; Ngeze, 2017). These problems make it harder for teachers to learn and practice their digital literacy abilities. Unfortunately, teachers who don't know much about technology are more likely to work in schools with bad infrastructure. This makes it tougher for them to improve their skills.

Despite the infrustructre challenges identified, still about 40.2% of the teachers in the High profile had moderate to strong digital literacy skills. This shows that they are incredibly flexible and strong. This implies that many of these teachers may have learned how to use technology by having their own devices, going to professional development seminars, or learning on their own ways with their mobile devices. These finding highlights how crucial it is to provide more than one approach for individuals to learn how to use technology that doesn't rely exclusively on schools.

Professional Development Landscape

On its way to enhance teachers' ICT competencies, Tanzania has made various efforts including distribution of tablet to all secondary and primary schools' teachers all over the country, also provision of online training courses, and school-based technology integration workshops (MoEST, 2024/25–2029/30). The availability of three different digital literacy profiles among teachers reflects differences in their access to and engagement with these professional development opportunities. Furthermore, the observed link between digital literacy and lesson design competence underscores the need to have professional development programmes that explicitly connect digital skill development with pedagogical applications.

Research on professional development effectiveness in Tanzania has shown that hands-on, practice-based training that includes collaborative lesson design and classroom implementation produces more substantial

improvements in teachers' technology integration competencies than traditional workshop-style training (Kafyulilo & Fisser, 2019; Ngao & Sang, 2024).

Systemic, Cultural, and Policy Context

By developing policies that make it easy to use technology, Tanzania is moving toward competency-based education and teaching skills that are crucial in the 21st century (MoEST, 2024/25–2029/30). The rules inform schools how to use technology, but it's still challenging to make these goals happen in the classroom. This is because it's hard to access the necessary tools, teachers lack adequate training, and assessment systems still focus on traditional academic goals instead of digital abilities.

The study's findings reveal significant differences in teachers' digital literacy skills. So, it won't work to make rules about how to utilize technology in the classroom. Not all teachers are good with computers when they first start working, therefore rules that apply to everyone don't work. These variations suggest that we need to develop rules that function in the actual world and can be adapted to meet what every teacher knows and needs.

Depending on their age, culture, or the institution they work for, teachers may use digital tools in different ways. This study didn't look directly at this issue, but other studies have found that younger teachers may be better at utilizing technology, while older teachers may have more trouble but be better at using technology since they have more experience teaching (Mtebe & Raphael, 2018). Therefore, it is important to consider these variables to establish a comprehensive understanding of teachers' digital profile.

Interpretation of Findings and Implications

The implications of the present study's findings are significant for conducting further studies, teacher training, and education policy in Tanzania. The fact that three unique digital literacy profiles were identified, namely Low (11.6%), Moderate (48.2%), and High (40.2%), clearly points to the need for differential training instead of adopting a homogeneous training approach for teachers. Teachers with a Low profile require intensive training in basic digital skills, confidence, mentoring, and infrastructural and application support for gradual induction into the classroom teaching environment. Teachers with a Moderate profile, who

already possess some digital skills, require training that builds on their existing skills, such as developing pedagogy, critical thinking, content generation, and collaborative learning approaches. Teachers with a High profile require training that positions them as technology leaders, such as training them in the latest technologies, innovation, and leadership, and supporting them through a community of practice and a system of recognition.

In terms of policy, the present study clearly points to the need for developing progressive digital literacy standards that are in line with international standards and yet unique to the Tanzanian context. Digital literacy and technology integration need to be included in pre-service teacher training programs so that newly qualified teachers are at least moderately proficient in digital literacy skills. Sustained funding for infrastructural development and teacher training needs to be ensured, as the two are interdependent, with infrastructural development alone being inadequate for improving digital literacy and technology integration in Tanzania's education system. In addition, the development of central resources and an accountability system is necessary for improving digital literacy and technology integration in Tanzania's education system.

LIMITATIONS AND STRENGTHS OF THE STUDY

Limitations of the Study

There are a few things we need to keep in mind when trying to figure out what this study's findings mean: The cross-sectional design makes it hard to figure out if there is a cause-and-effect relationship between digital literacy and lesson design skills. In addition, the reliance on self-reported measures of lesson design competence introduces the possibility of response bias, including social desirability and overestimation of actual classroom practices. As a result, the findings should be interpreted as reflecting perceived competence rather than directly observed instructional performance. Future studies may benefit from incorporating classroom observations or performance-based assessments to validate these findings. The study included teachers from different types and areas of schools, but the fact that they chose to take part may make it harder to use the results with other groups. The study mainly looked at the traits of individual teachers and did not look at things like school infrastructure, leadership support, or professional learning communities in depth. Lastly, even though the tools were adapted to fit the Tanzanian context, using

measurement tools that were made in Western contexts could make people wonder if they are culturally valid.

Strengths of the Study

Significantly, the research indicated considerable methodological and contextual strengths to increase the validity and reliability of the results and their applicability. The application of the stratified sampling method and the large and diverse sample of 251 teachers from secondary schools in different areas of Tanzania resulted in more representative and generalizable results. The application of cluster analysis and person-centered analysis enabled the identification of different types of digital literacy profiles. This resulted in more useful and policy-relevant results than the application of variable-centered analysis. To increase the understanding of pedagogical technology integration, the research applied a multidimensional measurement framework to assess lesson design competency in five constructs and digital literacy in Information and Data Literacy and Digital Content Creation. Construct validity was confirmed through the strong internal consistency reliability (Cronbach's $\alpha > .85$) of all measures used in the research, grounded in the DigComp 2.0 and TPACK frameworks. The application of multiple statistical methods, including multiple regression analysis, cluster analysis, correlation analysis, and ANOVA/MANOVA, resulted in convergent results and strengthened the conclusions drawn from the results. Effect sizes and statistical significance tests are important in demonstrating the potential application of the results. The policy relevance and applicability of the results to regional education reform and professional development programs are strengthened through the strong contextual background of the research in Tanzania and Sub-Saharan Africa.

CONCLUSION

From the study findings, it is evident that existing different levels of digital literacy among Tanzanian secondary school teachers are closely related to how well they can use technology to teach. The results show that teachers in today's schools need to be able to use computers and other digital tools well in order to teach well. To make sure that technology works well in Tanzania's schools, we need to deal with the fact that not all teachers are equally good at using computers. So, various strategies can be done to improve the integration of technology in schools including initiating a range of professional development programs, developing strong policy frameworks, and ongoing investments in infrastructure and teacher

training. This study gives us a clear set of facts that we can use in our work, our policies, and future research. We require additional longitudinal and qualitative studies to cultivate a more thorough comprehension of teachers' digital literacy in relation to technology-enhanced lesson design.

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The Effects of Tourism on the Socio-Economic Activities of Local Communities Neighboring Lake Manyara

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Abstract
This study examined the socio-economic effects of tourism on local communities neighboring Lake Manyara National Park in Tanzania, with particular emphasis on tourism multiplier effects and livelihood outcomes. A mixed-methods approach and cross-sectional research design were employed, involving 108 respondents comprising local households, tourism business operators, and park management officials. Data were collected through structured questionnaires, semi-structured interviews, and focus group discussions using simple random and purposive sampling techniques. Quantitative data were analyzed using descriptive statistics, including frequencies and percentages, while qualitative data were analyzed through thematic content analysis. The findings indicate that tourism significantly contributes to local economic development through employment creation, income generation, small business expansion, and infrastructure improvement. In addition, tourism supports social development through enhanced access to education, healthcare, and cultural promotion. However, the results also reveal structural challenges, including unequal distribution of benefits, weak integration into productive sectors, and increasing dependence on tourism as a primary livelihood source. The study concludes that while tourism generates measurable socio-economic benefits, its multiplier effects remain uneven and constrained by limited local participation and weak economic linkages. These findings highlight the need for policies that strengthen inclusive economic integration and enhance the sustainability of tourism-driven livelihoods.

Keywords: *Tourism, Socio-economic impacts, Local communities, Livelihoods, Tourism multiplier effects, Tanzania.*

INTRODUCTION

Tourism is globally known to trigger socio-economic growth, but it has a disproportionate impact on the local socio-economic development especially in the localities near conservation zones, which is a controversial topic. The tourism industry in the world contributed to about 9.1 per cent of world GDP and employed more than 330 million people in 2023, which is a high recovery following COVID-19 pandemic (WTTC, 2024). Although such numbers are economically important, they conceal one vital question: does tourism development lead to significant and fair local population benefits. More researchers assert that aggregate growth data does not reflect inequalities in income distribution, opportunity accessibility, and livelihood gains at the local level (García and Blanco, 2023; Liu et al., 2023).

Domestic tourism as a more robust and inclusive avenue of economic development has emerged in response to global shocks and structural weaknesses related to international tourism. Domestic tourism constitutes more than 70 percent of the total tourism expenditure across the world, and it is a key factor in income redistribution in national economies (UNWTO, 2023). It is commonly propagated in developing nations as a tool of increasing local engagement, empowering small and average businesses, and boosting rural livelihoods (Haulle et al., 2024). Nevertheless, even though its policy relevance is on the rise, there is a paucity of empirical data on the impact of domestic tourism on socio-economic activities at the community level, especially in conservation-proximate areas where resource access is limited.

The context of Tanzania provides an interesting example to study these dynamics. Tourism continues to be a significant part of the national economy, directly contributing 5.1 per cent to GDP and indirectly and indirectly adding over 17 per cent (Mwipopo & Massawe, 2024; WTTC, 2024). Recent statistics show that in 2023, Tanzania registered over 1.8 million visitors of international tourist arrivals, as well as a steady growth in domestic tourism due to government-based programs encouraging domestic tourism (NBS, 2024). Regarding this expansion, recent findings indicate the unequal nature of tourism changes, as many neighboural populations have had minimal gains in earnings, job creation, and diversification of their economies (Msangeni et al., 2024; Mmbaga et al., 2024). This questions the sustainability and inclusiveness of development driven by tourism.

The socio-economic impacts of tourism are multidimensional. Tourism has direct, indirect, and induced effects that affect employment and household income as well as local business development. Simultaneously, it may lead to infrastructure improvement and better access to services. Nevertheless, many challenges typically accompany these advantages, such as the unequal distribution of benefits, increased expenses of living, reduced access to land and natural resources, and a lack of representation of local communities in the decision-making process (Kessy et al., 2025; Kiffner et al., 2026). These tensions are especially acute in the circumstances of safeguarding where conservation goals can be opposed to the livelihood requirements of the locals.

These challenges are exemplified in the Lake Manyara Basin. Being included in the Tanzanian Northern Tourism Circuit, Lake Manyara National Park is a focal point of massive tourist arrivals because of its ecological diversity and strategic position. Nevertheless, the adjacent communities experience continuing limitations, such as human-wildlife interactions, land-use demands, and the lack of access to the tourism-related advantage (Janssens et al., 2021; Cheeseman, 2024). Empirical research on the wider Manyara ecosystem suggests that revenues and job opportunities in tourism tend to be centralized in the hands of external actors, with local populations being included only peripherally in tourism value chains (Mmbaga et al., 2024; Kulunge et al., 2026). Such conditions result in a lack of alignment between local livelihood improvement and tourism development.

An in-depth analysis of available literature shows a gap. The literature in the Lake Manyara area has mostly concentrated on community involvement, conservation performance, or macroeconomic benefits of tourism and little is done to understand the impacts of tourism especially domestic tourism on the socio-economic activities at the household and community levels (Melubo et al., 2024; Mwipopo and Massawe, 2024). Moreover, empirical analysis of the tourism multiplier effects and how they are influencing local livelihoods is inadequate. This gap constrains insight into whether tourism development is a source of significant socio-economic change or just perpetuation of existing disparities.

Thus, the purpose of this study is to evaluate how tourism impacts the socio-economic life of communities surrounding Lake Manyara National Park and, in particular, the impacts of tourism-on-tourism multiplier effects, distribution of benefits, and livelihoods. Addressing this gap, the study will add to the evidence base on the development of inclusive tourism

and contribute to insights on policy interventions to enhance the socio-economic well-being of communities in the conservation fields.

METHODOLOGY

Research Design and Approach

The study used cross-sectional research design with pragmatist research paradigm which combined both the quantitative and qualitative methodology. The mixed-methods design was selected to ensure that the effects of tourism could be properly evaluated through the integration of quantifiable socio-economic dimensions with the contextual knowledge of the local stakeholders. This method is highly suggested in tourism and development research in which the numeric patterns and the lived experiences are required to clarify the complex socio-economic factors (Creswell and Plano Clark, 2018; Liu et al., 2023). The cross-sectional design enabled gathering of data at a particular time, which was appropriate in studying the status of tourism-related socio-economic activities and their related multiplier impacts within local communities.

Study Area

The research was carried out in Kibaoni village, which contains Kilimamoja and Chemchem sub-villages within Manyara Town, which is about 37 km off Lake Manyara National Park. It was chosen purposely because of its proximity to the park, and the high density of tourism-related businesses, such as lodges, campsites, curio shops, cultural tourism enterprises, and tour guiding businesses. Kibaoni is an important human-wildlife interface within the Lake Manyara ecosystem, which involves tourism activities and livelihoods. There is regular tourist travel in the area related to the Northern Tourism Circuit, which boosts local economic operations, including employment in hospitality services, craft sales, and provision of agricultural products to tourism facilities.

Regardless of these opportunities, the region has numerous context-specific issues, including disproportionate allocation of the tourism benefits, under-involvement of the local communities in high-value tourism segments, increased living expenses, and environmental strains associated with tourism growth. The same trends have been documented in the community around the conservation zones in northern Tanzania, where the increase in tourism does not necessarily result in livelihood gains that are reasonable and equitable (Mmbaga et al., 2024; Kessy et al., 2025). These features render Kibaoni a suitable place to analyze the socio-economic impacts of tourism on the community level.

Population, Sample Size and Sampling Techniques

The study targeted three categories of respondents: local households, tourism business operators, and institutional stakeholders within Kibaoni village. The household population consisted of 1,155 households, from which a sample of 92 household heads was determined using Yamane's (1967) formula with a 10% margin of error. Household respondents were selected through simple random sampling using village registers as the sampling frame. Each household was assigned a unique identification number and selected through a random number generation procedure, ensuring equal probability of inclusion and minimizing selection bias.

In addition, 26 key informants were selected purposively based on their direct involvement in tourism-related activities and governance. These included accommodation managers, tour guides, curio shop owners, village leaders, and officials from Lake Manyara National Park. This ensured that participants possessed relevant knowledge and experience necessary for in-depth analysis. A total of 118 respondents were targeted, of which 108 participated in the study, resulting in a response rate of 91.5%. This rate is considered adequate for statistical analysis and generalization in social science research (Mugenda & Mugenda, 2003).

Data Collection, Data Analysis and Measurement of Variables.

Structured questionnaires, semi-structured interviews and focus group discussions were used to gather primary data. Household heads were given questionnaires in English and Swahili. To provide consistency and translational accuracy of meaning, the instrument was translated through a forward-backward translation process.

The questionnaire was formulated on the foundation of the existing literature on the tourism effects and rural livelihoods (García and Blanco, 2023; Liu et al., 2023). It was composed of closed-ended questions organized by major variables in line with the objectives of the study. Tourism was also assessed in terms of its economic contribution through indicators like employment, generation of income and business growth. The social impacts were measured by access to infrastructure, education, healthcare services, and cultural preservation. To quantify the negative effects, the indicators used were environmental degradation, social disruption, cultural erosion, economic dependence and land-related pressures.

Attitudinal variables were all measured on a five-point Likert scale between 1 (strongly disagree) and 5 (strongly agree) which enabled a standardized measurement of perceptions and experiences. The descriptive statistics, frequencies, and percentages, were used to analyze quantitative data and this aligns with the formatting of the results provided in this study (). Thematic content analysis was used to analyze qualitative data (interviews and focus group discussions) to determine common patterns and explanations that supplemented quantitative data. The data were pre-cleaned to ensure completeness, consistency, and accuracy. Only complete questionnaires were included, and the responses were coded and verified then input into SPSS version 27.

Pilot Testing, Reliability, and Validity

A pilot study involving 12 respondents of a nearby community with similar socio-economic background was administered to evaluate the clarity, relevance and reliability of the research instruments. The pilot also provided feedback that resulted in clarification of the ambiguous items and better sequencing of the questions. Cronbachs Alpha was used to evaluate reliability of measurement scales. The total reliability coefficient was 0.78, which is sufficient internal consistency to publish social science research (Hair et al., 2019).

Multiple procedures were used to guarantee validity. Expert validation of the instruments ensured content validity by ensuring that they met study objectives. Grounding of measuring variables through the existing literature on tourism and socio-economic impacts guaranteed construct validity. Moreover, methodological triangulation, which was attained by using questionnaires, interviews and focus group discussions, strengthened the credibility of the findings and their validity.

RESULTS AND DISCUSSION

Demographic Characteristics of Respondents

The study sampled respondents based on key demographic variables, including gender, age, education level, and occupation. Males constituted a slightly higher proportion at 53.7% compared to females at 46.3%, indicating a modest gender imbalance that could influence participation in tourism-related activities, particularly given gendered disparities in access to economic opportunities (Rogan et al., 2020).

Table 1:
Demographic characteristics of respondents

Demographic	Response options	Tick	Percentage (%)
Gender	Male	58	53.7
	Female	50	46.3
Age of respondents	18-30	30	27.8
	31-45	40	37.1
	46-60	25	23.1
	60+	13	12
Educational Level	Primary School	10	9.3
	Secondary School	20	18.5
	Certificate	15	13.9
	Diploma	25	23.1
	Bachelor Degree	30	27.8
	employed	60	55.5
	self-employed	30	27.8
Occupation	unemployed	18	16.7

Age distribution showed that the largest age group was between 31–45 years (37.1%), followed by 18–30 years (27.8%), 46–60 years (23.1%), and above 60 years (12%). This suggests a predominantly mature and economically active sample, which aligns with findings that this age bracket is often more involved in and benefits more from tourism initiatives (Jovicic, 2022).

Regarding education, 27.8% of respondents held a bachelor's degree, 23.1% a diploma, 18.5% secondary education, 13.9% a certificate, 9.3% primary education, and 7.4% had no formal education. The relatively high education levels suggest that the community is well-prepared to engage with tourism initiatives, as education has been linked to increased participation in tourism development (Mutana & Mukwada, 2021). Occupation-wise, 55.5% were employed, 27.8% self-employed, and 16.7% unemployed, indicating an economically active population. This employment pattern supports the notion that tourism may have positive multiplier effects on local livelihoods, as employment directly contributes to economic growth in tourism areas (García & Blanco, 2023).

Socio-economic activities Driven by Tourism

In this section, respondents were asked about any other socio-economic activities performed because of the presence of tourism activities in Lake Manyara National Park. The assessment of local community participation in tourism activities surrounding Lake Manyara National Park indicates a

high level of engagement, with all respondents (100%) acknowledging the presence of other socioeconomic activities resulting from tourism activities in the area. The following are various social economic activities specified by respondents because of the presence of tourism.

Table 2:
Social Economic Activities Performed

Responses	Frequency	Percentage (%)
Job Creation	80	96.4
Small Business Development	77	92.8
Infrastructure Development	71	85.5
Education and Training	75	90.4

The findings presented in Table 2 outline the socio-economic activities that have taken place because of tourism activities around Lake Manyara National Park. The study shows that 96.4% of respondents reported job creation as a key socio-economic activity from tourism. This indicates that tourism has provided employment opportunities for residents. 92.8% of respondents indicated that tourism has been involved in the development of small businesses. This includes enterprises such as restaurants, transport services, and other businesses provided to tourists. Moreover 85.5% of respondents mentioned improvements in infrastructure due to tourism. This involves the construction and enhancement of roads, communication networks, and other public facilities that benefit both tourists and the local community. Furthermore 90.4% of respondents highlighted the importance of education and training initiatives linked to tourism. These programs likely focus on enhancing skills relevant to the tourism industry, such as hospitality management, language skills, and environmental conservation.

The research conducted interviews to get responses if there any other social economic activities performed as a result of the presence of tourism activities in Lake Manyara National Park: Within interview session Lake Manyara National Park Officials, Village Executive Officers, Tour Guides and Managers of accommodation establishments were asked to explain the presence and mention social economic activities performed as a result of the presence of tourism activities in Lake Manyara National Park. Respondents responded to this question that,

> *As an official of Lake Manyara National Park, I've witnessed a remarkable surge in local employment opportunities, from park rangers to administrative roles. This influx not only bolsters the local economy but also fosters a deep sense of pride and ownership among the community towards the park. Additionally, revenue from tourism has been reinvested into vital community development projects like schools and healthcare*

> *facilities, significantly enhancing the quality of life for nearby residents* (Interviewed Manyara National Park Official A, 02/10/2023).

The quote implies that tourism has become a key economic engine in the region, fostering both income generation and a growing emotional investment by locals in the park's success. It suggests a transformation of local identity through employment linked to tourism.

> *The tourism boom in Lake Manyara National Park has paved the way for local entrepreneurs to thrive. From artisans selling crafts to establishing businesses catering to tourists, individuals have found sustainable sources of income. This economic empowerment not only benefits individuals but also strengthens the local economy, creating a ripple effect of prosperity throughout the community* (Interviewed Village Executive Officer B, 16/10/2023).

This reflects how tourism can stimulate grassroots entrepreneurship, enabling individuals to transition from informal to sustainable livelihoods. It highlights tourism's role as a catalyst for community self-sufficiency and financial empowerment.

> *The presence of tourism activities has facilitated profound cultural exchanges between visitors and locals. Through these interactions, traditions, stories, and customs are shared, enabling mutual understanding and respect. Furthermore, the development of infrastructure in surrounding areas, including improved roads and sanitation facilities, not only caters to tourist needs but also benefits the local community, enhancing overall living standards* (Interviewed Tour Guide A, 26/10/2023).

The statement implies that tourism infrastructure has spillover benefits beyond visitors, directly contributing to long-term improvements in public services and living conditions for residents.

Socio-Economic Support to Local Communities through Tourism-Related Projects

Table 3 presents socio-economic initiatives supporting local communities as a result of tourism activities around Lake Manyara National Park.

Table 3:
Projects Supporting Local Communities as A Result of Tourism Activities

Response options	Frequency	Percentage (%)
Establishment of development projects	70	84.3
Funding Health Care projects	20	24.1
Local and International Scholarships	15	18.1
Building and renovating education facilities	60	72.
Development of Financial Institutions	10	12.0

The findings indicate that tourism contributes primarily to community development through infrastructure-oriented projects, with 84.3% of respondents reporting the establishment of development projects and 72% highlighting investments in education facilities. These interventions reflect tourism's role in enhancing human capital and public service provision. However, support in critical welfare sectors remains limited, as only 24.1% of respondents reported healthcare funding and 18.1% indicated access to scholarships. Financial inclusion initiatives were least reported (12%), suggesting weak integration of local communities into formal economic systems. Overall, the results demonstrate that while tourism contributes to visible development outcomes, its socio-economic benefits remain uneven, with stronger emphasis on physical infrastructure than on long-term capacity building and financial empowerment.

This study aimed to collect interview answers on tourism activities performed by local communities adjacent to Lake Manyara National Park. During interview Lake Manyara National Park Officials, Village Executive Officers, Tour Guides and Managers of accommodation establishments were asked if there are any tourism activities performed by local communities adjacent to Lake Manyara National Park and required to mention them. Respondents answered that,

> *It is indeed the case that several tourism activities are performed by local communities situated in the vicinity of Lake Manyara National Park. One such activity is cultural tours, during which local communities showcase their traditions, dances, and crafts to visitors. These tours offer visitors a unique insight into the local culture and heritage, enhancing their overall experience of the region* (Interviewed Manyara National Park Official A, 02/10/2023).

This highlights how tourism encourages cultural performance and preservation. It suggests that locals are actively curating their heritage for visitor engagement, turning culture into both an educational and economic asset.

> *There are guided walks led by knowledgeable community members who provide information about the park's flora and fauna, as well as the importance of conservation efforts. They offer visitors the opportunity to*

> *connect with nature while supporting the local community* (Interviewed Manyara National Park Official B, 02/10/2023).

The quote implies that community members serve as interpreters of nature, transferring local ecological knowledge to tourists. It shows their critical role in shaping visitor understanding of environmental values.

> *Certainly, the local communities adjacent to Lake Manyara National Park engage in various tourism activities. One of the activities is community-based ecotourism projects where visitors can participate in tree planting and other conservation activities alongside community members. This promotes environmental awareness and sustainable tourism practices* (Interviewed Village Executive Officer A, 16/10/2023).

This points to the evolution of tourism into a participatory, eco-conscious model. It implies that community-led conservation efforts are merging with visitor experiences to promote responsible tourism behavior.

> *Local communities adjacent to Lake Manyara National Park offer a range of tourism activities. One popular activity is bird-watching tours led by local guides who are well-versed in the park's avian species. Visitors spot a variety of bird species while learning about their habitats and behaviors* (Interviewed Tour Guide E, 26/10/2023).

This implies a shift toward low-impact, alternative tourism experiences. It highlights how community engagement diversifies tourism formats and connects visitors to tranquil, immersive environments.

> *The communities organize cultural festivals and events that celebrate their traditions, music, and food. These events attract tourists who are interested in experiencing the vibrant culture of the local communities while contributing to their economic well-being* (Interviewed Tour Guide F, 26/10/2023).

The quote suggests that tourism is becoming a platform for cultural celebration and public diplomacy. It implies that organized cultural events serve as both economic ventures and tools for community pride.

> *Yes, there are several tourism activities facilitated by local communities adjacent to Lake Manyara National Park. One such activity is cultural homestays where visitors can stay with local families, experiencing their daily life, traditions, and customs firsthand. It offers a more authentic and immersive travel experience for guests* (Interviewed Managers of Accommodation Establishments C, 02/10/2023).

This reflects innovation in local tourism practices, promoting physical activity and environmental consciousness. It implies that the community is integrating modern, sustainable trends to appeal to contemporary travelers.

The study further used two Focus group discussions with 7 individuals each to discuss the participation of Local Communities in tourism activities in Lake Manyara National Park. This group for discussion was composed of managers from tourism businesses, Village Executive Officers (VEO), heads of households in Kibaoni Manyara, owners of curio shops and tour guides. Below are their discussions

The participants emphasized the importance of inclusive decision-making processes that involve local communities in tourism activities. They argued that local communities possess invaluable knowledge about the area's culture, history, and environment. Therefore, incorporating their insights can lead to more authentic and sustainable tourism experiences for visitors. VEOs and heads of households suggested establishing community-based tourism initiatives that allow residents to directly benefit from tourism revenues. It was proposed that partnerships be established between tourism operators and local communities to develop and manage tourist attractions, with the profits being reinvested in community development projects. Tour guides and curio shop owners highlighted the need for capacity-building programs to enhance the skills of residents in hospitality, customer service, and entrepreneurship. It was believed that investing in training and education would empower local communities to actively participate in the tourism sector, thereby increasing their income and improving their quality of life. In conclusion, the participants concurred on the significance of fostering collaboration between stakeholders to promote local community involvement in tourism activities. They recommended implementing policies that prioritize the well-being of residents and ensure that tourism growth is sustainable and inclusive.

Socio-Economic Effects of Tourism on Local Communities

Table 4 presents the socio-economic effects of tourism on local communities surrounding Lake Manyara National Park.

Table 4:
Socio-Economic Effects of Tourism on Local Communities

Socio-Economic Effects	Frequency	Percent (%)
Creation of employment opportunities	80	96.3
Improvement of infrastructure (roads, water, healthcare)	74	88.9
Showcasing cultural heritage	57	69.1
Revenue-sharing schemes	69	82.7
Support for education initiatives	68	81.9
Support for healthcare initiatives	66	79.5
Support for small business development	65	78.3
Development of local crafts and souvenirs	50	60.2
Encouragement of local agriculture (organic vegetable production)	45	54.2
Expansion of local manufacturing (animal skin items)	40	48.2

Source: Field Data (2023)

The results show that tourism plays a huge role in economic and social aspects of community development. The most reported benefit (96.3%) was economic in nature, wherein tourism created income generation opportunities by creating employment. This is accompanied by an increase in support of small business development (78.3%), local crafts (60.2%), agriculture (54.2%), and small-scale manufacturing (48.2%), which indicates the growth of livelihood activities and income diversification of the local economy.

Socially, tourism leads to the need of better infrastructure (88.9%) and money-sharing schemes (82.7%), both of which make access to vital services easier. Investments in education (81.9%), and healthcare (79.5%) also reflect positive changes in human capital and community well-being. Also, the enhancement of cultural heritage (69.1%) indicates how tourism plays a part in enhancing cultural identity and social cohesion. In general, the findings indicate that tourism has widespread socio-economic impacts, but the comparatively small share of productive sectors, including agriculture and manufacturing reveals the fact of the lack of local economic integration.

Negative Effects of Tourism on Lake Manyara National Park

In this section, respondents were asked about the negative effects of tourism in Lake Manyara National Park on the local communities. Those indicating affirmative involvement were prompted to specify the negative effects of tourism in Lake Manyara National Park on the local communities.

Table 5: Negative Effects of Tourism in Lake Manyara National Park

	Response options	Frequency	Percentage (%)
Response on Negative Effects	Yes	83	100
	No	0	0
Negative Effects of Tourism	Cultural Erosion	48	57.8
	Social Disruption	69	83.1
	Economic Dependence	53	63.9
	Environmental Degradation	72	86.7
	Land Displacement	60	72.3
	Pressure on Wildlife	75	90.4

Source: Field Data, (2023)

The assessment of tourism multiplier effects on local communities neighboring Lake Manyara National Park, as depicted in Table 5, with all respondents (100%) in Table 4.9, acknowledges the presence of negative impacts of tourism activities. The findings show that of respondents 57.9% cited cultural erosion as a negative effect of tourism, with increased commercialization and commodification leading to the loss or distortion of traditional practices and values. 83.1% of respondents showed that tourism inflow can disrupt the social fabric of local communities, resulting in conflicts over resource use, changes in social dynamics, and pressures on community infrastructure and services. Respondents 63.9% showed that depending on tourism as the primary source of income leaves local communities vulnerable to fluctuations in tourist arrivals, economic downturns, or changes in tourism trends.

These results are complemented by focus group discussion (FGD) as follows:

> *Tourism has truly been a blessing for our community in many ways. Thanks to the park, many of us now have jobs in hotels, lodges, and as tour guides. It's reduced unemployment and given our youth a reason to stay in the area instead of leaving in search of work. The roads, water supply, and other infrastructure have improved as well, and we've seen local artisans selling their crafts to tourists, which brings income directly to families. But, at the same time, I can't ignore the damage tourism has caused to our environment. Pollution, habitat destruction, and even the loss of wildlife are becoming real problems. And let's not forget the cultural clashes we're starting to lose our traditional values because we're adapting so much to please the tourists (Group 1).*

The locals noted that they valued the economic gains that tourism has provided them, particularly in the form of employment in lodges, hotels and guiding services. These prospects have minimized unemployment and

motivated young people to remain in the region. Tourism was also linked to better infrastructure, including roads and water access. Nonetheless, members also expressed grave concerns regarding the environmental implications, such as pollution, habitat damage, and wildlife loss. The group also reported a change in local values as a culture, claiming that local traditions are being changed or watered down to fit tourist requirements, which is a threat to cultural preservation.

> *We have seen both good and bad sides. As a craft maker, the tourists are my biggest customers. My business has grown, and I can now support my family. But there's a downside. The cost of living has gone up because tourists are willing to pay more for goods and services. That leaves us locals struggling to afford necessities. There's this growing gap between those who benefit from tourism and those who don't it's creating inequality in our community (Group 2).*

The group recognized the positive impact of tourism in enhancing small businesses, especially local artisans whose work is sought after by tourists. Higher income has boosted household welfare among others. But they also pointed out that tourism has increased the cost of living, making basic goods and services unaffordable to locals. The uneven distribution of tourism income led to increased disparity in economic status between those who directly enjoyed the benefits of tourism and those marginalized, causing societal inequality to increase as social stratification in the community.

Moreover, 86.7% of respondents agreed that unsustainable tourism practices, such as overdevelopment, habitat destruction, pollution, and wildlife disturbance, can degrade the natural environment and ecosystems upon which local communities depend for their livelihoods. Furthermore, 72.3% of respondents suggested that tourism development projects, such as hotels, resorts, or infrastructure expansion, may encroach upon or displace local communities from their ancestral lands.

To get more answers to, the researcher conducted FGD, Local Communities in the vicinity of Lake Manyara National Park benefit from tourism and discussed the Negative effects of tourism on the Local Communities adjacent to Lake Manyara National Park. Below are their discussions

> *Tourism has opened our eyes to the world. It has fostered cultural exchange and mutual understanding. We've learned so much about other people, and they've learned about us. Some of our young people have even started small businesses, diversifying our local economy. But I worry about our future. We're becoming too dependent on tourism. If anything were to happen to disrupt it, we'd all suffer. Also, our traditions are being distorted. We*

> *sometimes feel pressured to put on performances or alter our customs just to entertain the visitors (Group 3).*

Respondents acknowledged the positive aspects of cultural exchange and the role of tourism in opening minds, creating entrepreneurship, and diversifying the local economy. However, they raised an alarm regarding growing reliance on tourism as a primary means of livelihood. They cautioned that any interruption in tourist movement (like international crises) would greatly affect the local revenues. They were also under pressure to change the traditional practices to entertain tourists, which resulted in cultural identity distortion and a lack of authenticity in the long run.

> *I'm deeply concerned about the impact on our natural resources. The increased pressure from tourists has led to overexploitation too many vehicles, too many people, and too much waste. The park is beautiful, but how long can it sustain this? If we're not careful, we'll lose the very thing that attracts tourists here in the first place (Group 4).*

These voices from the focus group discussions highlight the dual impact of tourism on local communities near Lake Manyara National Park. While it brings undeniable benefits, such as employment, infrastructure development, and cultural exchange, it also presents significant challenges, including environmental degradation, social inequalities, and cultural erosion.

The findings of the study explain that the erosion of cultural identity has diminished the authenticity and uniqueness of local culture, affecting community cohesion and heritage preservation efforts. Social Disruption has strained community relationships and led to tensions between residents and tourists, impacting the overall well-being of the community. Findings explain that economic dependence due to tourism activities hinders diversification efforts and limits the resilience of the community to external shocks, posing risks to long-term sustainability. However, other negative impacts include environmental degradation which threatens biodiversity, ecosystem services, and the overall health of the ecosystem, undermining the well-being of both residents and wildlife. Also land displacement, which can lead to the loss of access to resources, disruption of traditional livelihoods, and marginalization of Indigenous communities, exacerbating socio-economic disparities and inequities.

In addition to these benefits, there have been significant concerns expressed about the detrimental consequences of tourism on the environment and nearby populations. The fragile ecosystem of the national park is in danger

due to environmental degradation brought on by a rise in tourism, including pollution and habitat damage. Furthermore, there have been instances of cultural confrontations, the deterioration of traditional values, and an over-reliance on tourism as the main source of revenue due to the increase in tourists. To secure the long-term well-being of the local people surrounding Lake Manyara National Park, these difficulties underscore the necessity for sustainable tourism methods that strike a balance between financial gains, environmental protection and cultural preservation.

DISCUSSION OF THE FINDINGS

The results show that tourism has a very important role in the socio-economic organization of communities around Lake Manyara National Park where employment, small businesses, infrastructure, and human capital development all have extensive involvement. The demographic traits of the respondents, which are described as a mostly economically active population with a medium-high level of education, seems to ease the process of engaging in tourism-related activities and gaining the benefits associated with them. This substantiates the idea that demographic variables (education and age) affect tourist participation and access to tourism amenities (Mutana and Mukwada, 2021; Jovicic, 2022). The degree of tourism participation also indicates that tourism has been a key part of the local livelihoods instead of a secondary activity, which supports its contribution to socio-economic change among rural populations (Garcia and Blanco, 2023).

The results are broadly in line with the earlier research, which establish tourism as a contributor to local economic growth and diversification of livelihoods. The high role of tourism in job creation and income earned is in line with the paper by Garcica and Blanco (2023), and Liu et al. (2023), who add value to the idea of tourism, which enhances the livelihood of rural people. In a similar way, it is observed that the multiplier effects, as evidenced by developing small businesses, enhancing infrastructure, and provision of services, corroborates the findings of Chidakel et al. (2021), who show that tourism plays a significant role in household income and local development despite the existence of leakages. The findings also support Budovich (2023) who established a strong positive correlation between tourism and regional economic growth. Nevertheless, the research also reveals structural constraints aligned with Kessy et al. (2024), specifically, low sectoral connections and insufficient involvement of the local population in high-value tourism segments. This implies that as much as tourism has some quantifiable socio-economic impacts, its full potential has been limited by insufficient integration with other local economies.

Through these contributions, the results indicate some important socio-economic and environmental issues, such as unequal distribution of benefits, escalating living costs, environmental diminishment, and the mounting reliance on tourism as a major source of livelihood. These findings are consistent with the research findings in conservation sites where tourism may create positive and negative impacts at the same time when it is not managed appropriately (Kessy et al., 2025; Kideghesho et al., 2021). The local impacts are also notable since excessive reliance on tourism exposes the local communities to external shocks and reduces the probability of managing livelihoods in the long run. Policymaking-wise, the findings highlight the importance of inclusive tourism policies that reinforce the involvement of locals in tourism value-generating activities, skills training and development, as well as facilitating cross-linkages with other sectors like the agriculture and manufacturing sectors. Moreover, the equitable benefit-sharing systems and sustainable resource management practices are needed to enable tourism to lead to long-term socio-economic development without compromising the sustainability of the environment (Liu et al., 2023; Melubo et al., 2024). The absence of the said interventions would mean that the development of tourism in the area of Lake Manyara would only serve to reinforce the already present inequalities and not to promote growth to be inclusive.

CONCLUSION AND RECOMMENDATIONS

The aim of the study was to evaluate the socio-economic impacts of tourism on local communities around Lake Manyara National Park. The results are that tourism is now a major force of local socio-economic operations, playing a major role in creating employment, building small business, enhancing infrastructure and making social services, including education and medical care, more accessible. These results affirm that the study objectives have been fulfilled in that definitive evidence has been provided regarding the impacts of tourism on the economic and social aspects of community livelihoods. The outcomes also however indicate that such benefits are also lopsided and clustered in particular sectors and that there is weaker connection to productive activities like agriculture and manufacturing. Moreover, the existence of adverse impacts such as environmental degradation, social unrest, and economic reliance show that tourism is a two-sided phenomenon in the area of the study.

This study thus concludes that although tourism has quantifiable socio-economic impacts, the multiplier impacts have not been achieved because of structural constraints on local economic integration and engagement.

This revelation fills a significant gap that is present in the literature in which tourism has been primarily measured in terms of aggregate returns without paying enough attention to localized distribution and sustainability issues. The study also fills the gaps in knowledge on how tourism effects work at the micro-level, especially within developing country contexts, by offering empirical evidence using a conservation-adjacent community. However, the study is confined by the fact that it is based on cross-sectional data and descriptive analysis, which does not allow to assert the causal relationships and long-term effects. Irrespective of these shortcomings, the research is adding to the more discriminating perspective of tourism as the developmental possibility, as well as the socio-economic vulnerability.

According to the data, the development of tourism in the Lake Manyara region needs specific interventions, including both the distribution of benefits and structural deficiency in the participation of local people. Emphasis should be placed on enhancing local economic connections by incorporating communities into the higher value segments of the tourism value chain, especially by supporting agriculture, local production, and supply systems related to tourism businesses. Capacity-building efforts must aim to develop skills that would allow communities to transition out of low-income activities into higher-end competitiveness in the sector. Moreover, the policy interventions should also respond to unequal distribution of benefits by implementing transparent and inclusive revenue sharing mechanisms, as well as enforcing environmental management practices to contain degradation and pressure on resources. Lastly, future studies must go beyond descriptive studies by using longitudinal and inferential methodology to better represent causal relationships and long-term socio-economic effects of tourism.

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Enhancing Electronic Medical Records Privacy in Tanzania: A blockchain-based framework

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Abstract

Electronic Medical Records (EMRs) are vital for healthcare delivery in Tanzania, yet centralised systems in government hospitals remain vulnerable to privacy breaches, unauthorised access, weak access controls, and insufficient audit trails. This study proposes a blockchain-based framework to strengthen EMR privacy in Tanzanian public hospitals, overcoming limitations of existing firewall-based protections. Using a mixed-methods design, data were collected at Dodoma Regional Referral Hospital from 210 purposively sampled participants (108 staff, 102 outpatients) via questionnaires, structured interviews, and expert interview was used during framework validation. Quantitative analyses using SPSS and EPI Info, and thematic qualitative analyses, revealed key privacy gaps: 75.9 percent of staff used unencrypted, password-protected files for data transfer; 72.2 percent reported unclear access roles and policies; and 64.7 percent of patients expressed serious concerns about EMR confidentiality due to limited awareness of data-handling practices. The proposed permissioned blockchain framework integrates Proxy Re-Encryption (PRE) to enable secure, consent-based sharing, immutable smart-contract audit trails, and off-chain encrypted storage. This enables controlled access by hospital staff and authorised third parties (e.g., insurance providers) while preserving patient privacy. Expert validation through scenario-based review and prototype testing confirmed technical feasibility, alignment with Tanzania's Personal Data Protection Act, and effectiveness in addressing vulnerabilities, including password sharing and a lack of traceability. This tailored solution offers a scalable approach to privacy-preserving EMR management in resource-limited settings, with potential for broader adoption across Sub-Saharan Africa.

Keywords: *Privacy, Electronic medical records, Medical Records, Proxy Re-Encryption, Blockchain technology*

INTRODUCTION

Electronic Medical Records (EMR) have become a powerful tool in modern healthcare delivery. EMRs significantly improved the safety and quality of healthcare delivery by increasing access to health information, reducing illegibility, and enabling closer oversight of clinical care processes. In the healthcare sector, the first attempts to create digital versions of electronic medical records (EMRs) were made in 1962 within the Oxford Record Linkage Project (ORLP) (Acheson & Evans, 1964). The current EMR system has significant flaws that compromise patients' privacy and safety and reduce medical practitioners' trust in EMR data (Haux, 2006). Patients cannot control who can access their confidential information. There is also no mechanism to assess the privacy, Security, and trustworthiness of patients' medical data (Choi, Capian, Krause, & Streeper, 2006).

The implementation of EMR system faces several challenges. More government support and adequate infrastructure are needed, including reliable internet connectivity and limited computer access, which hinder successful deployment (Munyaradzi C, Katurura, Cilliers L, 2018). Healthcare professionals' resistance and patients' lack of awareness of the benefits of EMRs pose significant obstacles (Daria, Kok N, Basoglu, Daim T, 2019). Patient participation and education are crucial for effective utilisation of EMRs. Cost is another barrier, especially in resource constrained settings, with initial expenses, ongoing maintenance fees, and training costs.

Blockchain technology offers a promising solution for achieving data-sharing privacy preservation, thanks to its immutability (meaning the data or ledger is permanent and tamper-proof, and its history cannot be modified after its creation). Hence, a distributed, searchable scheme for electronic medical records is proposed by implementing blockchain technology. Blockchain-based access control technology provides a range of strategies to address privacy concerns and ensure the confidentiality of patient information.

Blockchain technology strategies encompass robust encryption, access controls, user authentication mechanisms, and privacy assessments. Blockchain is a public, decentralised, append-only, immutable digital ledger with a time-stamped series of transactions called blocks that are linked to form a chain, secured by cryptographic principles such as public-key cryptography. This study aims to develop and test a blockchain framework to enhance EMR privacy in Tanzanian government hospitals.

The purpose is to provide secure data transactions, reduce compliance costs, and expedite data transfer processing.

Tanzania's healthcare sector faces critical challenges in Electronic Medical Record (EMR) privacy and Security, with only 34.5 percent of healthcare facilities achieving full EMR implementation, while 78 percent rely on basic DHIS2 systems (Chakravarthy et al., 2025). Current centralised EMR architectures create significant vulnerabilities that threaten patient privacy and data integrity in resource-constrained environments.

The core problems include centralised systems that create single points of failure, making patient data vulnerable to unauthorised access and malicious attacks (Mwamba & Mjema, 2024). Healthcare facilities report difficulties in safely sharing medical information between institutions, maintaining data integrity, and implementing adequate access controls (Charles, 2024). Weak audit mechanisms prevent the tracking of unauthorised access, undermining patient trust and violating medical confidentiality principles. Additional challenges include bandwidth constraints, off-chain cloud storage vulnerabilities, and inadequate regulatory frameworks for health data protection (Hao et al., 2025).

Institutional gaps compound these technical vulnerabilities. Health administrators and policymakers demonstrate limited awareness of advanced security solutions, while human capacity deficits hinder the deployment of sophisticated privacy-preserving technologies (Hao et al., 2025; Tandon, 2022). Infrastructure limitations, including unreliable connectivity and scalability concerns for storage, further complicate EMR security enhancement efforts. Blockchain technology offers promising solutions through decentralised architectures, cryptographic integrity protection, and intelligent contract-based access control (Chakravarthy et al., 2025; Hao et al., 2025; Kumbo et al., 2024). Prototype systems have demonstrated feasibility, with implementations successfully tested on 200,000 EMRs using privacy-preserving techniques. However, critical gaps remain: limited real-world deployment in developing countries, insufficient adaptation to resource-constrained environments, limited interoperability with existing systems, and inadequate training frameworks. A tailored blockchain-based framework addressing Tanzania's specific technical, institutional, and resource constraints is essential for protecting patient privacy while enabling digital healthcare transformation across Sub-Saharan Africa. Moreover, healthcare records were stored in centralised databases, making healthcare data a highly attractive target for attackers. Several research studies have shown that centralisation increases

privacy risks and requires trust in a single authority. Centralised databases can leave us vulnerable to attacks that escalate into cyber threats, ranging from the recent ransomware attack (Mohurle & Patil, 2017) to the Equifax attack, which compromised the privacy of electronic medical records (Berghel, 2017). The objectives are to assess the current privacy controls in government hospitals, identify specific points at which unauthorised access or disclosure occurs, and test a blockchain-based framework that enables controlled sharing and strong privacy protection. The proposed framework seeks to offer secure transactions, reduce privacy risks, and support safe information exchange in public hospitals

LITERATURE REVIEW

Privacy factors play a significant role in the acceptance of healthcare technology (Wilkowska & Ziefle, 2011). Although EMRs offer many advantages, current technologies are insufficiently utilised to realise their full potential while maintaining patients' privacy. Healthcare adopters and doctors remain deeply concerned about the privacy and Security of patients' data, which remains inadequately addressed. Moreover, privacy and security concerns remain significant barriers to EMR adoption (Ochieng & Hosoi, 2005). (AL-nassar, Abdullah, & Osman, 2009) believes that understanding these barriers and developing an appropriate strategy to address them will ensure the success of EMR implementation. The most common problems encountered by EMR users are Security, privacy, and confidentiality (George & Bhila, 2019). There are many challenges in EMR implementation, including legal issues such as privacy and security, as well as insufficient standards for EMR users. This is why is considered a critical issue for doctors and patients.

The research was done by (Wang, 2015) from Taiwan about the Security and privacy of personal health records, electronic medical records and health information. The analysis was based on 13,960 citations of 410 articles, and the results indicate that the designer of the electronic health information system must avoid unauthorised use and cyberattacks. Wrongful disclosure of individually identifiable health information was an offence punishable by both financial penalties and jail terms. A study was done from Mzumbe University (Mohamed, 2020) to examine the law and practice regarding patient data privacy and confidentiality. The research investigated how the law governs patient data privacy and confidentiality, and how Tanzania can improve its data privacy laws. However, the study does not explain the current state or the mechanisms used to ensure privacy in EMRs, thereby undermining patient trust. Moreover, without privacy assurances, patients faced the question of whether to disclose information

to healthcare providers to enhance care or withhold it to avoid inappropriate use (McGraw, Dempsey, Harris, & Goldman, 2009).

The literature shows apparent privacy and security weaknesses in existing EMR implementations in Tanzania, alongside a new but still maturing legal framework for personal data protection. It also shows rapid growth in global blockchain-based health privacy frameworks. Yet there is a lack of context-specific designs that bridge these two bodies of work. Existing Tanzanian studies describe fragmented EMR systems, limited privacy awareness and regulatory gaps, while global blockchain research largely ignores the constraints and workflows of Tanzanian public hospitals. No published study identified a blockchain-based framework that specifies, implements, and evaluates a framework that addresses concrete privacy weaknesses in Tanzanian EMRs, aligns with PDPA requirements, and fits within the technical and organisational capacity of government facilities. The proposed framework, Enhancing EMR privacy in Tanzania: A blockchain-based framework, addresses this gap in several ways. First, it is explicitly grounded in the Tanzanian context. The framework maps PDPA principles and the Personal Data Protection Regulations to technical and organisational components of EMR privacy, including consent recording, access control, logging, and breach response, within a permissioned blockchain that links to existing hospital EMRs rather than replacing them. This alignment with Tanzanian law and health information system guidelines distinguishes it from generic blockchain architectures designed for other jurisdictions.

METHODOLOGY

The study population comprised healthcare workers at the Dodoma Region Referral Hospital. The units of analysis were hospital nurses' staff, doctors' staff, ICT staff and patients. Disregarding gender variation, all staff and patients were involved in the study, as they were expected to provide relevant information about the privacy of Electronic Medical Records in Government hospitals in Tanzania. Purposive sampling is based on the researcher's judgment and the study's purpose (Babbie, 1992). The study used this technique because the selected respondents had the characteristics which the researcher needed.

The total population of hospital workers using the EMR system was 442. The research used Stovin's formula to get a sample size of two hundred and ten (210) respondents, who were selected by using a purposeful sampling technique, including hospital staff and patients. The data collection methods used in this study were a questionnaire with closed-ended and

Likert-scale questions, an interview with structured questions. The data were organised, described, coded, and analysed using Statistical Package for the Social Sciences (SPSS) version 25 and EPI Info version 7.1.310 to produce simple descriptive statistics, such as frequency analyses and percentages, and to generate tables and charts for quantitative data. The study employs a questionnaire data collection instrument for clinicians, records staff, and ICT staff. The data were collected on EMR usage, privacy practices, awareness of the PDPA, perceived risks, and views on blockchain-based controls. Key expert interviews were used during framework validations, and thematic analysis was applied to the combined qualitative data from semi-structured interviews and open-ended questionnaire responses. The study focused on privacy rights, experience with the EMR, and the acceptability of patient involvement in a blockchain-based model. The analysis combined descriptive statistics and a user experience test, including scenario-based simulations (e.g., doctor/pharmacist/insurance access requests) and prototype demonstrations with anonymized data, conducted as part of framework validation with experts. Also, it was used to examine how role, experience, and awareness shaped privacy perceptions among EMR users; thematic analysis was applied to combine qualitative data from semi-structured interviews and open-ended questionnaire responses. ICT staff expressed greater concern about weak safeguards, while newer staff had lower confidence in current controls. Awareness of the Personal Data Protection Act, alongside more substantial support for blockchain-based audit trails. Quantitative analysis produced descriptive statistics that supported three themes identified through thematic analysis of qualitative data (interviews and open responses): weak technical safeguards, low awareness of privacy rights, and strong support for transparent access tracking.

RESULTS AND DISCUSSION

The presentation, data analysis, and discussion are sequenced according to the order of the research questions. To achieve the research objectives, the researcher analysed the data systematically and accurately. The data were analysed to achieve the study's objectives.

Results from hospital workers

The data was collected from six different staff members, where nurses (36.1 percent), Doctors (18.5 percent), receptionists (18.5 percent), ICT specialists (13 percent), laboratory technicians (7.4 percent), pharmacists (5.6 percent), and radiologists (0.9 percent), as Table 1 shows.

Table 1:
Respondents' occupation

Occupation	Frequency	Percentage	Cumulative Percentage
Doctor	20	18.5	18.5
Nurse	39	36.1	54.6
Pharmacist	6	5.6	60.2
Laboratory Technician	8	7.4	67.6
Radiologist	1	0.9	68.5
ICT' Specialist	14	13.0	81.5
Receptionist	20	18.5	100.0
Total	**108**	**100.0**	

Note: Percentages sum to 100.0% (minor rounding applied)

The analysis of user experience with Electronic Medical Records (EMR) systems among 108 respondents reveals a notably experienced user base, with half (50.0 percent) reporting more than two years of usage and an additional 42.6 percent having 1 to 2 years of experience, resulting in over 92 percent of users possessing at least one year of familiarity. Only a small proportion (7.4 percent) fall into the novice category of 6 months to 1 year, as shown in Table 2, indicating that the sample largely comprises seasoned EMR users rather than recent adopters. This distribution suggests successful long-term integration of EMR systems in the surveyed setting, likely reflecting sustained usage, effective onboarding for early users, or a workforce with established roles requiring prolonged EMR interaction. The limited presence of short-term users may point to either high retention rates or potential barriers discouraging early-stage participation, highlighting the importance of continued support and advanced feature training to maintain engagement among the predominantly experienced majority while ensuring smoother onboarding for future newcomers.

Table 2:
User experience duration with EMR systems

Experience	Frequency	Percent	Cumulative Percentage
6 months to 1 year	8	7.4	7.4
1 to 2 years	46	42.6	50.0
Above 2 years	54	50.0	100.0
Total	**108**	**100.0**	

Note: Percentages sum to 100.0% (minor rounding applied

The controls taken in the study area to ensure the privacy of electronic data when transferred from one place to another are Password-protected data files without encryption, which account for 75.9 percent, as shown in Table 3.

Table 3:
Privacy controls for transferred electronic data

Privacy controls	Frequency	Percentage	Cumulative percentage
Authentication of the identifiers of the sender and receiver before transfer	7	6.5	6.5
Password-protected data files without encryption	82	75.9	82.4
Encryption of the information during transfer	3	2.8	85.2
post-transfer verification of the appropriate and successful transfer	7	6.5	91.7
Privileged Mode	9	8.3	100.0
Total	**108**	**100.0**	

Note: Percentages sum to 100.0% (minor rounding applied)

However, the findings from the study area show that there were no clearly defined roles and access levels for all staff with authorised access to the patient EMR. As shown in Table 4, staff (72.2 percent) agreed that there were no clearly defined roles or policies for authorised staff to access the patient's information. This shows that the patient's privacy was at high risk.

Table 4:
Clarity of staff roles and access levels for authorized EMR users

Clarity	Frequency	Percentage	Cumulative Percentage
Yes	30	27.8	27.8
No	78	72.2	100.0
Total	108	100.0	

Note: Percentages sum to 100.0% (minor rounding applied)

Results from patients

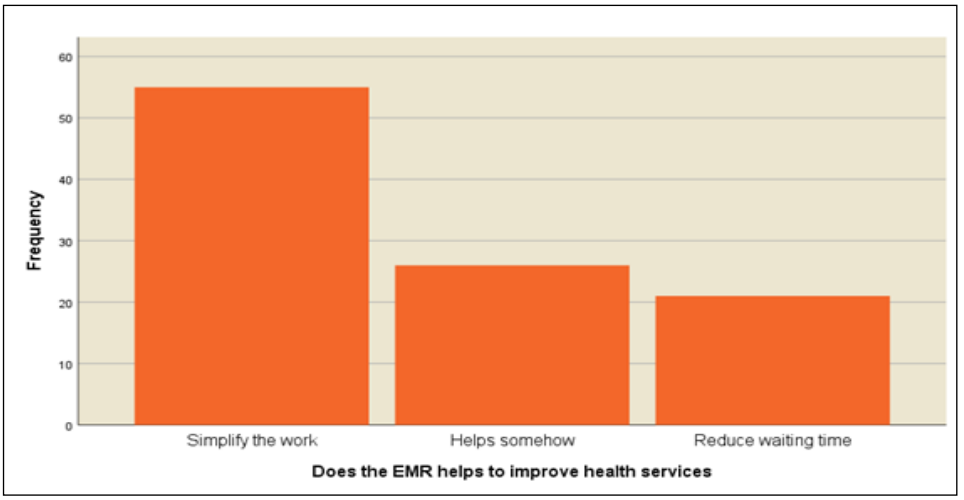
The patient's experience with EMR at government hospitals shows that 85.3 percent of respondents believe EMR is superior to paper records. Specifically, 53.9 percent of respondents say it simplifies their work, 20.6 percent note that it reduces waiting times, and 25.5 percent feel it enhances health services, as illustrated in Table 5 and Figure 2.

Table 5:
Comparison EMR and paper records

	Frequency	Percentage	Cumulative Percentage
Yes	87	85.3	85.3
No	5	4.9	90.2
I am not sure	10	9.8	100.0
Total	102	100.0	

Note: Percentages sum to 100.0% (minor rounding applied)

Figure 1:
Impact of EMR on Health Service Improvement



However, many patients who accessed services at Government hospitals are concerned about the privacy of their health information. As the results show in Table 6, 66 respondents (64.7 percent) concluded that they have worries about the privacy of electronic medical records, since many of them do not have enough knowledge about how the privacy of their medical records is managed electronically.

Table 6:
Concern about the privacy of your EMR

	Frequency	Percentage	Cumulative Percentage
No	36	35.3	35.3
Yes	66	64.7	100.0
Total	102	100.0	

Note: Percentages sum to 100.0% (minor rounding applied)

Technical safeguard regarding EMR privacy

To provide a comprehensive understanding of the finding's, semi-structured interviews were conducted alongside with: one with hospital staff exclusively and the other with a diverse mix of staff and patients. These discussions aimed to explore in greater depth participants' experiences, concerns, and expectations regarding the privacy of electronic medical records (EMRs). Thematic analysis of the qualitative data identified three prominent themes that align with the quantitative results: inadequate technical safeguards, low levels of privacy awareness, and an urgent need for improved accountability within the system. Inadequate Technical Safeguards and Risky Workarounds were consistently highlighted throughout the discussions as significant practical challenges posed by the current EMR system. Many described how these limitations compel staff to resort to unorthodox and potentially dangerous practices, such as sharing passwords, to maintain workflow efficiency. This theme is starkly reflected in the quantitative data, which shows that staff (75.9 percent) depend on password-protected files that lack encryption, as indicated in Table 3, and that respondents (72.2 percent) reported experiencing confusion surrounding access roles, detailed in Table 4, Representative quotes from the interviews are presented to illustrate group consensus; individual semi-structured interview quotes supplement these insights.

> "We share passwords sometimes due to limited access rights. If one person is busy, another has to log in to avoid delaying patient care, there is no other way." Staff Nurse

> "The firewall blocks useful actions we need every day, so people find shortcuts. That creates bigger privacy risks than the firewall was supposed to prevent." ICT Officer

Both patients and some staff reported limited awareness of privacy rights and data management. They had a restricted understanding of how electronic records are stored, protected, or shared, resulting in widespread confusion and anxiety. This finding reinforces the findings of patients (64.7 percent) who reported worries about EMR privacy, as shown in Table 6,

and the generally low awareness of the Personal Data Protection Act observed in the interview, as said by a respondent;

> "I worry about who sees my records; no one explains the system or asks for my consent before anything is entered. "Outpatient (Female)
> "We trust the doctors, but with computers, I don't know if my information stays inside the hospital or goes somewhere else." Patient (Male)

There was strong demand for transparent tracking and patient involvement, with participants consistently calling for improved auditability, real-time access logging, and mechanisms for patients to control, or at least know, who views their data. This strong desire for transparency and accountability directly justifies the proposed blockchain framework's immutable audit trails and consent-based access control features.

> "We really need a system that tracks every access, who opened the record, when, and why. That would build trust for everyone." Doctor
> "If I could see who looked at my file and give permission before sharing it with insurance or another hospital, I would feel much safer." Patient

Thematic analysis of interview transcripts (one staff-only and one mixed staff-patient) confirmed and refined these themes, revealing group consensus on password-sharing workarounds and strong collective support for blockchain-enabled audit trails as solutions to current vulnerabilities. The study identifies a critical intersection between technical vulnerabilities and institutional

gaps in Tanzanian EMR systems, where a heavy reliance on basic, non-encrypted password protection (75.9 percent) and centralized architectures creates significant privacy risks and single points of failure. These technical weaknesses are exacerbated by a lack of clearly defined staff access roles (72.2 percent) and a general lack of awareness of the Personal Data Protection Act (PDPA), leading to shared passwords and weak audit mechanisms that undermine patient trust.

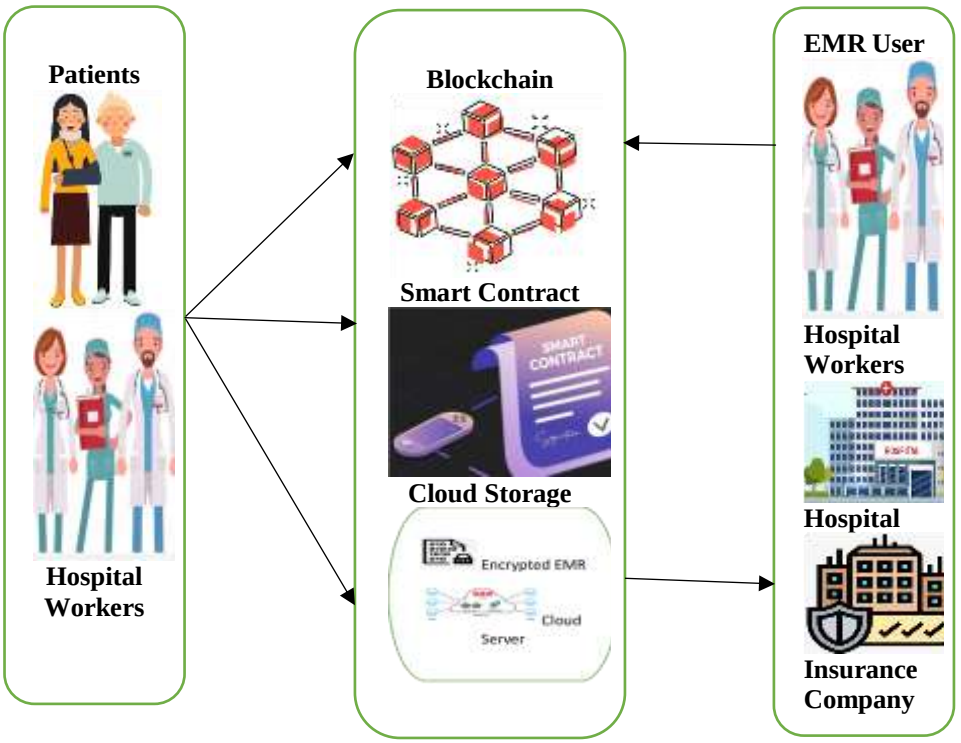
Consequently, patients (64.7 percent) express concern about the privacy of their electronic records. To address these challenges, the research proposes a decentralized blockchain-based framework that utilizes Proxy Re-Encryption (PRE) and smart contracts, which was validated by experts as a feasible solution for transparent access tracking, immutable audit trails, and secure, consent-based data sharing. These thematically derived insights directly informed the design of the proposed blockchain framework, particularly the emphasis on immutable audit trails and consent-based access control via Proxy Re-Encryption (PRE).

Designing an EMR privacy framework for Government hospitals using blockchain technology

The current firewall protects basic traffic but restricts operations, reduces performance, and fails against insider/third-party threats. To address this, the proposed blockchain framework employs Proxy Re-Encryption (PRE) to enable secure, consent-based sharing. The study found that the hospital uses user IDs, passwords, and a Firewall to maintain patient data privacy. A Firewall is a set of components located between two networks that filter traffic between them according to security policies. A Firewall can be an effective means of protecting local systems and networks from network-based security threats while also affording access to the outside world through wide-area networks and the Internet. A weakness of firewalls in privacy protection was that, in practice, they were beneficial for the average user but problematic for large institutions or organisations. The firewall's policies can restrict staff from performing certain operations. This severely affects the overall productivity of the organisations. Sometimes this compels staff to use shortcuts, which can lead to serious privacy problems. However, the use of software firewalls can limit a computer system's overall performance. Therefore, using the firewall method to maintain the patient's EMR privacy may infringe on the patient's privacy whenever any third party, other than hospital workers, attempts to access the patient's data. Given this dilemma, no related research has been conducted on this issue. Therefore, the researcher designed a blockchain framework based on the EMR scheme for data sharing that uses the PRE (Proxy Re-Encryption) technology to enable third-party access to patients' data.

Figure 3 illustrates the operational framework: patients must be registered on the hospital's server before consulting a medical professional. Hospital personnel- including doctors, nurses, pharmacists, and laboratory technicians- generate new blocks and Electronic Medical Records (EMRs) for each patient and subsequently broadcast them to the hospital's private blockchain. The cloud infrastructure securely stores encrypted EMRs uploaded by hospital staff. Third-party entities, such as the National Health Insurance Fund (NHIF), which are system users other than hospital staff, access patients' EMRs. The framework is constructed around an EMR data-sharing scheme utilising Proxy Re-Encryption (pre) technology.

Figure 1:
A designed EMR privacy framework for Government hospitals by using blockchain technology



Validation of the designed framework

Validation involved user experience testing through expert review sessions (resembling structured focus group discussions) with five specialists (ICT officers, cybersecurity expert, records management expert), who assessed the framework via scenario simulations and prototype testing. The framework was validated through a scenario-based expert assessment and a small prototype test using anonymised data. Five specialists, including ICT officers, a cybersecurity expert, and a records management expert, reviewed the structure, access rules, and PRE-based data sharing. They confirmed that the design fits existing EMR workflows and addresses privacy gaps such as shared passwords and a lack of audit trails. A simulation of a doctor, pharmacist and insurance access showed that authorised actions were logged and unauthorised requests were blocked. Experts agreed that the consent feature supports national data protection requirements. The validation shows that the framework is feasible and

acceptable in practice. The following were the results from interview when there is validation of the framework in Hospitals:

> "The use of Proxy Re-Encryption (PRE) is the strongest feature here. It allows the hospital to share data with the National Health Insurance Fund (NHIF) without ever exposing the raw private keys, which solves a major current vulnerability." Cybersecurity Expert

> "From a records management perspective, the immutable audit trail on the blockchain is a game-changer. Currently, we can't prove if a record was tampered with after the fact; this framework makes every edit permanent and visible." Records Management Expert.

> "While the technical design is sound, the challenge will be the 'human element.' If staff continue to share passwords, even a blockchain cannot prevent an authorized user from letting someone else use their terminal." ICT Office

It shows that all experts strongly supported the framework's core technical strengths, highlighting its potential to significantly improve EMR privacy in Tanzanian government hospitals. The Cybersecurity Expert and Records Management Expert highlighted blockchain's advanced cryptographic features, PRE for secure, keyless third-party sharing, and immutable audit trails for tamper-proof logging, viewing these as direct solutions to existing vulnerabilities such as unauthorised access and a lack of traceability. Their opinions align closely, emphasising how these mechanisms enhance data integrity, patient control, and compliance with PDPA, with no noted drawbacks in the technical design itself.

In contrast, the ICT Officer introduced a pragmatic, cautionary perspective by shifting attention to human factors as the primary remaining risk. While acknowledging the design's soundness, they highlighted that technical excellence alone is insufficient if operational behaviors (e.g., password sharing due to workflow pressures or limited training) persist. This contrasts with the more optimistic technical endorsements by underscoring implementation challenges in resource-constrained settings, where user adoption, training, and policy enforcement are critical for real-world success.

Overall, the experts converge on the framework's strong technical feasibility and privacy benefits but diverge in emphasis: two prioritise innovative cryptographic protections as transformative, while the third stresses the need to address socio-technical (human) barriers to ensure long-term effectiveness. This balanced feedback reinforces the

framework's promise and recommends complementary measures, including staff training and access policy reforms.

CONCLUSION AND RECOMMENDATIONS

In this study, the researchers investigated several questions regarding the perceived privacy of electronic medical records in government hospitals. Patients' perceptions of the privacy of their EMR data indicate that many are concerned about its confidentiality due to limited knowledge about how their health data is managed. Not only that, but the privacy techniques and framework used in the study area also help address privacy issues; however, the existing framework does not solve the privacy problem due to specific weaknesses. Therefore, the researcher introduces a blockchain framework to address the existing shortcomings of the framework used in the study area. The study was limited by its geographic scope (a single hospital), time constraints, and the sampling technique used. The researcher suggests specific areas for future research, such as pilot studies testing the blockchain framework across multiple hospitals. Also investigating patient attitudes towards EMR privacy on a larger scale.

Despite patients and users expressing general comfort with Electronic Medical Record (EMR) systems, significant privacy concerns remain that could undermine the accuracy of healthcare data and public trust. To address this, governments, the Ministry of Health, and relevant authorities should urgently implement and enforce robust privacy protection strategies at this early stage, enhance training programs for EMR users (which many respondents found inadequate for safeguarding patient privacy), and ensure healthcare providers transparently inform patients about how their health data is stored and processed. Additionally, patients and system users must be actively involved and empowered before new technologies are adopted to promote greater engagement in their own care. Finally, as this study was limited to government hospitals in a single location over a short period and may not reflect broader privacy issues, further comprehensive research is recommended to evaluate the effectiveness of privacy frameworks and the full benefits and challenges of EMR implementation

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The Quest for Regulated Social Work Ethical Practice in Tanzania: A Comparative Historical Review

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Abstract

Background: Social work in Tanzania remains under-regulated, with professional practice largely guided by social welfare sector laws and policies rather than specific social work statutory frameworks. This gap raises concerns about ethical accountability, training standards, and alignment with international norms. This review examined the state of social work regulation in Tanzania, situating it within systems theory and comparing it to statutory models in other African countries and internationally. A historical comparative review was conducted, analyzing Tanzanian policy documents, reports from the Law Reform Commission, and comparative legislation from England, the United States, Zimbabwe, South Africa, Namibia, Seychelles, and Kenya. The comparative analysis was applied to identify structural, ethical, and regulatory gaps. The review revealed that Tanzania's social work practice faces systemic ethical challenges due to fragmented institutional structures. In contrast, African peers have established statutory councils that enforce registration, licensing, and ethical oversight. These bodies have elevated professional recognition, standardized training, and strengthened public trust. The comparative analysis underscored the relevance of statutory regulation for Tanzania. Namibia's integration of social work and psychology, South Africa's broad professional council, and Zimbabwe's sanction of unregistered practice illustrate diverse pathways for embedding accountability. These models highlight the importance of grounding ethical practice in interconnected institutional laws, policies, and regulations. To align with regional and global standards, Tanzania should consider establishing a statutory social work council. Such a body would enhance professional recognition, enforce ethical compliance, and harmonize practice with African and international frameworks, thereby strengthening the welfare system and protecting vulnerable populations.

Keywords: *Social Work, Ethics in Social Work, Tanzania Social Work, Ethical Regulation and Social Welfare.*

INTRODUCTION

This article presents a comparative historical review of the regulation of social work practice in Tanzania, focusing on adherence to the profession's ethical principles and values. For global comparison, it examines the evolution of social work practice in Great Britain, the United States of America, and Sub-Saharan African countries with contexts similar to Tanzania. Ethics provide social workers with regulated practice-based knowledge and skills for guiding professional conduct and integrity, protecting client rights, preventing conflicts of interest, and maintaining public trust (International Federation of Social Workers, 2018).

Social workers are accountable for enhancing ethically informed decision-making by consulting policy and knowledge frameworks, including national service laws and regulations, theories of practice, practice-informed research, and agency policies. Recent scholarship underscores this responsibility, highlighting the need for inclusive ethical decision-making models that draw on diverse sources of guidance (McAuliffe & Greenslade, 2025; Reamer, 2014). In Tanzania, updated regulatory instruments such as the Social Security Schemes (Benefits) (Amendment) Regulations, 2024 reinforce the imperative for practitioners to align professional judgments with national laws and institutional mandates (United Republic of Tanzania, 2024). This reliance on multiple sources is particularly critical given that Tanzania does not yet have a professionally and legally binding code of social work principles.

The global definition of social work was articulated in 2014 by the International Federation of Social Workers and the International Association of Schools of Social Work, with both bodies calling for regional and national contextualization. As part of this global community, Tanzania adopts this definition. In the Tanzanian context, social work is operationally defined as a hands-on profession and field of study that strives for community and individual empowerment, positive social change, and improved livelihoods. Its core values include social justice, human rights, shared responsibility, and respect for cultural diversity. Drawing on theories from the social sciences and humanities, as well as indigenous knowledge such as *Ujamaa* and the philosophy of self-reliance, social work in Tanzania engages with people and systems to collectively address life's challenges and enhance well-being (IFSW, 2021). In the absence of national statutory instruments, ethical

practice standards in Tanzania are largely shaped by global definitions, national policies, guidelines, and standard operating procedures. This article suggests that the lack of a nationally codified set of ethical principles has limited the effectiveness of social welfare service delivery in Tanzania.

The main purpose of this article was to review the state of social work practice in Tanzania with respect to professional conduct and the protection of client rights. It does so by examining the global historical evolution and legislative requirements for adherence to ethical principles. These principles provide direction and professional judgment to ensure adequate provision of social welfare services by trained and regulated cadres under appropriate legal frameworks (Ministry of Health, Community Development, Gender, Elderly and Children, 2021a). The article posits that when ethical principles are applied within adequately resourced environments, social work practice can contribute to improved social, economic, and emotional outcomes for vulnerable populations. The practice and policy recommendations emerging from this review are intended to inform government and development partners in Tanzania about approaches to strengthening ethical practice.

The principal contribution of this paper was to situate the regulation of social work practice in Tanzania within a comparative and policy-oriented framework. This paper draws on historical developments in Great Britain, the United States, and Sub-Saharan Africa to provide contextual background. The analysis focuses on the Tanzanian case, where the absence of a legally binding professional code of ethics has significant implications for practice. The value of the study lies less in prescribing normative solutions than in critically examining how ethical principles, global definitions, and indigenous philosophies intersect with existing national policies and regulatory instruments. In doing so, the paper advances understanding of how professional regulation and ethical theory shape social work practice in Tanzania and identifies areas where further institutional development may enhance the effectiveness of social welfare provision.

This article employed a systems theory framework to explain the interdependence of professional conduct, client rights, and legislative requirements. Systems theory emphasizes that individuals are embedded within larger structures, that is families, communities, institutions, and laws—and that social workers must understand how these levels interact (Pincus & Minahan, 1973). By situating practice within social, legal, and institutional

contexts, the framework highlights the need for trained and regulated cadres to uphold ethical principles under appropriate policy and legal arrangements. In this study, systems theory is applied across multiple levels: at the macro-level, national legislation and regulatory bodies define professional boundaries, with Tanzanian social welfare policies and instruments such as the Social Security Schemes (Benefits) (Amendment) Regulations, 2024 guiding practice; at the meso-level, universities and training institutions transmit ethical codes and regulatory expectations, balancing global standards with Tanzanian realities; at the micro-level, social workers mediate between systemic mandates and client needs, with accountability shaped by institutional policies and ethical norms; and at the client level, rights are protected or constrained depending on how effectively practitioners navigate institutional and legislative frameworks. Taken together, these interconnected domains demonstrate that ethical regulation in Tanzania is best understood as a systemic outcome shaped by the dynamic interplay of legal, institutional, educational, professional, and client systems.

METHODS

Study Design

This article employed qualitative approach involving historical-comparative research design (Rubbin and Babbie, 2010; Grinnell, 1997). The choice of this design, was attributed to the need for carrying out historical analyses of trends and practices of social work in order to broadly understand the practice experiences over time and across different societies (Pierson, 2022). The application of this research approach resulted into the detailed understanding on the evolution of social work as profession and the development, application and improvement of the profession's ethical principles in the global context, Africa and in Tanzanian context (IFSW, 2021).

The countries selected for comparison, that is Great Britain, the United States, Zimbabwe, South Africa, Namibia, Seychelles, and Kenya; were chosen on the basis of three criteria: (a) their historical influence on the development of social work regulation globally and regionally; (b) the presence of established regulatory bodies and legal frameworks that provide instructive contrasts to the Tanzanian context; and (c) their relevance to Tanzania either through shared colonial legacies, regional proximity, or comparable socio-political conditions. This selection is not intended to be exhaustive but rather illustrative, providing a range of regulatory experiences against which the Tanzanian case can be critically examined. The following table 1, describes

the logic for selection of the countries reviewed and the structured comparative regulatory landscape at a glance.

Table 1:

Selected country comparative regulatory landscape at a glance

Country	Regulatory Body / Association	Legal Framework / Statutory Basis	Relevance for Tanzania
Great Britain	British Association of Social Workers (BASW)	Social Work England; statutory regulation under Care Standards Act 2000, c.14 (UK), Social Workers Regulations 2018 (UK Statutory Instrument No. 893).	Colonial influence; model of professionalization
United States	National Association of Social Workers (NASW)	State-level licensing laws; Code of Ethics (NASW), 2021; Association of Social Work Boards. (2020). *Model Social Work Practice Act*. ASWB.	Illustrates diversity and modeling of social work regulation across states
Zimbabwe	Council of Social Workers	Social Workers Act No. 27:21for regulation of social workers.	Regional example of statutory regulation
South Africa	South African Council for Social Service Professions (SACSSP)	Social Service Professions Act No. 110 of 1978	Strong regional model; advanced regulatory framework
Namibia	Social Workers Association of Namibia	Social Work and Psychology Act No. 6 of 2004	Regional model of professional registration and regulation
Seychelles	Social Workers Association of Seychelles	Social Workers' Council Act No. 18 of 2007.	Regional model of professional registration and regulation
Kenya	Kenya Association of Social Workers	Social Work Profession Act No. 5 of 2025.	Most recent regional relevance; and ongoing regulatory reforms

Based on Rubbin and Babbie's (2010) conception of sources of data for observation and analysis, this article studied historical records such as historical writings found in literature, biographies of social work pioneers,

studies on development of social welfare activities and institutional frameworks and comparative studies; reviews and official government documents/guidelines/policies/ and legislations; and organizations documents such as their policy statements, code of ethics. The search strategy included literature searches that were conducted using Google Scholar, JSTOR, AJOL, and local university repositories, applying filters for books, peer-reviewed articles, reviews, and publication dates between 2010 and 2025. Used Keywords included "global evolution of social work practice," "history of social work in Tanzania," and "ethical regulation of social work." With regard to inclusion criteria, sources were retained if they (i) addressed regulatory frameworks or ethical codes in social work, (ii) provided historical or comparative insights relevant to Tanzania, or (iii) offered empirical or policy-based evidence. On the other hand, materials were excluded if they were (i) purely theoretical without regulatory relevance, (ii) duplicative, or (iii) outside the 2010–2025 timeframe unless historically foundational.

After screening exercise, an initial pool of 220 documents was identified. Titles and abstracts were screened for relevance to social work regulation, ethics, and Tanzanian or comparative contexts. Then, 85 documents that met the inclusion criteria and were subjected to full-text review and ended up with 47 references. Finally, the comparative analysis was conducted, by bringing experiences on ethical and regulatory practices from America and United Kingdom, selected African countries and Tanzania. The experiences were then synthesized to derive comparative insights and implications for Tanzanian practice.

Ethical Considerations

This study did not involve direct engagement with human participants and therefore did not require ethical clearance for human subject research. However, ethical integrity was maintained throughout the research process by adhering to principles of academic honesty, transparency, and respect for intellectual property. Data sources including historical writings, institutional reports and official documents such as government policies, codes of ethics, and organizational guidelines, were critically reviewed and appropriately cited to ensure proper attribution.

Results: Evolution of Social Work Ethical Practice

Professional social work activities have progressed from moral responsibility toward clients to a formal emphasis on professional conduct and protection of client rights (Morales & Sheafor, 1995). Voluntary, charitable, and state

interventions to support vulnerable populations have a long history (Healy, 2011; Compton & Galaway, 1998). This section examines the global and Sub-Saharan African evolution of ethically based practice and considers implications for Tanzania.

Global Perspective

In Britain, early welfare responses such as the Elizabethan Poor Law of 1601 categorized the poor and reflected moralistic assumptions that stigmatized the able-bodied, subjecting them to punitive measures (Wilson, et al., 2008). These interventions failed to address urban poverty, family disintegration, and crime (O'Hagan, 2001), revealing that welfare grounded in moral judgment undermined dignity and worth of the clients (Davies, 1994). By the 19th century, welfare reforms introduced counseling, juvenile welfare, and community rehabilitation, embedding client-centered principles into practice (Midwinter, 1994; Lishman, 2002). The U.S. followed a similar trajectory, with charitable societies filling gaps left by state welfare. Compassion rooted in religious values motivated assistance (Wilensky and Charles (1958), Reamer, 2014), but stigmatization reinforced dependency (Robinson, 2002; Hepworth & Larsen, 1993). Welfare activities often protected affluent communities rather than addressing structural causes of poverty, urbanization, and immigration (Esping-Andersen, 1990). These cases demonstrate that without professional regulation and ethical accountability, welfare systems risk perpetuating inequality.

In as far as analytical implications are considered, **t**he British and American experiences highlight the dangers of moralistic welfare traditions and the need for professionalized, ethically accountable practice. Education programs must therefore equip social workers with historical knowledge, ethical standards, and relevant laws to navigate dilemmas and foster client trust (British Association of Social Workers, 2012; Evans, 2011; National Association of Social Workers, 2021; Beresford et al., 2008). Critical thinking in ethical decision-making remains essential (Banks, 2001; Banks, 2010; Sewpaul & Henrickson, 2019).

In terms of comparative relevance for Tanzania, McCurdy et al. (2018) caution that regulation alone does not guarantee ethical practice, as shown in Australia where many welfare providers lack formal training. This situation parallels Tanzania, where non-social work trained service providers play a significant role. Thus, Tanzania's quest for ethical regulation need to combine statutory

frameworks with culturally grounded professional development, ensuring inclusion of diverse service providers while raising accountability standards.

African Experience

The national research report on Social Welfare Services in Tanzania Mainland (Tanzania Law Reform Commission, 2018) emphasized the need for legislation that uphold ethical principles into practice. Experiences from other Sub-Saharan African countries demonstrate that regulatory systems significantly improved professional conduct and client protection (IFSW Africa Region, 2021). Zimbabwe's Social Workers Act (2001) established a Council to oversee registration, ethical compliance, and service quality, criminalizing unregistered practice and curbing client abuse (Chidyausiku & Bohwasi, 2021). South Africa's Social Service Professions Act (1978) created a Council that registered multiple categories of professionals and collaborates with universities to strengthen training (SACSSP, 2017). Namibia's Social Work and Psychology Act (2004) (Republic of Namibia, 2007) and Seychelles' Social Workers' Council Act. 2007 (Republic of Seychelles, 2011) similarly institutionalized registration, licensing, and disciplinary measures to enforce ethical standards (Tanzania Law Reform Commission, 2018). Most recently, Kenya's National Social Work Act (2025) established clear structures for training, practice, licensing, and accountability, aiming to address challenges of recognition, public trust, and client protection (The Mount Kenya Times, 2025).

Comparative lessons and implications for Tanzania

Building on the global and African experiences reviewed, it is essential to distill practical lessons that Tanzania can realistically adapt to strengthen ethical regulation in social work. Comparative analysis highlights both the risks of relying solely on moralistic or charitable traditions and the benefits of legislative frameworks that embed professional accountability. At the same time, successful adaptation requires sensitivity to Tanzania's cultural philosophies, institutional capacities, and training systems. The following insights summarize key lessons from comparator countries and outline the necessary conditions for Tanzania's regulatory reform:

- From Britain and America's experience, Tanzania should avoid moralistic welfare approaches that stigmatize clients; and adapt approaches enshrined with the clients' dignity and rights into service delivery.
- From Zimbabwe, South Africa, Namibia, Seychelles, and Kenya, an important lesson is cognizant of the fact that legislative instruments elevate professional status and public trust, and that they need to be

accompanied by investment in training institutions, enforcement mechanisms, and culturally relevant ethical codes.

- Effective adaptations of experiences from the African countries in Tanzania call for establishment of a statutory framework for social work regulation; integrate indigenous philosophies such as *Ujamaa* into ethical codes; strengthen collaboration between universities and regulatory bodies; and create pathways to include non-social work trained service providers while raising accountability standards.

The universal values such as human rights, social justice, dignity, and respect for diversity remain foundational (Bwambale Bhangyi, 2022). However, regulation in Africa must also reflect culturally competent skills and locally grounded values (Osborn & Karandikar, 2022). For Tanzania, this means that the quest for ethical regulation requires both legislative reform and culturally responsive professional development should also ensure client protection and professional legitimacy.

Tanzania Perspective

Tanzania still lacks a Social Work Professionals Act, relying instead on broader social welfare laws to guide practice and service delivery. The evolution of social work practice in Tanzania began during colonialism in the 1930s. The welfare services were introduced primarily to secure cheap labor for the colonial economy (Wangwe & Rweyemamu, 2001). Hospitals, schools, and welfare laws such as the Children and Young Persons Act (1937), Affiliation Ordinance (1949), Probation of Offenders Act (1947), and Foster Care and Adoption Ordinance (1955) reflected administrative priorities rather than ethical commitment. The establishment of the Social Welfare Department in 1949, later expanded after independence in 1961, marked a shift toward rehabilitation and child welfare. Following the Arusha Declaration, responsibilities broadened to include support for the elderly and persons with disabilities. Formal training began in 1973 with the National Social Welfare Training Institute, embedding ethical principles into professional education (Tanzania Law Reform Commission, 2018).

To date, Tanzania has multiple laws and policies guiding welfare services, including the Law of the Child Act (2009/2019), Persons with Disabilities Act (2010), Mental Health Act (2008), Drugs Control and Enforcement Act, Community Services Act, and Anti-Trafficking of Persons Act. Policies such as the Child Development Policy (2008), National Policy for People with Disabilities (2004), and National Policy on HIV/AIDS (2001) provide

frameworks for service delivery (Tanzania Law Reform Commission, 2018. Development programs such as the National Strategic Program for Eradication of Poverty and the National Plan of Action on Violence Against Women and Children (2017/18–2021) further demonstrate state commitment. Yet, these instruments remain fragmented and lack a unifying professional code of ethics.

Despite the above legal and policy landscape, the review reported that challenges persisted including low public awareness of social work. Other challenges identified included poor recognition of practitioners, inadequate staffing, weak professional development, and insufficient facilities such as remand homes and shelters. Higher education institutions also lacked clear national guidelines for social work curricula. On the other hand, malpractice and workforce shortages were reported to be compounded by the absence of a national system for identifying, training, registering, and supervising the services providers at all administrative levels. For instance, workforce projections estimated a need for 23,694 practitioners, yet only 9,140 graduate-level providers existed, with just 740 employed in government service (Tanzania Law Reform Commission, 2018). Similar gaps were evident in police gender desks, health facilities, homes for the elderly, disability services, vocational rehabilitation centers, probation, and marriage reconciliation programs. For instance, violence and social problems, such as partner murders, child killings, and gender-based violence reported in regions like Kigoma, Kagera, Tabora, Mwanza, and Katavi (National Bureau of Statistics, 2024).

It is clear that while existing laws and policies provide guidance, they do not substitute for a dedicated regulatory framework. Embedding ethical principles into legislation is essential to ensure that social workers consistently uphold client rights, navigate complex social problems, and deliver services with integrity. Ultimately, such regulation would strengthen professional recognition, improve accountability, and enhance Tanzania's capacity to respond to social welfare needs and challenges in a systematic and ethical manner.

DISCUSSION

The current study highlights that there is substandard service provision, frequent violations of ethical principles, and reliance on inadequately trained practitioners. These challenges are further linked to limited recognition and employment of qualified professionals. This exacerbates social issues such as

household poverty, family conflict, and violence against vulnerable groups. The review also identified a lack of essential working tools, particularly in rural areas. For example, children's homes face ethical concerns including poor safeguarding, maltreatment, and mismanagement of resources for personal gain. Socioeconomic shifts have led to the rapid growth of day care centers for children aged 2–4 years, yet many operate without formal licensing or qualified personnel trained in Early Childhood Development.

Similarly, juvenile justice and behavioral rehabilitation services remain inadequate. The government-run remand homes in Mbeya, Moshi, Tanga, Arusha, and Dar es Salaam provide basic needs such as food, shelter, medical care, education, and legal assistance. However, these facilities are constrained by a shortage of competent professionals with expertise in ethical practice, counseling, and child care. Ethical challenges, including malpractice and workforce shortages, are evident across diverse service areas. The challenges are compounded by the absence of a formal national system for identifying, training, registering, and supervising providers at all administrative levels. The Law Reform Commission (2018) noted that the existing workforce is far below the level required to ensure adequate coverage across both public and non-governmental sectors. These shortcomings extended to police gender desks, health facilities, homes for the elderly, disability services, vocational rehabilitation centers, probation and community programs, and marriage reconciliation initiatives.

The lack of a coherent regulatory framework undermines accountability and ethical standards compliance. This absence could potentially weaken the ability of social workers to deliver consistent, client-centered services and eroding public trust in the profession. Tanzania needs to elevate standards and ethics in social work practice to the level achieved in countries such as Zimbabwe, South Africa, Namibia, and Seychelles. In order to achieve this level, Tanzania should entrench internationally recognized values of social justice and human dignity (Bwambale Bhangyi, 2022). At the same time, systems of registration and regulation should be designed to reflect Tanzania's cultural realities and socio-economic conditions (Osborn & Karandikar, 2022).

The findings of this review are consistent with systems theory. This framework underscores that ethical practice in Tanzania's social work profession, and the broader provision of welfare services, should be grounded in the interconnectedness of institutional laws, policies, and regulations

(Ministry of Health and Social Welfare, 2013; Wangwe & Rweyemamu, 2001). Yet, the Law Reform Commission of Tanzania (2018) reveals that practice continues to face systemic ethical challenges because it is not embedded within well-organized institutional structures. According to McCurdy et al. (2018), ethical social work must emerge from national and local contexts shaped by experiential best practices. Tanzania's fragmented institutional arrangements therefore highlight the gap between theoretical consistency and practical implementation, reinforcing the need for statutory regulation and contextually grounded ethical frameworks.

Recommendations for Tanzania's Ethical Practice and Policy

Drawing from global frameworks, African experiences, and Tanzania's current realities, the government of Tanzania and social work practitioners, in collaboration with other stakeholders should work on the following recommendations as prioritized into immediate, medium-term, and longer-term actions to strengthen ethical practice and regulation.

i) Immediate Actions
   a) Adopt and apply core ethical principles, which is respect for human dignity, commitment to social justice, opposition to discrimination, promotion of client self-determination, respect for confidentiality, and commitment to competence (National Guidelines for Provision of Psychosocial Care and Support, 2021; Rubin & Babie, 2010; Midgley, 1999). These principles should guide daily decision-making across all service contexts, even in the absence of a formal code of ethics.
   b) Strengthen practitioner awareness and compliance with existing national laws and policies, such as the Law of the Child Act (Cap. 13 R.E. 2019), the National Guidelines for Supportive Supervision of Most Vulnerable Children Programs (MoHCDGEC, 2021a), and the National Costed Plan of Action for Most Vulnerable Children (United Republic of Tanzania, 2013).

ii) Medium-Term Actions
   a) Establish a regulatory body with statutory authority to oversee registration, licensing, and ethical conduct of social workers and related practitioners (Tanzania Law Reform Commission, 2018).
   b) Develop and enforce a national code of ethics to formalize standards of practice, prevent admission of unqualified individuals, and guide professional conduct.

c) Define professional roles and standards for all categories of social welfare providers, ensuring clarity for institutions, development partners, and the public.
d) Integrate auxiliary social professions (Community Case Workers, Community Health Workers, Para-Social Workers) into the regulatory framework to mitigate workforce shortages.

iii) Longer-Term Actions
a) Legally recognize private social work practitioners to expand structured career pathways for graduates and strengthen service delivery.
b) Embed internationally recognized values of social justice and human dignity (Bwambale Bhangyi, 2022) into national legislation, while ensuring that systems of registration and regulation reflect Tanzania's cultural realities and socio-economic conditions (Osborn & Karandikar, 2022).
c) Invest in continuous professional development and education, fostering competence and responsiveness to evolving social needs through collaboration with universities and training institutions.

Limitations

The choice of a qualitative historical design presented certain limitations, particularly regarding the completeness and reliability of data sources. Some historical facts were either fragmented or found within gray literature, which may lack peer-reviewed validation. Additionally, while institutional documents and conference reports provided valuable insights, they were potentially influenced by organizational interests. To mitigate these challenges, the study employed data triangulation by incorporating a diverse range of sources, including archival records, policy documents, and peer-reviewed scholarly articles in order to enhance the credibility of findings. Interpretations were also cross-validated across different regions and institutions to minimize bias and strengthen the robustness of comparative insights.

Suggestions for Further Research

Future research could benefit from mixed-methods studies that will examine how social work practice is currently conducted in Tanzania in the absence of comprehensive legislative frameworks governing ethical standards. Such studies would provide empirical insights into how practitioners navigate ethical dilemmas and uphold professional integrity in day-to-day service

delivery. Additionally, targeted surveys and in-depth interviews with social work professionals are recommended to explore their lived experiences in maintaining high-quality social welfare services. These inquiries should focus on strategies used to safeguard client rights and well-being, particularly in contexts where formal ethical regulation is limited or evolving.

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eleDo Governance Practices Drive Product Innovation? Evidence from Agricultural Marketing Co-operative Societies in Simiyu, Tanzania

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Abstract
While governance reforms are emphasised in Tanzania's Agricultural Marketing Co-operative Societies (AMCOS), the governance–product innovation relationship remains underexplored despite its importance for competitiveness and sustainability. This study examines how governance practices influence product innovation in AMCOS in Simiyu Region, focusing on board accountability, board strategic leadership, digital governance, and inclusive governance, guided by Good Governance Theory and the Resource-Based View. A cross-sectional mixed-methods design with an embedded approach was used. Quantitative data were collected from 237 AMCOS managers using structured questionnaires, while qualitative data were obtained from District Co-operative Officers through interviews. Analysis used descriptive statistics and regression in SPSS, with qualitative data analysed thematically. Results show low product innovation, with 61.2% of AMCOS reporting no new products or services over the past three years. Regression results indicate that only board accountability has a positive and statistically significant effect on product innovation, while board strategic leadership, digital governance, and inclusive governance have statistically insignificant effects. Qualitative findings reveal that traditional business orientation, limited board capacity, dependency on external support, and a risk-intensive regulatory environment constrain innovation. The study concludes that governance practices in Simiyu AMCOS contribute little to product innovation. Accountability supports compliance and routine improvements, while other governance mechanisms do not translate into meaningful innovation due to structural and capacity limitations within a cotton-centric context. The study recommends strengthening board capacity, strategic planning systems, adopting the New Generation Co-

operative model, and regulatory policy support to foster product innovation in AMCOS.

Keywords: *Governance systems, Agricultural Co-operatives, Innovation Capacity*

INTRODUCTION

Product innovation is a key driver of organisational competitiveness, sustainability, and long-term performance, particularly within agricultural co-operatives. Across agricultural value chains, innovation enables organisations to respond to changing market demands, enhance value addition, and improve members' economic outcomes (Rwekaza & Anania, 2018). Agricultural Marketing Co-operative Societies (AMCOS), which link smallholder farmers to markets, are expected to adopt innovations that promote product diversification, processing, branding, digital integration, and inclusive service delivery (Njau et al., 2019). In developing economies such as Tanzania, where co-operatives underpin rural livelihoods and local development, product innovation is essential for competitiveness and sustainability (Ahmed, 2015; Holgado-Silva & Binotto, 2021).

Despite this importance, many agricultural co-operatives remain constrained in their transition from raw-material suppliers to value-adding enterprises (Holgado-Silva & Binotto, 2021; Rwekaza & Anania, 2018). Governance, defined as the system by which co-operatives are directed and controlled, is central to addressing this gap by aligning members' interests with organisational goals (Palacio & Oñate-Paredes, 2024). Governance mechanisms, including board accountability, strategic leadership, digital governance, and inclusive participation, shape resource allocation and innovation capacity (Silva et al., 2022). Within the Tanzanian AMCOS context and an evolving technological environment, the effectiveness of these governance mechanisms is particularly important in shaping how co-operatives translate organisational processes into innovation and participation outcomes (Njau et al., 2019). This study positions these governance mechanisms not only as performance enablers but also as drivers of product-innovation capability in co-operative organisations.

Empirical evidence on the governance–innovation relationship in agricultural co-operatives remains limited and inconsistent, particularly in developing economies (Holgado-Silva & Binotto, 2021; Jamaluddin et al., 2023). Existing studies largely focus on private-sector firms, leaving co-operatives underexplored, and tend to emphasise external factors such as

finance and institutional support rather than internal governance mechanisms like digital systems and inclusive governance that strengthen coordination and participation (Holgado-Silva & Binotto, 2021; Njau et al., 2019). Recent studies suggest that governance systems characterised by transparency, digital coordination, and inclusivity are key drivers of innovation and value creation (Guimarães et al., 2022).

Governance shapes organisational outcomes by setting strategic direction and strengthening accountability systems (Jamaluddin et al., 2023; Silva et al., 2022). In agricultural co-operatives, boards of directors serve as the central governance unit, aligning innovation with member welfare and sustainability goals (Rwekaza & Anania, 2018). However, findings remain mixed. While some studies report that board accountability, strategic leadership, digital governance, and inclusive governance enhance innovation (Fatima et al., 2026; Silva et al., 2022), others find weak effects due to limited capacity, low digital readiness, and institutional constraints (Paraschou et al., 2025). This highlights the need for context-specific analysis, particularly given the scarcity of evidence on cotton-dominated co-operative systems despite their importance to rural economies in Tanzania.

Addressing this gap, the study examines the relationship between governance practices and product innovation within AMCOS in Simiyu, Tanzania. It argues that accountability, transparency, participation, digital coordination, and internal capabilities jointly enhance innovation capacity. Accordingly, it examines how board accountability, board strategic leadership, digital governance, and inclusive governance influence product innovation, providing empirical evidence for policymakers and co-operative leaders to strengthen governance to support sustainability and innovation. Focusing on AMCOS in a cotton-dominated, contemporary digital context, the study offers novel empirical insights into how internal governance mechanisms interact to drive product innovation in resource-constrained co-operative settings, an area that remains underexplored in the literature.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Theoretical Framework: Good Governance Theory and Resource-Based View

The study was guided by Good Governance Theory (GGT) and the Resource-Based View (RBV), which together provided the analytical foundation for explaining how governance mechanisms within AMCOS

influence product innovation. GGT, popularised by the World Bank, emphasises transparency, accountability, participation, legitimacy, and professionalisation in organisational management (Diarra, & Plane, 2011; OECD, 2023; Puri & Sujarittanonta, 2016). These principles are relevant in AMCOS where members are both owners and beneficiaries, requiring democratic and accountable decision-making structures (Silva et al., 2022). In this context, accountability and participation align governance decisions with member needs, thereby improving coordination, responsiveness, and the capacity to generate product innovation.

RBV complements this view by explaining performance through valuable, rare, inimitable, and non-substitutable internal resources(Njau et al., 2019; Saani et al., 2025). In AMCOS, governance capabilities such as strategic leadership and digital governance are treated as internal strategic resources that enhance product innovation. Strategic leadership improves prioritisation of innovation activities and resource allocation, while digital governance enhances information flow, reduces asymmetry, and facilitates knowledge sharing necessary for developing new products and services (Cao et al., 2025; Cortes & Herrmann, 2021; Silva et al., 2022).The integration of GGT and RBV provides a complementary lens in which governance is viewed both as a normative system of accountability and participation and as a strategic resource base for innovation. Together, these theories explain how governance mechanisms enable AMCOS to overcome resource constraints and enhance product innovation, value addition, and competitiveness within agricultural value chains (Holgado-Silva & Binotto, 2021; Saani et al., 2025).

Empirical Literature Review and Hypothesis Development

Board Accountability and Product Innovation

Board accountability refers to the responsibility of board members for their decisions and stewardship of organisational resources (Nkilijiwa, 2026). It is recognised as a key governance mechanism influencing organisational performance and innovation(Franscis et al., 2009; Nkilijiwa, 2026). Empirical studies show that accountable boards enhance transparency, align decisions with stakeholder interests, and improve resource allocation for innovation (Akpan et al., 2022; Heubeck & Meckl, 2022; Silva et al., 2022). Monitoring and reporting further strengthen decision-making in co-operatives (Difalla et al., 2025; Franscis et al., 2009). Evidence from developing contexts also shows improved innovation capacity under strong accountability systems (Kijkasiwat, et al., 2024; Silva et al., 2022). However, limited evidence exists on how board accountability influences

product innovation in cotton-centred AMCOS in Simiyu Region, Thus, it is hypothesised that:

H₁: *Board accountability has a positive and significant effect on product innovation in AMCOS.*

Board Strategic Leadership and Product Innovation

Board strategic leadership refers to the board's ability to define vision, set priorities, and guide decisions for long-term performance (Lucas et al., 2025). It includes goal alignment, adaptive decision-making, and the chairperson's coordinating role (Cortes & Herrmann, 2021; Lucas et al., 2025). Studies show that strategic leadership enhances innovation through clear direction, experimentation, and risk-taking (Akpan et al., 2022; Cortes & Herrmann, 2021; Fatima et al., 2026). It also supports adaptation to market changes (Heubeck & Meckl, 2022; Sabourin, 2020), although findings remain mixed due to institutional constraints (Maharani et al., 2024; Mui et al., 2018). However, evidence on strategic leadership and product innovation in Simiyu AMCOS remains limited. Accordingly, it is hypothesised that;

H₂: Board strategic leadership has a positive and significant effect on product innovation in AMCOS.

Digital governance and Product Innovation

Digital governance refers to the use of digital technologies and information systems to improve decision-making, transparency, and coordination (Hanisch et al., 2023). It includes MIS, e-transactions, and digital communication platforms that enhance information flow and timely decisions (Du et al., 2025). Evidence shows that digital governance improves access to information, coordination, and data-driven innovation (Cook et al., 2022; Dawson et al., 2024). MIS improves monitoring, while e-transactions enhance efficiency and transparency (Al-Shakri et al., 2024; Hera et al., 2024). Digital platforms also strengthen collaboration and responsiveness (Alassuli et al., 2025; Oppusunggu et al., 2024). Empirical work on digital governance within AMCOS operating in Simiyu's cotton sector is still scarce, thus it is hypothesised that:

H₃: *Digital governance has a positive and significant effect on product innovation in AMCOS*

Inclusive Governance and Product Innovation

Inclusive governance entails participatory decision-making and the representation of diverse members' interests in co-operative management (Annahar et al., 2022). It encompasses inclusive leadership and equitable

access to resources (Annahar et al., 2022; Buang, 2021). Studies indicate that participation enhances knowledge sharing, problem-solving, and innovation (Peng et al., 2016; Richter, 2018). Inclusion of diverse members, particularly youth, fosters new ideas and innovation (Li & Tang, 2022). However, participation may slow decision-making due to conflicts and institutional constraints (Chevallier, 2011; Hale, & Carolan, 2018). Nevertheless, empirical evidence on how inclusive governance affects innovation in Simiyu Region AMCOS remains limited. Thus, it is hypothesised that:

H₄: *Inclusive governance has a positive and significant effect on product innovation in AMCOS.*

Conceptual Framework

Figure 1 presents a conceptual framework illustrating the relationship between governance practices and product innovation in AMCOS. Grounded in the study's theories and empirical literature, the framework posits that board accountability, board strategic leadership, digital governance, and inclusive governance influence product innovation performance within co-operatives. In AMCOS, these governance mechanisms are expected to enhance organisational capabilities reflected in new products, market-driven responses, and diversification beyond cotton-based activities, thereby strengthening product innovation in agricultural co-operatives in Tanzania

Figure 1:
Conceptual framework

Source: Developed by the Researchers from the literature

METHODOLOGY

Research design and study area

A cross-sectional mixed-methods design with an embedded approach was used, in which quantitative data served as the primary strand and qualitative data provided contextual explanation and triangulation (Creswell & Plano Clark, 2017). Data were collected at a single point in time (Cvetkovic-Vega et al., 2021), enabling assessment of relationships between governance practices and product innovation in AMCOS (Maxwell et al., 2008). The design aligns with pragmatism, as it supports mixed-method inquiry focused on practical, real-world solutions in co-operative governance (Creswell & Plano Clark, 2017).

The study was conducted in the Simiyu Region, northern Tanzania, southeast of Lake Victoria, which was purposively selected due to its high concentration of AMCOS. According to the Tanzania Co-operative Development Commission (TCDC, 2023) the region has 336 registered AMCOS across six councils: Bariadi Town (25), Bariadi (50), Busega (46), Maswa (83), Itilima (58), and Meatu (74). Most AMCOS are engaged in cotton production and marketing, making the region suitable for examining how governance practices influence product innovation in agricultural co-operatives.

Sample and data collection

The sampling frame comprised all AMCOS managers and District Co-operative Officers (DCOs) in the Simiyu Region. For AMCOS managers, the population was stratified into six districts. Stratified random sampling was then used to select AMCOS managers, with one manager chosen from each AMCOS based on governance and operational experience. The sample size for each stratum was determined using the Yamane (1967) formula at a 95% confidence level and 5% margin of error. From this, respondents were randomly selected to minimise bias and ensure representativeness. The final sample consisted of 288 AMCOS managers, as presented in Table 1. Purposive sampling was used to select six DCOs as key informants, one from each district, based on their regulatory oversight role.

Table 1:
Distribution of the Sample Size fo AMCOS Managers

N.	Stratum	Target Population (AMCOS/ Managers)	Calculations (Yamane formula)	Sample Size
1.	Bariadi Town	25	$25/\{1+[25](0.05)^2\}$	23
2.	Bariadi DC	50	$50/\{1+[50](0.05)^2\}$	44
3.	Busega DC	46	$46/\{1+[46](0.05)^2\}$	41
4.	Itilima DC	58	$58/\{1+[58](0.05)^2\}$	50
5.	Maswa DC	83	$83/\{1+[83](0.05)^2\}$	68
6.	Meatu DC	74	$74/\{1+[74](0.05)^2\}$	62
	Total	**336**		**288**

Source: TCDC (2023)

Data Collection and Tool

Data were collected between June 1 and August 10, 2025, using structured questionnaires administered to AMCOS managers in the Simiyu Region and a key informant interview guide for DCOs. The questionnaire included both closed and open-ended items, with closed questions measured on a five-point Likert scale to capture respondents' views on governance practices and product innovation indicators. This approach enabled systematic measurement of study variables, particularly perceptions of governance practices within AMCOS (Tanujaya et al., 2022). Questionnaires were used for their efficiency and suitability for collecting standardised data from a large, geographically dispersed sample (Kuphanga, 2024).

Prior to the main study, the instrument was pretested with 15 AMCOS managers in Kishapu District, and necessary revisions were made to improve clarity and content validity. Reliability was assessed using Cronbach's alpha, and all constructs exceeded the acceptable threshold of 0.70, indicating satisfactory internal consistency for regression analysis. Of the 288 distributed questionnaires, 237 were returned and deemed usable, yielding an 82% response rate, which is considered adequate for statistical analysis in survey-based studies (Kelley et al., 2003).

Ethical Consideration and informed Consent

This study received ethical approval from the Board of Postgraduate Studies at The Co-operative University of Kenya (CUK) and the Tanzania Commission for Science and Technology (COSTECH) under reference number CST00001362-2025-2025-00655, ensuring compliance with ethical standards for research involving human participants. Additional

authorisation was obtained from relevant regional authorities, including the Regional Assistant Registrar, to ensure institutional recognition and compliance with national research regulations in Tanzania.

Written informed consent was obtained from all participants before data collection, and the questionnaire clearly outlined the study's academic purpose, confidentiality safeguards, and the voluntary nature of participation. All research procedures were reviewed by COSTECH in accordance with established ethical principles for research involving human participants, ensuring that respondents were fully informed of their rights and that all data were used strictly for academic purposes.

Variable Measurement

The measurement framework was developed from relevant theoretical and empirical literature to ensure valid operationalisation of all constructs. Survey items were adapted to the AMCOS context in Tanzania to enhance clarity and relevance (Appendix 1). Responses were measured using a five-point Likert scale ranging from strongly disagree (1) to strongly agree (5). In addition, product innovation was measured using a five-point extent scale ranging from 1 (very small extent) to 5 (very large extent) to capture the degree of innovation in terms of product diversification within AMCOS.

Board accountability was measured using indicators of board monitoring, information disclosure, and timely reporting (Evans, 2010; Joannides et al., 2016; Othman et al., 2016; Silva et al., 2022; Wuryani & Harti, 2020). Board strategic leadership was assessed through strategic goal alignment, adaptive decision-making, and chairperson effectiveness (Asahak et al., 2018; Gill et al., 2005). Digital governance was measured using e-transaction platforms, co-operative Management Information Systems (MUVU), and digital communication tools (Afridi et al., 2023; Cao et al., 2025; Gao, 2023; Moore & Benbasat, 1991). Inclusive governance was captured through member participation, youth inclusion in leadership, and equitable access to services (Hartley, 2014; Merlini et al., 2025; Novkovic, 2021). Product innovation (PI) was conceptualised as the ability of AMCOS to develop, introduce, and diversify products in response to market demand. In this study, the construct was operationalised using three indicators: new product introduction, market-driven product development, and diversification beyond cotton (Laosirihongthong et al., 2014; Maydeu-Olivares & Lado, 2003).These measurement items are summarised in Appendix 1.

Data analysis and model specification

Quantitative data from closed-ended questionnaires were analysed using descriptive and inferential statistics, with multiple linear regression employed to examine the relationship between governance practices and product innovation in AMCOS. Qualitative data from interviews and open-ended responses were thematically analysed using Microsoft Excel. Prior to regression analysis, data coding, computation, and hypothesis testing were conducted using SPSS version 28, which facilitated regression estimation, ANOVA decomposition, and diagnostic testing,

Reliability of constructs was assessed using Cronbach's alpha (α) to ensure internal consistency, as presented in Table 2. All constructs recorded acceptable to excellent reliability ($\alpha \geq 0.70$), indicating that the measurement items consistently captured the intended variables.

Table 2:
Cronbach's alpha results

Construct	No. of Items	Cronbach Alpha(α)	Remarks
Board Accountability (BA)	9	0.845	Good Reliability
Board Strategic Leadership (BSL)	9	0.788	Acceptable Reliability
Digital Governance (DG)	9	0.701	Acceptable Reliability
Inclusive Governance (IG)	9	0.753	Acceptable Reliability
Product Innovation (PI)	3	0.911	Excellent Reliability

Source: Researcher Computation

Descriptive statistics (mean and standard deviation) were used to summarise variable distributions. Diagnostic tests ensured regression assumptions were met: multicollinearity (VIF and tolerance), heteroscedasticity (Breusch–Pagan), model specification (Ramsey RESET), and residual normality (Jarque–Bera and histogram analysis). These procedures confirmed the suitability of the data for robust regression analysis. The relationships between the variables were estimated using the following regression model:

$$PI = \beta_o + \beta_1 BA_i + \beta_2 BSL_i + \beta_3 DG_i + \beta_4 IG_i + \varepsilon_i$$

Where:
PI = Product Innovation in AMCOS
β0 = Constant Coefficient (intercept)

β1-β4 = Coefficient of Independent Variables
BA = Board Accountability
BSL = Board Strategic Leadership
DG = Digital Governance
IG = Inclusive Governance
εi = error term

RESULTS

Demographic Profile of Respondents

The results in Table 3 show that, of 237 respondents, 88.2% were male and 11.8% were female, indicating strong male dominance in AMCOS management and the underrepresentation of women due to persistent gender norms and imbalance (Achandi et al., 2023). In terms of age distribution, most respondents were between 31 and 40 years (41.8%) and between 41 and 50 years (28.3%), suggesting a relatively mature workforce operating within productive working ages, which supports stability in AMCOS operations (Okumu & Mchapondwa, 2020). Regarding education levels, the majority had primary education (45.1%) and secondary education (44.3%), indicating relatively low levels of formal education, which may influence the adoption of governance practices and product innovation. Finally, work experience findings reveal that most respondents had 1–5 years (64.1%) and 6–10 years (22.4%) of experience, suggesting a moderately experienced workforce with practical exposure that can support co-operative stability and innovation activities (Berge et al., 2021).

Table 3:
Respondents' Demographic Characteristics

Demographic	Category	Frequency (n=237)	Percentage%
Gender	Male	209	88.2%
	Female	28	11.8%
Age	18-30yrs	31	13.1%
	31-40yrs	99	41.8%
	41-50yrs	67	28.3%
	51-60yrs	30	12.7%
	Above 60yrs	10	4.2%
Education	Primary	107	45.1%
	Secondary	105	44.3%
	Certificate	9	3.8%
	Diploma	4	1.7%
	Bachelor Degree	12	5.1%
Work Experience	Below 1yr	12	5.1%
	1-5yrs	152	64.1%
	6-10yrs	53	22.4%

11-15yrs	10	4.2%
16-20yrs	4	1.7%
21yrs and above	6	2.5%

Source: Field Data (2025)

Descriptive Analysis

Descriptive statistics summarised product innovation and governance practices among AMCOSs, including reporting frequency, mean, and standard deviation, prior to regression analysis. Product innovation was operationalised as a composite construct measured through three indicators: introduction of new products/services, responsiveness to market and member needs, and diversification beyond core products. While Table 4 presents descriptive results on new product introduction as a key observable dimension, the regression analysis utilised the aggregated index capturing the broader construct of product innovation. The results in Table 4 indicate that product innovation was generally low over the past three years. The majority of respondents, 145 (61.2%), reported that their AMCOS had not introduced any new products or services, reflecting limited innovation and continued reliance on traditional cotton production, collection, and marketing activities. A smaller proportion reported some level of innovation, with 39 (16.5%) indicating one new product or service, 30 (12.6%) reporting two, 18 (7.5%) reporting three, and only 5 (2.2%) reporting four or more. Overall, the findings suggest low innovation capacity among most AMCOS, with minimal diversification beyond cotton and limited uptake of new products or services.

Table 4:
AMCOS Product Innovations

Response		N	Marginal Percentage
To what extent has your AMCOS introduced new products or services over the past 3 years? (Eg; improved seeds, fertilisers, storage facilities, diversification into non-cotton crops, value-added services like grading and packaging)	None	145	61.2%
	One	39	16.5%
	Two	30	12.6%
	Three	18	7.5%
	Four or More	5	2.2%
Valid		237	100.0%

Source: Field Data (2025)

Table 5 presents descriptive results on governance practices and product innovation among 237 AMCOS respondents. Board accountability recorded a high mean score (M = 4.48, SD = 0.49), followed by inclusive

governance (M = 4.48, SD = 0.69), board strategic leadership (M = 4.31, SD = 0.54), and digital governance (M = 4.22, SD = 0.60), indicating generally strong governance perceptions across co-operatives. The relatively low to moderate standard deviations suggest limited variation in responses. In contrast, product innovation recorded a lower mean (M = 2.67, SD = 1.27), with higher dispersion, indicating substantial differences in innovation levels among AMCOS. Overall, governance practices were consistently rated highly, while product innovation remained comparatively low and uneven across co-operatives.

Table 5:
Descriptive Analysis of Governance Practices and Product Innovations

Variables	N	Mean	Std. Deviation
Board Accountability	237	4.48	0.49
Board Strategic Leadership	237	4.31	0.54
Digital Governance	237	4.22	0.60
Inclusive Governance	237	4.48	0.69
Product innovation	237	2.67	1.27

Source: Field Data (2025)

Diagnostic Test

Diagnostic tests were conducted to assess whether the regression model met the key assumptions for reliable estimation of the relationship between governance practices and product innovation.

Multicollinearity was assessed using VIF and tolerance values (Table 6). Following Hair et al. (2019) and O'Brien (2007), VIF values below 10 and tolerance above 0.10 indicated no serious multicollinearity problem. The results showed low VIF values (1.31–1.74), confirming that the governance variables (BA, BSL, DG, IG) were not highly correlated and could independently explain variation in product innovation.

Table 6:
Multicollinearity Test

Variable	VIF	1/VIF
Board Strategic Leadership	1.74	0.57394
Board Accountability	1.61	0.622863
Digital Governance	1.39	0.720854
Inclusive Governance	1.31	0.760961
Mean VIF	1.51	

Source: Field Data (2025)

Therefore, multicollinearity was not a concern (Kim, 2019). Table 6 presents the multicollinearity results, confirming independence among the governance predictors used to explain product innovation.

Table 7 reports the Breusch–Pagan test for heteroscedasticity. The chi-square value of 2.01 with p = 0.1560 indicated homoscedasticity (Breusch & Pagan, 1979), as the p-value exceeded 0.05 and the null hypothesis of constant variance was not rejected. This confirmed that the error terms had a stable variance across observations, ensuring reliable standard errors when estimating the relationship between governance practices and product innovation.

Table 7:
Breusch-Pagan / Cook-Weisberg test for Heteroscedasticity

Null Hypothesis:	**No Heteroscedasticity issues**
chi2(1) =	2.01
Prob > chi2 =	0.1560

Source: Field Data (2025)

Table 8 presents the Ramsey RESET test results. The chi-square value of 0.12 with p = 0.9490 indicated no specification errors (Ramsey, 1969), as the p-value was far above 0.05, meaning the null hypothesis of correct model specification was not rejected. This confirmed that the functional form was appropriate and that the governance–innovation relationship was correctly modelled.

Table 8:
Ramsey RESET Test

Null Hypothesis:	**Model has no Omitted Variables**
chi2(1) =	0.12
Prob > chi2 =	0.9490

Source: Field Data (2025)

The Jarque–Bera test was used to assess residual normality, together with a visual inspection of the histogram (Table 9 and Figure 2). The test produced a chi-square value of 4.021 with a p-value of 0.1339, which exceeded 0.05, indicating that the null hypothesis of normality was not rejected (Jarque & Bera, 1987). This was supported by Figure 2, where the residuals appeared approximately bell-shaped and symmetric, with most values concentrated around the centre and fewer in the tails, closely following the normal curve. Overall, both statistical and graphical evidence

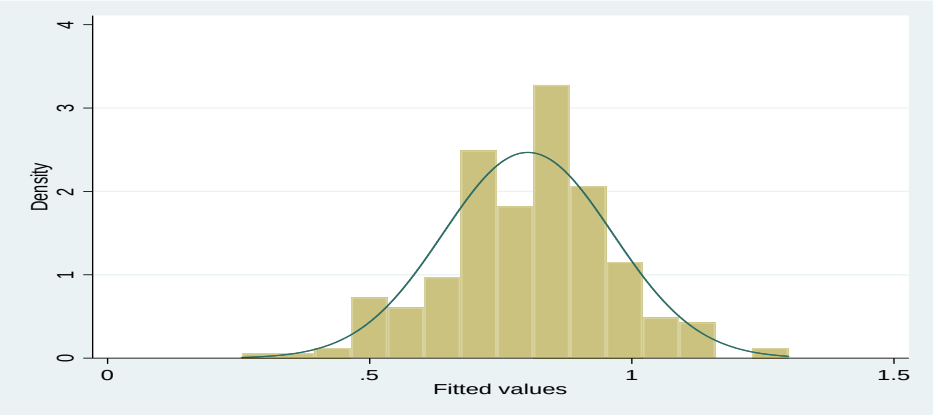
confirmed that the residuals were approximately normally distributed, supporting valid inference for the governance–product innovation model.

Table 9:
Jarque-Bera Normality Test

Test	Chi-square (χ^2)	df	p-value
Jarque-Bera	4.021	2	0.1339

Source: Field Data (2025)

Figure 2:
Histogram of the Residue Normality Test



Source: Field Data (2025)

Regression and Qualitative Results

Multiple regression analysis examined the relationship between governance practices and product innovation among AMCOS in the Simiyu Region. Quantitative findings were complemented by embedded qualitative evidence from KIIs and open-ended responses, which were analysed thematically to explain the statistical results. As presented in Table 10, the model was estimated using 237 observations, providing an adequate sample for statistical inference. The overall regression results showed that the model was statistically significant (F = 61.86, p = 0.000), indicating that board accountability (BA), board strategic leadership (BSL), digital governance (DG), and inclusive governance (IG) jointly explained variation in product innovation.

Table 10:
Model fit Measures

					Overall Model Test			
Model	**R**	**R^2**	**Adjusted R^2**	**RMSE**	**F**	**df1**	**df2**	**p**
1	0.718[a]	0.516	0.504	1.246	61.86	4	232	0.000

a. Predictors: (Constant), BA, BSL, DG, IG
Note. Models estimated using a sample size of N=237

Table 11: ANOVA[a]

	Sum of Squares	df	Mean Square	F	p
Regression.	384.00	4	96.00.	61.86	0.000
Residuals	360.19	232	1.55		
Total	744.19	236			

ı. Dependent Variable: Product Innovation
›. Predictors: (Constant), BA, BSL, DG, IG

Table 12: Regression Coefficients[a]

Predictor	Estimate	SE	t	p
Constant	-0.742	0.310	-2.39	0.018
Board Accountability (BA)	0.378	0.190	1.99	0.048**
Board Strategic Leadership (BSL)	0.027	0.203	0.13	0.893
Digital Governance (DG)	0.038	0.151	0.25	0.801
Inclusive Governance (IG)	0.088	0.145	0.61	0.544

a. Dependent Variable: Product Innovation

The model produced an R-squared (R^2) of 0.516, indicating that 51.6% of the variation in product innovation among the surveyed AMCOS is explained by the governance variables included in the model, while the remaining 48.4% is attributable to other factors not captured in the analysis. The Root Mean Squared Error (RMSE) of 1.246 indicated the average magnitude of residual errors, suggesting reasonable predictive accuracy.

The ANOVA results in Table 11 reinforce the model findings, showing that the regression component accounted for a sum of squares of 384.00 out of the total variation of 744.19, confirming that the governance variables collectively provide a statistically significant explanation of product innovation.

The regression coefficients in Table 12 show that the constant term was statistically significant ($\beta = -0.742$, $p = 0.018$), representing the baseline

predicted level of product innovation when all governance variables were held at zero. The negative coefficient suggests that, in the absence of governance practices, the model predicts a lower level of product innovation.

The results in Table 12 further indicate that board accountability (BA) was the only predictor with a statistically significant positive effect on product innovation ($\beta = 0.378$, $p = 0.048$). This implies that a one-unit increase in board accountability is associated with a 0.378 increase in product innovation, holding other governance variables constant. In practical terms, stronger accountability mechanisms such as transparent reporting, effective monitoring, and timely reporting contribute to improved innovation outcomes, including the introduction of new products, responsiveness to member and market needs, and diversification of co-operative activities beyond core products.

Qualitative evidence from KIIs supported these findings by indicating that accountable boards enhance transparency, strengthen member trust, and improve resource management within AMCOS. These governance practices were perceived as important for supporting co-operative initiatives and enabling the development of new services and business opportunities. As one DCO explained:

> *Accountability ensures proper use of every shilling, reduces misuse of funds, and builds a surplus that enables value addition and new member services beyond raw cotton* (KII-6)

These findings imply that strengthening board accountability is not merely an administrative requirement but a strategic driver of innovation in AMCOS, as it converts governance discipline into tangible capacity for resource mobilisation, value addition, and diversification beyond traditional cotton-based activities.

The regression results in Table 12 also indicated that board strategic leadership (BSL) had a positive but statistically insignificant effect on product innovation ($\beta = 0.027$, $p = 0.893$). This suggests that variations in strategic leadership among AMCOS do not significantly explain differences in product innovation, as existing planning and leadership practices do not consistently translate into product development or diversification activities.

Qualitative evidence confirmed these findings, revealing that strategic leadership is constrained by both structural and capacity-related factors. AMCOS were reported to operate under a traditional cotton marketing model, which limits financial flexibility for innovation, as one respondent noted:

> *"Many AMCOS still operate under traditional cotton marketing routines, focusing mainly on crop collection and transport. This traditional business orientation creates financial constraints that limit the board's ability to strategically pursue product innovation and diversification."* (KII-6).

In addition, limited strategic planning capacity among board members and managers results in reliance on yearly budgets rather than medium- or long-term strategic plans, creating dependence on external guidance that limits innovation initiatives, as explained by another respondent:

> *"Limited strategic planning capacity among board members and managers creates dependence on external guidance, as most AMCOS lack medium- or long-term strategic plans and rely on yearly budgets for implementation, which limits their ability to pursue product innovation independently."* (KII-3).

These findings imply that in AMCOS, strategic leadership exists in form but not in function, as structural constraints and limited planning capacity neutralise its potential to drive product innovation.

The regression results indicated that digital governance (DG) had a positive but statistically insignificant effect on product innovation ($\beta = 0.038$, $p = 0.801$), suggesting a weak direct relationship with product innovation within AMCOS. Qualitative evidence from KIIs, reinforced by additional comments, emphasised that digital governance in AMCOS remains largely compliance and reporting oriented rather than innovation driven. As one respondent noted, *"Most AMCOS use digital systems mainly for recording deliveries, payments, budgeting, not for developing new product, and digital tools help us manage members, but they do not guide on what new products to produce* (KII-1)." This suggests that technology use remains anchored in operational administrative control. Another explained that *"Managerial capacity and resource limitations make it difficult for AMCOS to use digital platforms beyond routine operations"* (KII-6), highlighting that both skills and infrastructure constraints restrict more advanced use. Overall, these results suggest that digital governance in AMCOS remains at an administrative adoption stage, where digital tools

are used mainly for routine record-keeping, constrained by limited capacity and resources, and reinforcing existing cotton-marketing practices rather than driving product innovation or strategic transformation.

Inclusive governance (IG) exhibited a positive but statistically insignificant relationship with product innovation ($\beta = 0.088$, $p = 0.544$), indicating that practices such as member deliberative democracy, youth inclusion, and equal access enhance participation, transparency, and cohesion but do not translate into product innovation. Qualitative findings from KIIs explained this gap through structural constraints, including misalignment between youth interests and the traditional cotton-focused business model, which limited the uptake of new ideas despite youth involvement. Limited board and managerial capacity further weakened the conversion of participatory inputs into innovation decisions. This was found to be reinforced by a risk-intensive regulatory environment that discouraged experimentation due to potential legal and financial consequences. As noted in open-ended questionnaire responses, "*if a new project makes a loss, managers and board members are legally required to pay,"* reflecting a risk-averse context that constrains the translation of inclusive governance into product innovation.

Overall, these results indicate that board accountability is the primary driver of product innovation, primarily focusing on strengthening compliance rather than driving transformation. The statistical insignificance of strategic leadership, digital governance, and inclusive governance reflects structural neutralisation rather than irrelevance. The cotton-based model, strict regulations, and limited managerial and board capacity restrict innovation. The negative constant indicates a low baseline, while the 48.4% unexplained variation reflects external dependencies and capacity gaps, limiting the effectiveness of governance in promoting innovation.

In summary, the estimated multiple regression equation for this model is derived as follows:

$$PI = -0.742 + 0.378(BA) + 0.027(BSL) + 0.038(DG) + 0.088(IG) + \varepsilon_i$$

Table 13:
Summary outcomes from the hypothesis tested

Hypothesis	Results	Decision
H_1: Board accountability has a positive and significant effect on product innovation within AMCOS	Reject H_0	Results support the hypothesis
H_2: Board strategic leadership has a positive and significant effect on product innovation within AMCOS	Do not reject H_0	Results do not support the hypothesis
H_3: Digital governance has a positive and significant effect on product innovation within AMCOS	Do not reject H_0	Results do not support the hypothesis
H_4: Inclusive governance has a positive and significant effect on product innovation within AMCOS	Do not reject H_0	Results do not support the hypothesis

DISCUSSION

The study examined governance practices and product innovation in AMCOS in the Simiyu Region, Tanzania. Descriptive results showed low levels of innovation, with 61.2% of respondents reporting no new products or services over the past three years. Regression results indicated that board accountability had a positive and statistically significant effect on product innovation, whereas board strategic leadership, digital governance, and inclusive governance had positive but statistically insignificant effects. Qualitative findings revealed that a cotton-based operational model, limited managerial and board capacity, administrative use of digital systems, and a risk-intensive regulatory environment constrained diversification and innovation within AMCOS.

The positive and significant effect of board accountability on product innovation is consistent with prior studies showing that accountable governance improves innovation outcomes (Akpan et al., 2022; Heubeck & Meckl, 2022; Silva et al., 2022). Effective boards enhance transparency, align decisions with stakeholders' interests, and allocate resources strategically to support innovation (Akpan et al., 2022). In agricultural co-operatives, monitoring and timely reporting strengthen resource mobilisation and facilitate new product development (Kijkasiwat, et al., 2024; Nkilijiwa, 2026). This finding supports Governance Theory, which emphasises oversight and accountability, and the Resource-Based View, which links governance mechanisms to effective resource utilisation for

innovation. In the Simiyu context, strong accountability practices appear to provide institutional legitimacy that enables AMCOS to mobilise resources and pursue innovation despite regulatory and structural constraints (Kempner-Moreira et al., 2020).

The finding that board strategic leadership has a positive but statistically insignificant relationship with product innovation suggests that, although boards provide strategic direction, it is not strong enough to generate measurable innovation in AMCOS. These results are consistent with studies indicating that strategic leadership does not directly influence innovation and that its effectiveness depends on contextual factors such as organisational capacity, governance structures, and institutional environments (Maharani et al., 2024; Mui et al., 2018). This contrasts with contexts where strategic leadership directly drives innovation (Akpan et al., 2022; Cortes & Herrmann, 2021; Heubeck & Meckl, 2022). The weak effect is explained by structural constraints in AMCOS, where a traditional cotton-centric business model limits diversification and reinforces routine operations (Lucas et al., 2025; Mui et al., 2018). Limited board and management capacity further reduces the ability to implement strategic initiatives (Littunen et al., 2021).

The regression results indicated that digital governance (DG) had a positive but statistically insignificant effect on product innovation ($\beta = 0.038$, $p = 0.801$), suggesting a weak direct relationship within AMCOS. This finding aligns with Lokuge et al. (2019) and Wang et al. (2025), who show that digital governance contributes to innovation only when supported by strong technological capacity and organisational readiness. In Simiyu AMCOS, qualitative evidence indicates that digital systems are mainly used for compliance and routine reporting, with limited application to innovation processes. Constraints related to managerial capacity, skills, and infrastructure further limit advanced use. This contrasts with studies where digital governance significantly enhances innovation under well-developed digital infrastructure and integration (Cook et al., 2022; Du et al., 2025; Hanisch et al., 2023; Hera et al., 2024), suggesting that its impact remains conditional on organisational capacity.

The results show that inclusive governance has a positive but statistically insignificant effect on product innovation, indicating that participation in decision-making does not translate into innovation outcomes in Simiyu AMCOS. This gap is explained by structural constraints, where weak board and managerial capacity limit the conversion of member inputs into viable

innovations, consistent with Ostrom, (2019) and Avoyan, (2022), who emphasise that participation requires supportive institutional design and incentives. In addition, Bijman & Wijers (2019) note that inclusiveness may create tensions between representation and market responsiveness, as evidenced by AMCOS cotton-oriented model, which restricts flexibility in innovation. Qualitative evidence further shows that youth ideas are often misaligned with existing operations, while a risk-intensive regulatory environment discourages experimentation due to potential financial and legal liability (Truby et al., 2022). Overall, inclusion enhances participation but remains insufficient to drive product innovation under current institutional conditions.

CONCLUSION AND RECOMMENDATION

The study concludes that governance practices in Simiyu AMCOS contribute only marginally to product innovation. While accountability is the only significant predictor, its role appears largely compliance-oriented within a regulated environment rather than strongly innovation-driven. The non-significant effects of strategic leadership, digital governance, and inclusive governance suggest that these mechanisms have limited influence on innovation, likely due to constraints in managerial capacity, strategic autonomy, and the cotton-centric operational model. Additionally, a risk-intensive regulatory environment discourages experimentation with innovative ideas because of potential financial and legal consequences. With a relatively low baseline level of innovation, AMCOS appear more oriented towards maintaining routine operations, which may limit opportunities for experimentation and broader organisational development.

The study recommends that the Ministry of Agriculture and the Tanzania Co-operative Development Commission (TCDC) consider moving from a strict oversight approach to a more supportive regulatory framework that encourages innovation and performance. AMCOS may adopt the New Generation Co-operative model to better align member ownership with market demand and production delivery, thereby reducing reliance on traditional cotton levies. This transition should be supported by strengthening technical capacity for board eligibility, introducing medium- to long-term strategic business plans to guide diversification, and promoting market-oriented partnerships with the private sector. By enhancing capacity-based accountability alongside these reforms, Simiyu's co-operatives can gradually evolve from government-dependent service entities into more autonomous and innovation-oriented agribusinesses.

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Appendix 1: Measurement of variables

Variable	Indicators	Measurement item	Source
Board Accountability	Effective board monitoring	The board monitors management through reports and meetings.	(Evans, 2010; Joannides et al., 2016; Othman et al., 2016; Silva et al., 2022; Wuryani & Harti, 2020)
		The board ensures annual external audits are conducted.	
		The board acts on members' concerns regarding mismanagement.	
	Information Disclosure	The board shares financial information with members.	
		The board informs members about major AMCOS decisions.	
		Members can access financial and operational reports easily.	
	Timely Reporting	Audited financial reports are presented at the AGM.	
		The board discloses information in a timely manner.	
		Members are regularly updated on AMCOS performance.	
Board strategic leadership	Strategic- goal alignment	The board aligns long-term goals with the strategic plan.	(Asahak et al., 2018; Gill et al., 2005)
		The board adjusts strategies to benefit members.	
		Resources are allocated strategically to support goals.	
	Adaptive decision making	The board aligns long-term goals with the strategic plan.	
		Plans are adjusted based on members' needs.	

		Resources are reallocated to improve efficiency.	
	Board chairperson efficacy	The chairperson promotes board engagement.	
		The chairperson sets agendas and guides product innovation	
		The chairperson ensures follow-up of decisions.	
Digital governance	E-transaction platforms	E-transaction systems (mobile money payments, bank electronic fund transfer, digital weigh scale) improve financial efficiency.	(Afridi et al., 2023; Cao et al., 2025; Gao, 2023; Moore & Benbasat, 1991)
		Digital payments improve convenience and timeliness.	
		E-platforms enhance financial transparency.	
	Co-operative MIS/MUVU	MIS improves decision-making.	
		MIS improves member data management.	
		MIS enhances performance monitoring.	
	Digital communication platforms	Digital platforms improve board-member communication.	
		Communication is more streamlined within AMCOS.	
		Digital tools improve response to member needs.	
Inclusive Governance	Members deliberative democracy	Members actively participate in decision-making.	(Hartley, 2014; Merlini et al.,

		Leadership encourages open dialogue.	2025; Novkovic, 2021)
		Board decisions reflect member input.	
	Youth inclusion in leadership	Youth (18-35yrs) hold leadership positions.	
		Youth participate in decision-making.	
		Youth contribute innovative ideas.	
	Equal Service Access	All members have equal access to services.	
		Resources are distributed fairly among members.	
		Fair guidelines guide input/service distribution	
Product innovation	Product Diversification	New products/services introduced in last 3 years.	(Laosirihongthong et al., 2014; Maydeu-Olivares & Lado, 2003)
		AMCOS introduces products in response to members' needs and market demand.	
		AMCOS has diversified beyond core products	

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Teachers' Pedagogical Competence in Promoting Higher-Order Thinking Skills under the Competency-Based Curriculum in Public Secondary Schools in Bariadi Town Council, Tanzania

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Abstract

This study examined teachers' pedagogical competence in promoting higher-order thinking skills (HOTS) under the Competency-Based Curriculum (CBC) in public secondary schools in Bariadi Town Council, Tanzania. Specifically, the study aimed to assess teachers' ability to design HOTS-oriented learning activities, examine their use of learner-centered teaching strategies, and analyze how they integrate real-life situations in teaching. The study employed a convergent parallel mixed-methods design involving 112 respondents, including teachers, Heads of Schools, the District Secondary Education Officer (DSEO), and the District Quality Assurance Officer (DQAO). Data were collected using questionnaires and semi-structured interviews. Quantitative data were analyzed using descriptive statistics (means and standard deviations), while qualitative data were analyzed thematically. The findings indicated moderate to relatively high levels of self-reported pedagogical competence in designing HOTS-oriented activities (M = 4.12), using learner-centered strategies (M = 3.99), and integrating real-life situations (M = 3.84). However, classroom implementation was reported to be inconsistent and often superficial, particularly in inquiry-based learning and authentic problem-solving tasks. These findings suggest a gap between pedagogical knowledge and actual practice. The study concludes that while teachers demonstrate awareness of HOTS-oriented pedagogy, learner engagement remains limited. It recommends strengthening professional development, improving instructional resources, and enhancing instructional supervision to support effective implementation of HOTS.

Keywords: *Pedagogical competence, higher-order thinking skills, competency-based curriculum, learner-centered teaching, Tanzania*

INTRODUCTION

The promotion of higher-order thinking skills (HOTS) has become a central goal of contemporary education systems. Rooted in Bloom's Taxonomy (Bloom, 1956) and later revised by Anderson and Krathwohl (2001), HOTS encompass cognitive processes that go beyond recall and comprehension to include analysis, evaluation, and creation. These skills enable learners to critically engage with knowledge, solve complex problems, and generate new ideas.

In response to the growing importance of HOTS, education systems across the globe have implemented various reforms to ensure that learners acquire these competencies. At the global level, there has been a strong shift toward learner-centered pedagogical approaches, which emphasize active engagement, inquiry-based learning, collaboration, and formative assessment. Evidence shows that such approaches significantly enhance students' critical thinking and problem-solving abilities (Darling-Hammond et al., 2020; Higgins et al., 2021). Similarly, in African contexts, reforms have focused on transitioning from rote learning to competency-based education. However, the implementation of these reforms has faced challenges, particularly due to limited resources and inadequate teacher preparedness (Mahlobo, 2021; Abadiga et al., 2026).

In Tanzania, the government introduced the Competency-Based Curriculum (CBC) in secondary schools in 2005 with the aim of improving the quality of education and producing graduates who are socially competent and economically productive (Hamidu & Peter, 2025; Lupeja & Komba, 2021). The curriculum promotes learner-centered teaching, active learning, and the application of knowledge to real-life situations.

Policy and curriculum frameworks further emphasize key 21st-century competencies such as problem-solving, collaboration, creativity, and critical thinking as central learning outcomes (Komba & Shukia, 2023). To realize these outcomes, the CBC advocates for learner-centered and activity-based pedagogical approaches, supported by formative assessment and authentic learning tasks that actively engage students in inquiry and knowledge construction (Issa et al., 2024; Mwakyobwe & Shawa, 2023; Mwila & Wambiya, 2025; Lupeja & Komba, 2021).

In principle, these pedagogical approaches are expected to facilitate the development of higher-order thinking skills, as they require learners to actively explore concepts, test ideas, solve real-life problems, and construct

meaning, rather than passively receive information (Galimova et al., 2025; Loyens et al., 2023; Rahayuningsih et al., 2025).

Despite the clear policy emphasis on competency-based teaching in Tanzania, evidence from national examinations consistently indicates that students struggle with higher-order cognitive tasks, particularly those requiring analysis, evaluation, and application of knowledge (NECTA, 2021–2023). Reports from the National Examination Council of Tanzania (NECTA) reveal persistent weaknesses in students' higher-order thinking skills across subjects. For instance, in the 2021 Certificate of Secondary Education Examination (CSEE), approximately 63.84% of students failed to adequately demonstrate the application of statistics in Geography (NECTA, 2021). Similarly, in 2022, about 75.42% of students experienced difficulties in answering a biology question that required evaluation of family planning methods, while in 2023, 64.43% underperformed in a poetry analysis task (NECTA, 2022; 2023). Notably, only 9.5% of students demonstrated the ability to provide insightful and well-structured responses, with the majority offering descriptive answers lacking analytical depth.

This persistent pattern raises concerns about the extent to which classroom pedagogy under the CBC effectively supports the development of HOTS. Research across contexts suggests that teachers' pedagogical competence plays a critical role in mediating the relationship between curriculum intentions and student learning outcomes (Darling-Hammond et al., 2017; Higgins et al., 2021). However, empirical evidence directly linking teachers' HOTS-oriented pedagogical practices to students' higher-order thinking outcomes in Tanzanian secondary schools remains limited, particularly at the local district level. This indicates a critical gap between curriculum intentions and actual classroom practice, as most Tanzanian studies focus on teachers' general readiness, training, and resource constraints rather than direct impacts on students' higher-order thinking outcomes (Kasuga & Kalolo, 2025; Mpate, 2023; Shiboko & Mrema, 2024). Therefore, this study seeks to examine how teachers' pedagogical competences in relation to the promotion of higher-order thinking skills in classroom practice in Bariadi Town Council.

Specific objectives of the study

i) To examine teachers' ability to design learning activities that promote higher-order thinking skills among students in public secondary schools in Bariadi Town Council.

ii) To assess the extent to which teachers use learner-centered teaching strategies associated with HOTS
iii) To analyze how teachers integrate real-life situations in teaching in ways that support HOTS among students

Theoretical Framework

This study is anchored in Constructivism Theory, as advanced by Jean Piaget (1972) and Lev Vygotsky (1978). Constructivism posits that learning is an active and dynamic process in which learners construct knowledge through interaction with their environment, experiences, and social engagement, rather than passively receiving information from the teacher. The theory emphasizes that meaningful learning occurs when learners are actively involved in exploring, questioning, and reflecting on concepts. According to Piaget (1972), learners develop cognitive structures by integrating new information with prior knowledge through processes such as assimilation and accommodation. This process enables learners to progress from simple understanding to more complex cognitive operations, including analysis, evaluation, and creation, which are core components of higher-order thinking skills (HOTS). On the other hand, Vygotsky (1978) highlights the importance of social interaction and guided learning, particularly through the concept of the Zone of Proximal Development (ZPD), where learners achieve higher levels of understanding with the support of teachers or more knowledgeable peers.

In the context of this study, Constructivism Theory provides a strong foundation for understanding how teachers' pedagogical competence supports the promotion of higher-order thinking skills among students. The Competency-Based Curriculum (CBC) in Tanzania emphasizes learner-centered teaching approaches that align closely with constructivist principles. These include activity-based learning, collaborative learning, inquiry-based teaching, and the use of real-life situations in instruction. Such approaches require teachers to design meaningful learning activities, facilitate discussions, ask open-ended questions, and create opportunities for students to actively engage in knowledge construction.

The theory assumes that when teachers effectively apply learner-centered pedagogical strategies, students are more likely to develop higher-order thinking skills such as critical thinking, problem-solving, and creativity. For instance, designing learning activities that require students to analyze and evaluate information encourages deeper cognitive engagement. Similarly, the use of open-ended questions stimulates reasoning and

reflection, while the integration of real-life situations enables students to apply knowledge in practical contexts, thereby enhancing understanding and innovation.

Furthermore, Constructivism Theory underscores the role of the teacher as a facilitator rather than a transmitter of knowledge. This implies that teachers' pedagogical competence is crucial in creating an interactive and supportive learning environment that promotes active participation and intellectual growth. However, the effectiveness of such pedagogical practices may be supported by contextual factors such as class size, availability of teaching resources, and teacher professional development. Therefore, this study adopts Constructivism Theory to explain the relationship between teachers' pedagogical competence and students' higher-order thinking skills. The theory provides a lens through which the study examines how instructional practices such as designing learning activities, using learner-centered strategies, and integrating real-life situations contribute to the development of HOTS in public secondary schools in Bariadi town council.

EMPIRICAL LITERATURE REVIEW

This literature review examines empirical findings regarding teachers' roles in fostering students' higher-order thinking skills (HOTS), focusing on three primary themes: instructional design competence, the implementation of learner-centered strategies, and the integration of authentic, real-life contexts.

Teachers' Ability to Design HOTS Learning Activities

Teachers' ability to design learning activities that promote higher-order thinking skills (HOTS) is widely recognized as a key aspect of pedagogical competence. HOTS-oriented activities require learners to analyze, evaluate, create, and solve problems rather than simply recall information. Although teachers across different contexts generally acknowledge the importance of HOTS, empirical evidence shows that their ability to translate this understanding into effective classroom practices varies depending on factors such as pedagogical training, curriculum alignment, and contextual support.

Studies from different countries consistently reveal a gap between teachers' awareness of HOTS and their actual instructional practices. For example, Assaly and Jabarin (2021) found that teachers in Israel recognized the importance of higher-order thinking but struggled to design tasks that

promote analysis and creativity due to limited pedagogical knowledge. Similarly, Fenyi and Jones-Mensah (2022) in Ghana reported that instructional activities often remained focused on recall, even in teacher education institutions. In Ethiopia, Abadiga et al. (2026) also found that classroom teaching was dominated by memorization, largely due to limited training and inadequate resources.

Further evidence highlights how contextual and systemic factors influence teachers' instructional design. Krause (2025) showed that exam-oriented systems can limit the use of higher-order tasks, while Rachmawati et al. (2023) found that although teachers in Indonesia produced lesson plans aligned with HOTS, their implementation was only partial. Overall, the literature suggests that while teachers may understand HOTS conceptually, their ability to design and implement effective HOTS-oriented learning activities remains constrained, particularly by limited pedagogical competence and contextual challenges.

Learner-Centered Teaching Strategies for HOTS

Learner-centered teaching strategies are widely recognized as essential for fostering higher-order thinking skills (HOTS), as they engage students actively in inquiry, collaboration, and critical reflection. Although these strategies are strongly emphasized in educational policy and theory, empirical evidence shows that their implementation in classrooms varies in both depth and consistency. In many cases, teachers report using learner-centered approaches, but their actual classroom application remains limited.

Studies across different contexts highlight a consistent gap between reported use and effective implementation. For example, Cain (2020) and An and Mindrila (2020) found that while teachers in the United States frequently reported using learner-centered strategies, these were often applied at a moderate or superficial level. Similarly, Guzman (2016) showed that although teacher trainees preferred student-centered methods, this preference did not always translate into practice due to contextual constraints such as time, class size, and institutional demands. Evidence from developing contexts reinforces this pattern. Studies in Cameroon (Nalova & Shalanyuy, 2017) and Malaysia (Sulaiman et al., 2017) revealed that teaching remains largely teacher-centered despite awareness of HOTS.

Further evidence suggests that the effectiveness of learner-centered strategies depends on both context and teacher competence. Liu and Zhang

(2022) demonstrated that structured approaches such as flipped classrooms can significantly enhance HOTS, although such models may be difficult to implement in resource-constrained settings. Similarly, Silfani et al. (2025) found that while teachers attempt to use learner-centered strategies, their success depends on pedagogical skills and classroom management. Overall, the literature indicates that learner-centered strategies are often implemented in form rather than in depth, limiting their potential to fully promote higher-order thinking skills.

Integration of Real-Life Situations in Teaching to Enhance Higher-Order Thinking Skills

The integration of real-life situations in teaching is widely recognized as an effective approach for enhancing higher-order thinking skills (HOTS), as it connects classroom learning to learners' everyday experiences. Grounded in constructivist theory, this approach encourages students to actively construct knowledge through meaningful engagement with real-world problems. Empirical evidence across different contexts shows that contextualized teaching can significantly improve students' critical thinking, problem-solving, and application of knowledge, although its effectiveness depends on how well it is implemented.

Studies from various countries demonstrate the potential of real-life integration in promoting HOTS. For example, Haryanto and Arty (2019) found that contextual teaching improved students' higher-order thinking and self-efficacy in Indonesia, while Mutegi (2023) reported enhanced problem-solving and analytical skills among students in Kenya. Similarly, Giacomazzi (2022) showed that when teachers are supported through professional development, the integration of real-life learning experiences can significantly improve students' critical thinking. However, these studies were often conducted under controlled or supported conditions, which may limit their applicability to everyday classroom settings.

Evidence from Tanzania suggests a more limited implementation of this approach. Hezron et al. (2024) found that teachers generally use real-life examples at a basic level, often as simple illustrations rather than as the basis for authentic, problem-solving activities. This limited integration is attributed to factors such as lack of instructional resources, insufficient training, and time constraints. Generally, the literature indicates that although teachers recognize the importance of contextualized teaching, its classroom application remains largely superficial, thereby limiting its potential to fully support the development of higher-order thinking skills.

METHODOLOGY

Participants and Sampling Techniques

Bariadi Town Council has a total of 21 public secondary schools. The study employed a multistage sampling procedure. In the first stage, 10 public secondary schools were selected from the council to represent diverse school contexts. The selection was guided by geographical location (covering all 10), variation in school size, and availability of key informants. Although the wider target population comprised teachers in all public secondary schools in Bariadi Town Council, the accessible population for this study consisted of teachers from the 10 selected schools. Across these 10 schools, the number of teachers was 133. The sample size for teachers was determined using Yamane's (1967) formula at a 5% level of precision: $n = N/1+ N(e)^2$ where n= required sample size, N = Population size, and e = level of precision. Thus, the final sample included 100 teachers selected using simple random sampling. The teacher sample was proportionately allocated across the selected schools using proportional stratified sampling. The proportional allocation was calculated using the formula: $ni = Ni/N \times n$ where Ni represents the teacher population in each school, N is the total population across selected schools, and n is the required teacher sample size.

In addition, 10 Heads of Schools from the selected schools were included using purposive sampling due to their leadership roles in supervising teaching and learning processes. Furthermore, district-level administrators, namely the District Education Officer (DEO) and the District School Quality Assurance Officer (DSQAO), were also included to provide supervisory perspectives on curriculum implementation and pedagogical practices. Therefore, the total sample for the study comprised 112 respondents as indicated in Table 1.

Table 1:
Sample Distribution by Participant Category and School (n = 112)

School Code	Teacher Population	Teachers Sampled	Head of School	Total per School
School A	18	14	1	15
School B	13	10	1	11
School C	17	13	1	14
School D	11	8	1	9
School E	14	11	1	12
School F	15	11	1	12
School G	12	9	1	10
School H	11	8	1	9
School I	10	8	1	9
School J	12	8	1	9
Sub-total (Schools)	133	100	10	110
DEO	-	-	1	1
DSQAO	-	-	1	1
Grand Total	**133**	**100**	**12**	**112**

Procedures

The study was conducted in a systematic and ethical manner to ensure the credibility and reliability of the data collected. The researcher began by obtaining an official introduction letter from the relevant authorities to facilitate access to the selected secondary schools in Bariadi Town Council. Subsequently, visits were made to the ten selected schools, where the researcher met with the Heads of Schools to explain the purpose, objectives, and significance of the study, thereby building trust and securing formal permission to conduct the research. After approval was granted, the researcher coordinated with school leadership to schedule data collection at appropriate times that would not disrupt teaching and learning activities. The study was then introduced to the selected teachers, who were informed about the purpose of the research, the nature of their participation, and their rights, including voluntary participation, confidentiality, and anonymity. For the quantitative component, questionnaires were distributed to the teachers, with clear instructions provided, and adequate time given for completion, while the researcher remained available to offer clarification where needed. Completed questionnaires were collected either immediately or at an agreed time to ensure a high response rate. For the qualitative component, semi-structured interviews were conducted with Heads of Schools and the District Secondary Education Officer (DSEO), with sessions scheduled at convenient times and conducted in quiet

environments to minimize disruptions; with participants' consent, notes were taken to capture key responses.

Instrument

Data were collected using two complementary instruments: a structured teacher questionnaire and semi-structured interviews with school heads and the district education officer. The teacher questionnaire was designed to measure three key constructs aligned with the study's specific objectives: (a) teachers' ability to design learning activities that promote higher-order thinking skills (HOTS); (b) the extent of teachers' use of learner-centered teaching strategies to foster HOTS; and (c) how teachers integrate real-life situations in teaching to enhance HOTS among students in public secondary schools in Bariadi town council.

The questionnaire consisted of four sections: demographic information, teachers' ability to design HOTS-oriented activities, use of learner-centered strategies, and integration of real-life contexts. Sections measuring HOTS-related practices used a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). Items were adapted from validated tools emphasizing HOTS lesson design, questioning techniques, collaborative learning, and contextualized tasks (Hashim et al., 2023; Rampean & Rohaeti, 2025).

Semi-structured interviews were conducted with school heads and the district education officer to gain deeper insights into institutional support, policy implementation, and challenges related to fostering HOTS in schools. The interview protocol included open-ended questions exploring perceptions of teacher preparedness, resource availability, professional development opportunities, and integration of real-life contexts in teaching. This qualitative approach complements the quantitative data by providing contextual understanding of systemic factors influencing HOTS promotion (Cojorn & Sonsupap, 2024; Yusoff & Che Seman, 2018).

Instrument Reliability

Both instruments underwent expert review for content validity by specialists in pedagogy and educational measurement. Subsequently, pilot testing was conducted with a small sample of 19 teachers and 3 head teachers outside the study area to assess clarity and reliability. Reliability analysis of the pilot data showed Cronbach's alpha coefficients of 0.65, 0.69 and 0.72 for the three subscales as indicated in Table 2.

Table 2:
Teachers' Pedagogical Competence in Promoting Higher-Order Thinking Skills

S/N	Dimensions of sustainability attitudes	Number of Items	Cronbach's α
1	Teachers' Ability to Design HOTS-Promoting Learning Activities	8	0.65
2	Use of Learner-Centered Strategies to Foster HOTS	10	0.69
3	Integration of Real-Life Situations to Enhance HOTS	7	0.72

Source: *Piloting Data 2026*

Although two values were slightly below the commonly cited 0.70 threshold, this benchmark is not absolute, and lower values can occur with small samples, few items, or complex constructs (Tavakol & Dennick, 2011; Kılıç, 2016). Moreover, instruments with alpha values below 0.70 can still provide meaningful results when supported by other evidence (McNeish, 2017). In this study, the subscales were retained due to expert validation and the use of triangulation through qualitative interviews, which strengthened the overall credibility of the findings.

Data Analysis Process

The collected questionnaire responses were entered into SPSS software (version 28.0), with each response numerically coded on a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree) to facilitate quantitative analysis. Descriptive statistics, specifically means and standard deviations, were computed using SPSS version 28 to summarize central tendencies and variability, with results presented in tables for clarity. For qualitative data, content analysis was conducted through a systematic process beginning with transcription of interviews to convert audio data into textual form. This was followed by coding meaningful units segments of text relevant to the research questions and grouping these codes into categories and themes that reveal patterns across the data. The process involved iterative interpretation to uncover latent meanings beyond the explicit content, enhancing depth and insight. Finally, conclusions were drawn by linking themes back to study objectives, ensuring rigor through transparency, reflexivity, and adherence to established qualitative content analysis phases of preparation, organization, and reporting.

Findings and Discussion

This section presents and discusses the findings of the study in relation to the three specific objectives. Quantitative data obtained from teachers' questionnaires are interpreted using descriptive statistics particularly the

Mean and Standard deviation, while qualitative insights from interviews with Heads of Schools and the District Secondary Education Officer (DSEO) are integrated to provide deeper contextual understanding.

Teachers' Ability to Design HOTS-Promoting Learning Activities

Table 3 presents teachers' responses regarding their ability to design learning activities that promote higher-order thinking skills.

Table 3:
Teachers' Ability to Design HOTS-Oriented Learning Activities (n=100 Teachers)

Item Description	Mean	SD
Designing objectives targeting analysis, evaluation, and creation	4.42	0.74
Use of action verbs reflecting HOTS	4.58	0.69
Designing comparison and classification tasks	4.36	0.81
Designing evaluation-based tasks	4.21	0.85
Designing creative/product-based tasks	3.15	0.88
Use of open-ended tasks	4.47	0.77
Constructing HOTS assessment questions	3.78	0.82
Confidence in designing HOTS materials	3.96	0.79
Overall Mean	**4.12**	**0.79**

(Source: Data field, 2026)

The findings presented in Table 3 indicate that teachers in public secondary schools in Bariadi Town Council demonstrate a relatively high level of self-reported competence in designing learning activities that promote higher-order thinking skills (HOTS), with an overall mean score of 4.12. Specifically, teachers reported strong ability in formulating learning objectives targeting higher-order cognitive processes such as analysis, evaluation, and creation (M = 4.42), as well as in the use of appropriate action verbs aligned with Bloom's higher levels (M = 4.58). Similarly, the frequent use of open-ended tasks (M = 4.47) suggests that teachers attempt to incorporate elements that potentially stimulate critical thinking and multiple perspectives in classroom instruction. However, despite this generally high self-reported competence, relatively lower mean scores were observed in more demanding pedagogical practices, particularly in designing creative or product-based tasks (M = 3.15) and constructing assessment questions that effectively measure higher-order thinking (M = 3.78). These areas require deeper pedagogical expertise and practical experience, indicating that while teachers are confident in planning for HOTS, they face challenges in operationalizing complex instructional tasks that fully engage students in higher-level cognition.

Qualitative findings further revealed that although teachers are generally familiar with HOTS concepts, there is a notable gap between planning and actual classroom practice. Interview responses from District School Quality Assurance officer (DSQAO) and Heads of Schools indicated that many teachers include higher-order verbs in lesson plans without designing corresponding learning activities that genuinely engage students in analysis, evaluation, and creation. In addition, reliance on textbooks was reported to limit the development of innovative, inquiry-based, and student-centered tasks.

District School Quality Assurance officer (DSQAO) noted:

> Teachers can write objectives using words such as 'analyze' or 'evaluate', which suggests an awareness of higher-order thinking requirements in lesson planning. However, this understanding often remains at a superficial level, as the actual classroom tasks implemented do not consistently reflect these cognitive demands. In many cases, lessons that are intended to promote higher-order thinking end up focusing on lower-level activities such as recall, description, or simple comprehension. This indicates a disconnect between what is planned on paper and what is practiced in the classroom, highlighting limitations in teachers' ability to translate theoretical knowledge of HOTS into meaningful, task-based learning experiences that genuinely engage students in analysis, evaluation, and creation (Interview with DSQAO 16th Jan 2026)

Similarly, one of the head of school coded HOS2 commented that;

> In our school, we encourage teachers to use learner-centered strategies that promote critical thinking and problem-solving. However, some teachers still struggle to fully implement higher-order thinking activities due to large class sizes and limited teaching resources. Continuous professional development is necessary to strengthen pedagogical competence and improve classroom practices (Interview with HOS2 15th Jan 2026)

The coexistence of relatively high self-reported competence and weaker classroom implementation can be explained by several interrelated factors. First, social desirability bias may influence teachers' responses, as they tend to report practices aligned with expected standards under the Competency-Based Curriculum (CBC), even when such practices are not consistently enacted in practice (Podsakoff et al., 2003). Second, contextual constraints, including large class sizes, limited resources, and time pressure, may restrict teachers' ability to implement cognitively demanding HOTS-oriented activities (OECD, 2019). Third, there is often a gap between pedagogical knowledge and classroom enactment, where teachers understand HOTS concepts theoretically but struggle to translate them into

structured and sustained learning experiences (Shulman, 1987; Darling-Hammond et al., 2017).

These findings suggest that teachers' competence is stronger at the level of planning than implementation, reflecting what can be described as a "pedagogical depth gap." This means that HOTS-oriented practices are present in form but not fully realized in ways that promote deep cognitive engagement. This pattern is consistent with studies by Assaly and Jabarin (2021) and Rachmawati et al. (2023), which found that teachers often demonstrate awareness of higher-order thinking but face challenges in operationalizing these practices effectively.

From a constructivist perspective, promotion of HOTS requires carefully designed learning experiences that actively engage students in inquiry, problem-solving, and knowledge construction. Therefore, the findings of this study highlight the need for targeted professional development, improved instructional support, and enabling classroom conditions to bridge the gap between pedagogical knowledge and actual classroom practice.

Use of Learner-Centred Teaching Strategies to Foster HOTS

Table 4 presents teachers' responses regarding the extent to which they use learner-centred teaching strategies to promote higher-order thinking skills (HOTS).

Table 4:
Use of Learner-Centered Teaching Strategies (n = 100 Teachers)

Item Description	Mean	SD
Use of group discussion to promote critical thinking	4.31	0.72
Use of problem-solving activities	4.05	0.80
Use of project-based learning	3.68	0.89
Asking open-ended questions	4.27	0.76
Encouraging justification of answers	3.94	0.78
Supporting inquiry-based learning	3.74	0.84
Active student engagement (debates, role play)	3.96	0.83
Use of think-pair-share or small group tasks	4.02	0.79
Reflection activities	3.71	0.86
Progressive questioning (simple to complex)	4.25	0.75
Overall Mean	**3.99**	**0.80**

(Source: Field Data, 2026)

The findings in Table 4 indicate that teachers demonstrate a moderately high level of use of learner-centred teaching strategies, with an overall

mean score of 3.99. Strategies such as group discussions (M = 4.31), open-ended questioning (M = 4.27), and progressive questioning techniques (M = 4.25) were frequently reported, suggesting that teachers are aware of and actively attempt to implement practices that support student engagement and critical thinking. These strategies are central to the Competency-Based Curriculum (CBC), which emphasizes active learning and student participation. However, relatively lower mean scores were observed in more cognitively demanding and student-driven approaches such as project-based learning (M = 3.68), inquiry-based learning (M = 3.74), and reflection activities (M = 3.71). These findings suggest that while teachers are comfortable using structured and teacher-guided strategies, they are less consistent in implementing approaches that require sustained student autonomy, deep inquiry, and extended problem-solving.

Qualitative findings further revealed that although learner-centred strategies are commonly used, their application is often surface-level and inconsistent. Interviews with Heads of Schools indicated that group discussions are frequently conducted without clear structure or follow-up activities that promote deeper analysis and reflection. In addition, large class sizes and time constraints were identified as major barriers limiting effective implementation.

One Head of School (HOS3) explained:

> Teachers use group discussions and questions in class, but sometimes these activities are not well guided. Students discuss, but they are not always pushed to think deeply or justify their answers (Interview with HOS2 15th Jan 2026)

Similarly, the District Secondary Education Officer (DSEO) noted:

> "Learner-centered methods are being used, but not at the level required to fully develop higher-order thinking. Many teachers still control the learning process, and students are not given enough opportunity to explore and discover knowledge on their own."
> (Interview with DSEO, January 2026)

These findings suggest that although teachers report a moderately high use of learner-centred strategies, the quality and depth of implementation remain limited. This indicates a gap between the presence of learner-centred activities and their effectiveness in promoting higher-order thinking skills. This observation is consistent with studies by Cain (2020) and Nalova and Shalanyuy (2017), which found that teachers often adopt

learner-centred approaches in form but not in substance. From a constructivist perspective, learner-centred teaching requires meaningful engagement, inquiry, and reflection. The findings of this study therefore imply that while teachers are moving toward learner-centred pedagogy, further support is needed to enhance the depth and effectiveness of these strategies in fostering higher-order.

Integration of Real-Life Situations in Teaching to Enhance HOTS

Table 5 presents teachers' responses regarding how they integrate real-life situations into teaching to enhance higher-order thinking skills.

Table 5: Integration of Real-Life Situations in Teaching

Item Description	Mean	SD
Connecting lessons to students' daily lives	4.36	0.73
Designing real-life problem-solving tasks	3.98	0.84
Using of local examples and cases	4.28	0.76
Analysis of real-world scenarios	3.92	0.84
Assigning community-based projects	3.54	0.92
Linking learning to future careers	3.01	0.80
Use of media (news, videos)	3.76	0.88
Overall mean	3.84	0.82

The findings in Table 5 indicate that teachers demonstrate a moderately high level of integration of real-life situations in teaching, with an overall mean score of 3.84 (SD = 0.82). Teachers reported strong practices in connecting lesson content to students' daily lives (M = 4.36, SD = 0.73) and using local examples and cases (M = 4.28, SD = 0.76), suggesting that they recognize the importance of contextualizing learning to enhance understanding and relevance. Similarly, relatively high mean scores were observed in designing real-life problem-solving tasks (M = 3.98, SD = 0.84) and analyzing real-world scenarios (M = 3.92, SD = 0.84), indicating that teachers make some effort to move beyond basic content delivery toward application-oriented instruction.

These findings are consistent with empirical evidence from different contexts, which shows that linking instruction to real-life situations enhances students' engagement and higher-order thinking skills (HOTS). For instance, Haryanto and Arty (2019) in Indonesia found that contextual teaching significantly improved students' HOTS and self-efficacy, demonstrating the effectiveness of real-life integration in promoting both cognitive and motivational outcomes.

However, despite this moderately high level of reported practice, relatively lower mean scores were observed in more complex and authentic pedagogical practices, particularly assigning community-based projects (M = 3.54, SD = 0.92), linking learning to future careers (M = 3.01, SD = 0.80), and the use of media resources such as news and videos (M = 3.76, SD = 0.88). These practices require higher levels of pedagogical competence, creativity, and resource availability, which may explain their less frequent implementation. The lower score on linking learning to future careers is particularly notable, as it suggests a missed opportunity to help students see the long-term relevance and application of their learning.

Qualitative findings further reinforce this interpretation by showing that although teachers frequently provide real-life examples during instruction, they rarely design structured learning activities that engage students in authentic investigation and problem-solving. Heads of Schools reported that contextualization is often limited to verbal explanations rather than extended tasks that promote inquiry, application, and critical thinking. As one Head of School (HOS1) explained:

> "Teachers try to relate topics to students' daily lives, but they do not always go further to design activities where students can investigate real problems or apply what they have learned in practical situations." (Interview with HOS1 15th Jan 2026)

This disconnects between awareness and practice reflects a broader pattern observed in empirical studies. For example, Giacomazzi (2022) in Uganda demonstrated that when teachers were supported through professional development to integrate contextualized learning experiences, students showed improved critical thinking and engagement. Similarly, Mutegi (2023) in Kenya found that students exposed to real-life instructional approaches performed better in problem-solving and analytical tasks, indicating that authentic contextualization has a direct impact on higher-order thinking outcomes. However, studies conducted in Tanzania by Hezron, Deogratias, and Lupeja (2024) revealed that teachers' use of real-life situations is often limited to simple illustrations rather than complex, problem-solving tasks, which aligns closely with the findings of the present study.

Overall, the findings suggest that while teachers demonstrate awareness of the importance of integrating real-life situations in teaching, their practices remain largely illustrative rather than experiential. This limits students' opportunities to engage in meaningful problem-solving, inquiry, and

application of knowledge, which are essential components of higher-order thinking skills. From a constructivist perspective, meaningful learning occurs when students actively engage with real-world problems and construct knowledge through experience. Therefore, the moderately high but incomplete integration observed in this study underscores the need to strengthen teachers' capacity to design authentic, context-based learning experiences that go beyond simple examples to fully engage learners in higher-order cognitive processes.

CONCLUSION AND RECOMMENDATIONS

Conclusion

This study examined teachers' pedagogical competence related to the promotion of higher-order thinking skills (HOTS) under the Competency-Based Curriculum (CBC) in public secondary schools in Bariadi Town Council, Tanzania. The findings indicate that teachers report moderate to relatively high levels of competence in designing HOTS-oriented learning activities, using learner-centred strategies, and integrating real-life situations in teaching. In particular, teachers demonstrated awareness of key HOTS principles, such as formulating higher-order objectives, using open-ended questions, and linking content to students' daily experiences.

However, the findings also reveal a gap between reported pedagogical competence and classroom practice. Teachers appear less consistent in implementing more demanding instructional approaches, such as inquiry-based learning, authentic problem-solving tasks, and project-based activities. In addition, the integration of real-life situations is often limited to illustrative examples rather than structured, experiential learning opportunities. These patterns are associated with contextual factors such as large class sizes, limited instructional resources, and constrained opportunities for professional development. Guided by constructivist theory, the study suggests that while teachers demonstrate awareness and reported use of HOTS-oriented practices, the depth and consistency of classroom implementation remain limited. These findings should be interpreted as indicative of a gap between pedagogical knowledge and enactment, rather than evidence of direct effects on students' higher-order thinking outcomes.

RECOMMENDATIONS

To strengthen the promotion of HOTS in classroom practice, targeted and continuous professional development is recommended to support teachers in designing and implementing inquiry-based, context-driven, and higher-

order assessment tasks. Such initiatives should emphasize practical classroom application to bridge the gap between knowledge and practice. In addition, improving the availability of instructional resources, including ICT tools and context-based teaching materials, may support teachers in implementing more engaging and cognitively demanding learning activities. Addressing structural challenges such as large class sizes and heavy syllabus demands may further create conditions that are more conducive to learner-centred teaching.

Strengthening instructional supervision through regular feedback, mentoring, and collaborative professional practices may also support teachers in refining their classroom implementation of HOTS-oriented strategies.

Finally, future research is recommended to employ classroom observations and intervention-based designs to more directly examine how pedagogical practices are enacted and how they relate to students' higher-order thinking outcomes.

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Institutional Theory and Tax Compliance: A Systematic Literature Review

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Abstract
The role of tax in any economy is of paramount importance since it contributes to the implementation of government plans and budget. Therefore, this study systematically reviewed the role of institutional theory in promoting tax compliance. The study used the PRISMA 2020 approach, 23 articles, thematic analysis, NVivo qualitative data analysis, and SPSS for descriptive data analysis. The study explored the characteristics and patterns of the studies in relation to the institutional theory variables. Study findings indicated that higher integration of institutional theory variables into tax compliance was conducted mostly in Asian and African countries in the 2020s. Also, study findings indicated that the regulations and normative pillars are frequently invoked to dominate the literature, whereas the cultural cognitive pillar is rarely studied. Additionally, while studies conducted in developing countries examined both the regulative and normative pillars, those in developed countries focused more on the regulative pillar. Additionally, the results suggest that the theory was reasonably utilized in explaining tax compliance among SMEs rather than among corporate entities. Generally, the review concludes that further studies are required to explain how institutional theory promotes tax compliance across developed and developing countries and across corporate entities. Studies that focus on normative and cultural cognitive aspects and intercountry studies are highly in demand, while policymakers should formulate and amend policies to promote tax compliance, focusing on the proper functioning of regulations, cultural and normative facets.

Keywords: *Institutional theory, Tax Compliance, regulations, norms, culture*

INTRODUCTION

Tax plays a significant role in financing governments' plans and budgets of all countries, regardless of the economic level (Meliza & Ulum, 2025). Through taxes, governments finance their daily operations, provide public services, and implement development plans within the country (Hyera et al., 2025). Additionally, if well administered, taxes ensure the proper distribution of income within the economy (Yapa et al., 2015). Because of the increasing government dependence on revenue collection, tax compliance has become an institutional, fiscal, and research agenda item. Hence, tax compliance is an essential catalyst for sustaining government revenue mobilization, which in turn supports public expenditure, public service delivery, and economic development. Institutional dynamics shape tax compliance, as it is determined by regulations, norms, and cultural cognition (Suez-Sales & Okabe, 2025) in both developing and developed economies.

The role of tax in promoting the availability of social services justifies governments' emphasis on ensuring that taxpayers pay an appropriate amount of tax. This will be possible if taxpayers comply with tax laws and regulations. Tax compliance is used as an indicator of the effectiveness of the tax system. Institutional quality, governance, government trust, tax morale, and social norms determine tax compliance (Koumpias et al., 2020). The extent to which taxpayers comply with tax laws, policies, and regulations is regarded as tax compliance (Lima et al., 2025). The governments play a significant role in promoting and enforcing tax compliance. Formulating and enforcing regulations, cultivating taxpayers' norms, and emphasizing a tax compliance culture have been essential tools for promoting tax compliance.

Despite substantial tax administration reforms, the challenge of tax compliance persists in many countries. Underreporting, tax evasion, and informal economic activities undermine tax countries globally (Al-Asfour & McGee, 2024). These challenges are amplified by fragile, weak institutions, enforcement techniques, and citizens' low confidence in public authorities, which diminishes tax compliance and tax collection in most developing countries (Paleka & Vitezić, 2023). Institutional weaknesses have catalyzed the tax collection mechanism in developing countries (Adem, 2024).

Institutional theory scholars assert that institutional dimensions of regulations, normative, and cultural-cognitive promote organizational performance (Kayaoğlu & Williams, 2020). The regulatory pillar examines

how laws, regulations, and policies shape behavior, while the normative pillar explains how social expectations, values, and norms influence behavior. The cultural-cognitive pillar focuses on shared beliefs that influence behavior. All three pillars of the institutional theory are believed to influence taxpayers' behavior in some way (Augustine, 2020).

The literature indicates that no SLR studies have examined how institutional theory variables influence tax compliance. Instead, individual studies concentrated on isolated institutional theory variables. Studies such as Lima et al. (2025) in Brazil, Ottone et al. (2015) in Italy, Sweden, and the UK, Augustine (2020) in Nigeria, Tuliao (2026) in Japan, and the United States, and Zhong (2023) in China focused on regulations. Firmansyah and Wardana (2025) in Indonesia, Nadirov (2021) in Azerbaijan, Boll (2018) and Ostapenko and Williams (2016), in Ukraine and Slovakia, and in Denmark concentrated on normative. Moreover, Anugrah et al. (2025) in Indonesia and Pipatnarapong (2025) in Brazil, Russia, India, China, and South Korea (BRICS) countries assessed how regulation and cultural factors influence tax compliance.

Additionally, Paquin (2022) in Georgia and Armenia, Yahaya et al. (2024) in Nigeria, and Hyera (2025) in Tanzania assessed the influence of regulations and normative factors. Likewise, Abbas et al. (2023) in Australia and Suez-Sales and Okabe (2025) in the United States and Japan focused on regulative, normative, and cultural aspects. Therefore, this study intends to systematically review different articles that used institutional theory to explain tax compliance. This study examined the characteristics of the 23 articles and their patterns. The principal contribution of this study is the identification of gaps in understanding how institutional theory variables influence tax compliance. The study aimed to identify which institutional theory constructs are widely or rarely applied, enabling holistic theoretical, practical, and policy recommendations.

METHODOLOGY

Eligibility criteria

The study used the PRISMA 2020 framework to guide article selection, thereby ensuring relevance and methodological rigor in the inclusion and exclusion criteria. The researchers applied the Google Scholar and Scopus databases. Google Scholar is freely accessible and therefore contains most grey literature articles (Gusenbauer, 2024). However, sometimes low-quality articles can be uploaded to Google Scholar. To avoid encountering low-quality articles, the researchers used PRISMA 2020 quality checks to retrieve only high-quality articles from Google Scholar. Scopus is the

largest and most reputable database because journals and articles indexed in it are considered credible and highly impactful (Anam et al., 2025).

The keywords "Institutional theory "AND "Tax compliance" in Google Scholar and "Institutional theory" AND "Tax compliance" or regulations AND "tax compliance" or normative AND "tax compliance" or culture AND "tax compliance" in Scopus were used to select articles. The selection criteria were: all articles with search keywords in the title, peer-reviewed articles in Google Scholar, and articles, working papers, and book chapters in Scopus. To capture the effect of measure variables, the researchers included only documents that applied regression analysis or higher-level data analysis methods, such as structural equation modeling or smart PLS. The researchers excluded documents not in English, theses and dissertations, qualitative and descriptive analysis articles, news articles, opinions, blogs, commentaries, and non-scientific materials. Due to the limited number of relevant articles, working papers, and book chapters, only those published in reputable databases such as Scopus and Web of Science were included in the analysis. Marzi et al. (2024) asserted that book chapters, conference papers, and working papers indexed in higher-impact journals may be included in systematic literature reviews. The selection process is presented in Table 1. The screening involved three phases: first, searching Google Scholar and Scopus for the search keywords; second, screening articles for English language and the other inclusion criteria. In the final phase, only articles that contained the search keywords and were not redundant or duplicates were included for analysis. Redundant articles were those that had flaws in the design and results, and those whose methodological approach did not qualify to articulate the effects of the measure. The duplicate articles were those that yielded similar results or contributed very little to the study. The review was done from June 2025 to January 2026.

The three researchers were assigned tasks to facilitate a timely, accurate review. The first researcher concentrated on Google Scholar, and the second on Scopus. The third researcher guided the two researchers and supervised the review analysis. After retrieving the articles, all three researchers finally screened them using the inclusion and exclusion criteria. Each article was included in the analysis if all three researchers agreed that it met the criteria and quality standards.

Table 1:
Article selection process

Type of Database	Initial Search	Screened Articles	Final Selection
Scopus	13	10	5
Google Scholars	2,200	33	18
TOTAL	**2,213**	**43**	**23**

Source: Google Scholar and Scopus Databases (2026)

Articles quality checks

A Mixed Methods Appraisal Tool (MMAT) was used to assess the methodological quality of the selected articles and the reliability of their results, as recommended by Hughes et al. (2020). Five design-specific criteria of MMAT include the suitability of quantitative and qualitative approaches, the appropriateness of data collection methods, adequate data to support the findings, a logical interpretation of the findings, and a thorough description of the context. Thereafter, the score for each study was assigned by categorizing the articles as "relevant", "not relevant", or "cannot tell", each with a numerical value. The scores for each article were summed to obtain the total, which was then converted to a percentage. All articles with scores below 60% did not qualify for the study.

As Hughes et al. (2020) recommended, the researchers also applied the Grading of Recommendations, Assessment, Development, and Evaluation (GRADE) to assess the quality of the articles. The study used the MMAT 2018 version, which rates articles from 5 to 1, where 5 is very high quality, 4 is good or high quality, 3 is moderate quality, 2 is low quality, and 1 is very low quality. According to Hughes (2020), the article is accepted for analysis if it scores 3 or above. Converted to percentages, the highest quality is 5/5 (100%); good quality is 4/5 (80%); moderate quality is 3/5 (60%); low quality is 2/5 (40%); and very low quality is 1/5 (20%). Table 3 shows the MMAT and GRADE scores for the articles. MMAT and GRADE ensured the researchers selected articles with reasonable quality, methodological reliability, and transparency. Additionally, the researchers used the MMAT and GRADES to overcome the risk of article selection bias. Hence, the application of inclusion and exclusion criteria, MMAT, and grades minimized the risk of selecting low-quality articles. Table 2 presents the selection information for the MMAT and GRADE articles.

Table 2:
MMAT and GRADE article selection information

No	Author	Year	Data analysis method	MMAT score	GRADE score
1	Lima et al.	2025	PLS-SEM	80% (4/5)	High
2	Suez-Sales & Okabe	2025	Regression	100% (5/5)	Very High
3	Tuliao	2026	Regression	80% (5/5)	High
4	Anugrah	2025	Regression	100% (4/5)	Very high
5	Paquin	2022	Regression	80% (5/5)	High
6	Night et al.	2019	Regression	100% (4/5)	Very high
7	Le et al.	2025	Regression	80% (5/5)	High
8	Koumpias et al.	2020	Regression	100% (4/5)	Very high
9	Augustine	2020	Regression	60% (3/5)	Moderate
10	Bin-Nashwan	2025	Regression	80% (4/5)	High
11	Pasin et al.	2026	Regression	80% (4/5)	High
12	Felix et al.	2025	Regression	80% (4/5)	High
13	Zhong et al.	2023	Regression	80% (4/5)	High
14	Pipatnarapong et al.	2025	Regression	100% (5/5)	Very high
15	Meliza & Ulum	2025	PLS-SEM	100% (5/5)	Very High
16	Kayaoğlu	2020	Regression	80% (4/5)	Moderate
17	Williams	2020	Regression	60% (3/5)	Moderate
18	Hyera et al.	2025	Regression	60% (3/5)	Moderate
19	Nadirov et al.	2021	Regression	100% (5/5)	Very High
20	Yahaya & Omotola	2024	Regression	60% (3/5)	Moderate
21	Ottone et al.	2015	Regression	80% (4/5)	High
22	Ostapenko & Williams	2016	Regression	80% (4/5)	High
23	Kimea et al.	2023	Regression	80% (4/5)	High

Source: Empirical Literature review (2026)

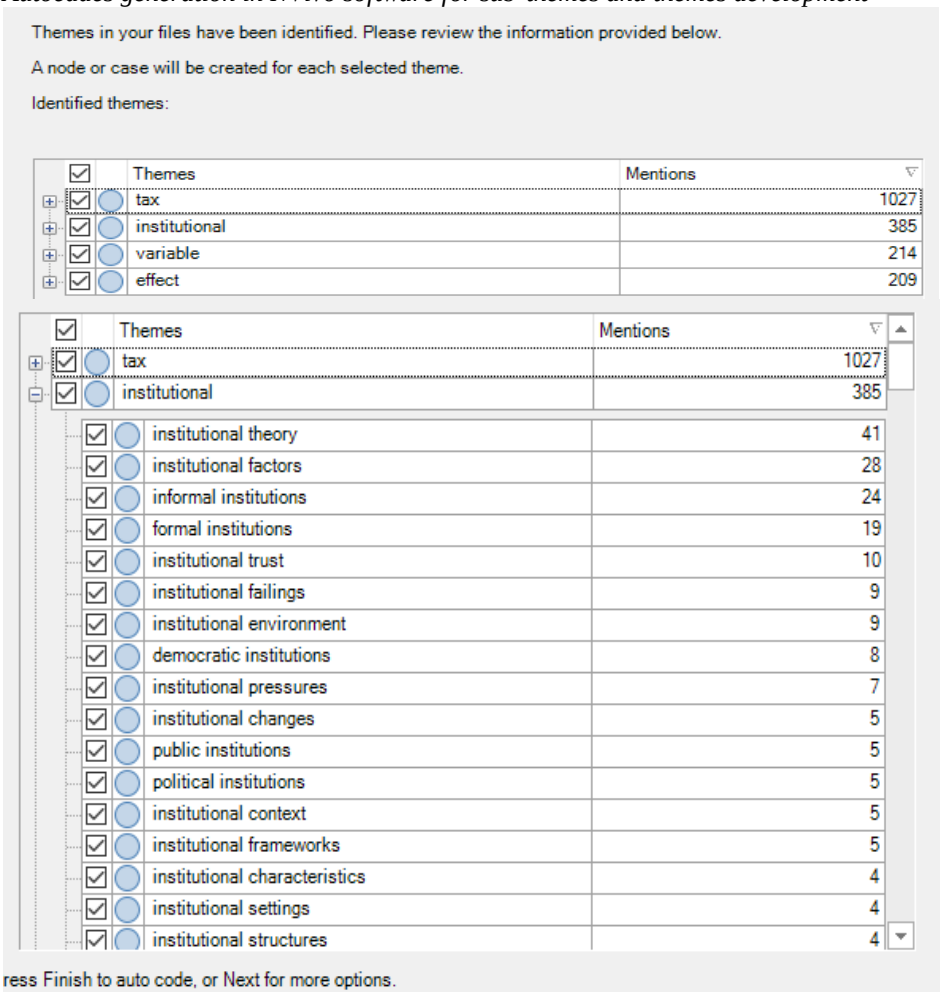
Risk of bias was assessed through a thorough evaluation of the study's objective, methodology, instrument validity, openness of the data analysis, and limitations. Thus, the study included only articles with methodological rigor, excluding those with missing data, qualitative and descriptive studies, and those with unclear methodological design. To ensure proper consideration of the effects of the measure, all studies without measure variables were excluded. These studies either used qualitative or descriptive analysis, or showed only association or direction, not the effect of the measure variables, such as R-square, odds ratio, beta coefficient, error term coefficients, etc. Therefore, studies that used only regression, structural equation modeling, or other rigorous data analysis methods were selected for analysis because they clearly indicated the effects of the measure variables.

Data analysis

The qualitative SLR articles were analyzed using thematic analysis. Using thematic analysis, the researcher identified, analyzed, and reported patterns in the data. According to Braun and Clarke (2006), thematic analysis comprises six steps: familiarization with the collected data, initial coding to identify and label the study's features, generalization of themes, theme evaluation and review, theme definition, and data analysis and report writing.

The analysis involved extracting data mainly from the abstracts, methodologies, results, and conclusions of the selected articles. The extracted data were screened, segmented and coded to fit research objectives. The final codebook was generated through autocoding. The process also involved assembling and matching the codes of similar texts. The autocoding in NVivo (Figure 1) explains how the sub-themes and final themes were generated. The initial themes included tax, institutional, variable, and effects, and they initially generated 1027 nodes. The sub-themes and themes were generated later, considering the sub-nodes that articulate the variables of institutional theory. Moreover, the word frequency (Table 2) and word cloud (Figure 2) also helped the researcher characterize the studies and identify study patterns, which are presented in the results section. For better visualization and analysis, the researchers also used the Statistical Package for the Social Sciences (SPSS) to analyze data from the selected articles. SPSS was used to analyze the data and generate detailed, meaningful information in line with the objectives.

Figure 2:
Autocades generation in NVivo software for sub-themes and themes development



Source: NVivo software (2026)

The word frequency (Table 3) suggested the generation of sub-themes, including the study country, data analysis method, study sector, institutional theory variables, and their influence on tax compliance.

Table 3:
Word frequencies for the themes and sub-themes development

Word	Length	Count	Weighted Percentage (%)	Similar Words
Institutions	12	1563	1.04	institute, institution, institutional, 'institutional, institutionalism, institutionalism', institutions, institutions'
governments	11	1028	0.68	govern, governance, governed, governing, government, governments, governments'
compliance'	11	972	0.65	compliance, compliance', compliance'
Morality	8	964	0.64	moral, morale, morale', morality, morals
Economics	9	815	0.54	economic, economically, economics
Country	7	618	0.41	countries, countries', countries', country
Accounts	8	600	0.40	account, accountability, accountable, accountancy, 'accountancy, accountant, accountants, accountants', accounted, accounting, accounting', 'accounting, accounts
Revenues	8	575	0.38	revenue, revenues
Social	6	504	0.33	social, socialization, socially, socials
Trust	5	426	0.28	trust, trusted, trusting
Public	6	418	0.28	public, publicly, publication, publications
Taxpaying	9	413	0.27	taxpayer, taxpayer', taxpayers, taxpayers', taxpayers', taxpaying
Business	8	389	0.26	business, businesses
Systems	7	377	0.25	system, systemic, systems
developments	12	370	0.25	develop, developed, developer, developers, developing, 'developing, development, development', developments, develops
Avoidance	9	367	0.24	avoid, avoidance, avoiders, avoiders', avoiding

Word	Length	Count	Weighted Percentage (%)	Similar Words
Regulators	10	143	0.10	regulate, regulated, regulating, regulation, regulations, regulative, regulator, regulators
citizens’	9	140	0.09	citizen, citizens, citizens’
Taxation	8	139	0.09	taxation, taxation’
Normative	9	131	0.09	Normative
Sector	6	131	0.09	sector, sector’, sectoral, sectors
Corruption	10	130	0.09	corrupt, corruption, corruptions
Educational	11	130	0.09	educate, educated, education, educational, educator, educators
Behaviors	9	128	0.09	behavior, behavior’, behavioral, behaviors
enforcement	11	117	0.08	enforce, enforced, enforcement, enforcements, enforcing
Regulatory	10	116	0.08	Regulatory
Mechanisms	10	109	0.07	mechanism, mechanisms
characteristics	15	108	0.07	characteristic, characteristics
Theoretical	11	93	0.06	theoretical, theoretically
Isomorphic	10	92	0.06	isomorphic, isomorphism
Regressions	11	143	0.10	regress, regression, regressions

Figure 2:
NVivo word-cloud insights from tax-compliance articles.

Source: NVivo Software (2026)

Using a word cloud, key issues that emerged across all 23 articles were tracked, from which the study's themes were identified. Study themes included identifying characteristics of tax compliance articles using institutional theory and identifying patterns of tax compliance articles using institutional theory. Thereafter, the interpretation of the analyzed was executed.

RESULTS

Characteristics of the studies

Variables for describing the characteristics of the study included year of the study, geographical location, methods of analysis and sector of the study as indicated in Table 4.

Table 4:
Characteristics of the studies

No	Author	Year	Years Category	Sources	Country	Country categorise	Economic status	Data analysis method	Variable in the institutional theory	Industry
1	Lima et.	2025	2021-2026	Scopus	Brazil	South America	Developing	PLS-SEM	regulative	Telecommunications
2	Suez-Sales & Okabe	2025	2021-2026	Scopus	United states and Japan	North America and Asia	Developed	Regression	regulative, normative and cultural-cognitive	General
3	Tuliao	2026	2021-2026	Google scholar	Taiwan	Asia	Developing	Regression	regulative, normative and cultural-cognitive	Business (self employed)
4	Anugrah	2025	2021-2026	Scopus	Indonesia	Asia	Developing	Regression	regulative and cultural cognitive	SME
5	Paquin	2022	2021-2026	Google scholar	Armenia and Georgia	Asia	Developing	Regression	regulative and normative	SME
6	Night et al.	2019	2011-2020	Scopus	Uganda	Africa	Developing	Regression	regulative, normative and cultural-cognitive	SME
7	Le et al.	2025	2021-2026	Scopus	Vietnam	Asia	Developing	Regression	normative	SME
8	Koumpias et al.	2020	2011-2020	Google scholar	Global	Global	Developed and developing	Regression	normative	General
9	Augustine	2020	2011-2020	Google scholar	Nigeria	Africa	Developing	Regression	regulative, normative and cultural-cognitive	General
10	Bin-Nashwan	2025	2021-2026	Google scholar	Global	Global	Developed and developing	Regression	normative	Banking and Finance
11	Pasin et al.	2026	2021-2026	Google scholar	Italy	Europe	Developed	Regression	normative	General

No	Author	Year	Years Category	Sources	Country	Country categorise	Economic status	Data analysis method	Variable in the institutional theory	Industry
12	Felix et al.	2025	2021-2026	Google scholar	Global	Global	Developed and developing	Regression	regulative and normative	General
13	Zhong et al.	2023	2021-2026	Google scholar	China	Asia	Developed	Regression	regulative	General
14	Pipatnarapong et al.	2025	2021-2026	Google scholar	Brazil, Russia, India, China and South Africa,	Global	Developed and developing	Regression	regulative and cultural cognitive	SME
15	Meliza & Ulum	2025	2021-2026	Google scholar	Indonesia	Asia	Developing	PLS-SEM	regulative	Government
16	Kayaoğlu	2020	2011-2020	Google scholar	Turkey	Asia	Developing	Regression	regulative, normative and cultural-cognitive	General
17	Williams	2020	2011-2020	Google scholar	Bulgaria	Europe	Developing	Regression	regulative	SME
18	Hyera et al.	2025	2021-2026	Google scholar	Tanzania	Africa	Developing	Regression	regulative and normative	Government
19	Nadirov et al.	2021	2021-2026	Google scholar	Azerbaijan	Asia	Developing	Regression	normative	General
20	Yahaya & Omotola	2024	2021-2026	Google scholar	Nigeria	Africa	Developing	Regression	regulative and normative	General
21	Ottone et al.	2015	2011-2020	Google scholar	Italy, Sweden UK	Europe	Developed	Regression	regulative	General
22	Ostapenko & Williams	2016	2011-2020	Google scholar	Ukraine and Slovakia	Europe	Developing	Regression	normative	SME
23	Kimea et al.	2023	2021-2026	Google scholar	sub-Africa countries	Africa	Developing	Regression	regulative and normative	General

Source: Empirical Literature Review (2026)

The findings in Table 5 show the study characteristics and the pattern of the studies.

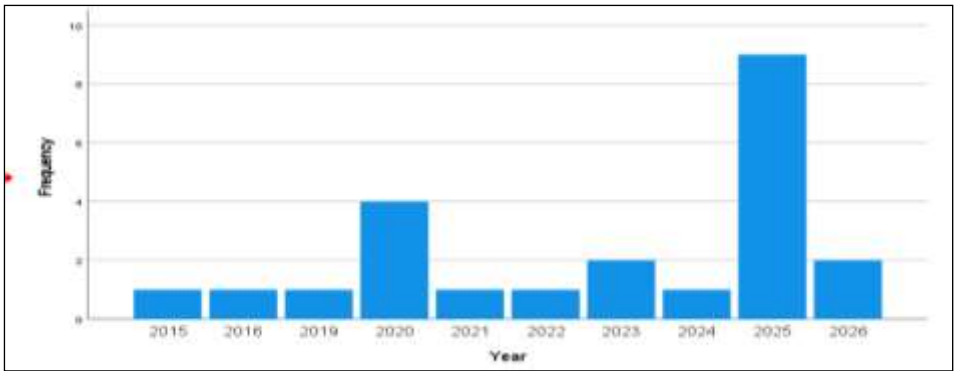
Table 5: Study Characteristics and Pattern of Studies

Regions of studies	Frequency	Percent
Africa	5	21.7
Asia	8	34.8
Europe	4	17.4
Global	4	17.4
North America and Asia	1	4.3
South America	1	4.3
Economic status		
Developed	4	17.4
Developed and developing	4	17.4
Developing	15	65.2
Data analysis method		
PLS-SEM	2	8.7
Regression	21	91.3
Total	23	100.0
Variable in the institutional theory		
Normative	6	26.1
Regulative	5	21.7
Regulative and cultural cognitive	2	8.7
Regulative and normative	5	21.7
Regulative, normative and cultural-cognitive	5	21.7
Industry		
Banking and Finance	1	4.3
Business (self-employed)	1	4.3
General	11	47.8
Government	2	8.7
SME	7	30.4
Telecommunications	1	4.3
Total	23	100.0

Source: SPSS Data analysis (2026)

The findings from Figure 3 show that all 23 articles were published after 2010, with 30% between 2011 and 2020 and the remaining 70% between 2021 and 2026, with peaks in 2025 and 2020. This is due to many countries worldwide using revenue collection as a major source of government income (Yapa et al., 2015).

Figure 3:
Yearly distribution of articles

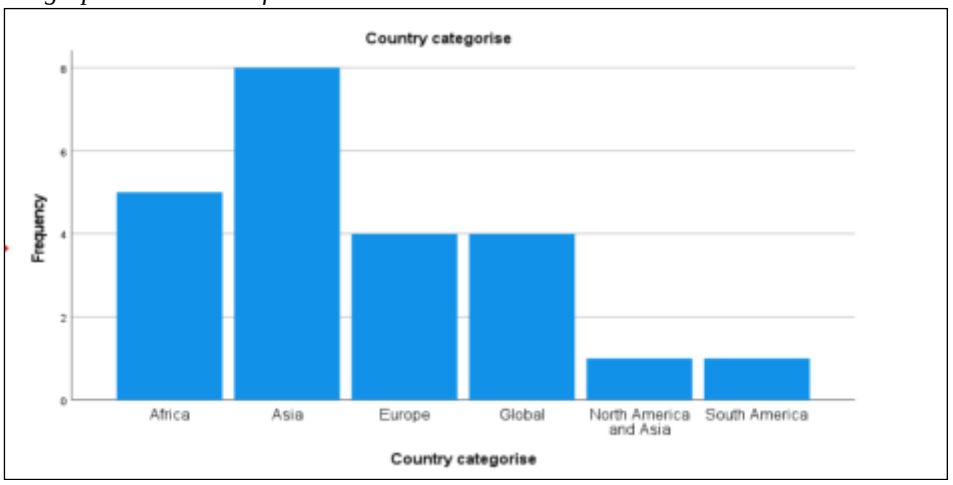


Source: Systematic Literature Review (2026)

The analysis indicates that most scholars have been using institutional theory in their studies to link it to ongoing scenarios that prioritize the use of institutional theory variables in promoting compliance across countries. The findings further depict that scholars have recently recognized the role of institutional theory variables of regulations, norms, and culture in promoting tax compliance, emphasizing that favorable regulations, norms, and culture are a panacea in promoting tax compliance. The findings further show that rigorous studies are essential tools for providing direction on how institutional theory variables promote tax compliance.

Findings on the geographical location (Figure 4) indicate that studies were conducted in Europe, Asia, Africa, North America, and South America. Furthermore, findings indicate a higher number of articles; about 35% were conducted in Asia. This was followed by about 23% of the articles being sourced from Africa, and only 4% from studies conducted in South America. The findings align with ongoing initiatives in Asian and African countries to promote tax compliance (Kimea et al., 2023). Given the pivotal role of governments in promoting tax compliance among their citizens, scholars view this as an opportunity to examine how institutional variables promote tax compliance (Pasin et al., 2026). Therefore, the study emphasizes that scholars in various countries have recognized the role of institutional theory variables in promoting tax compliance. Hence, scholars have assessed how institutional theory has promoted tax compliance across different countries.

Figure 4:
Geographical location of the studies

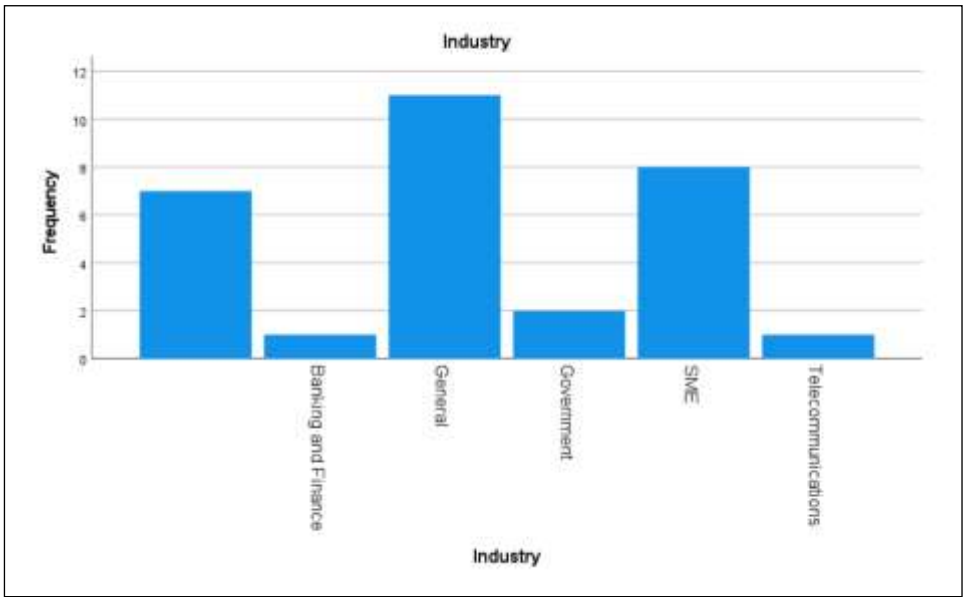


Source: Systematic Literature Review (2026)

The review indicates that 61% of the studies focused on the individual country, including China, Brazil, Uganda, Tanzania, Vietnam, Nigeria, Italy, Azerbaijan, Bulgaria, Taiwan, Indonesia, and Turkey. Moreover, 26% of the articles involved more than one country, of which 33% involved regional countries such as BRICS and sub-Saharan countries. Only 13% of the articles were conducted globally. Industrially, findings indicate that about 48% of the articles involved respondents from all industries to capture the general view of the taxpayers, regardless of the industry. 35% of the articles focused on Small and Medium Entrepreneurs (SMEs). Thus, a total of 83% of the articles focused on individual taxpayers and SMEs' perceptions. The analysis suggests that institutional theory has attracted scholars to assess the overall situation of taxpayers and SMEs regarding tax laws, regulations, and policies, as well as tax regulatory and administrative institutions, society, and culture (Figure 5). The theory has also been used to assess the government's effectiveness in promoting and enforcing tax compliance among its people, as indicated by 9% of the articles that focused on government entities. Additionally, only 8% of the articles focused on the telecommunication, banking, and finance industries. In most countries, institutions in these industries are large companies, the majority of which are multinational, and most tend to comply with tax laws, regulations, and policies to maintain the credibility of their brands (Kayaoğlu & Williams, 2020). This is in contrast to individual taxpayers and SMEs, who are encouraged to engage in tax avoidance and evasion practices due to their business instability and low level of tax education

(Anugrah et al., 2025). Generally, study findings suggest that most studies were conducted in SMEs, which contribute a large share of GDP in most countries and are an essential catalyst for economic development globally. Despite such an enormous role, most SMEs are more vulnerable to tax avoidance than the large firms. Therefore, the scholars are interested in assessing the role of institutional theory in fostering tax compliance among SMEs. Therefore, scholars are interested in assessing how institutional theory variables influence tax compliance among SME owners.

Figure 5:
Industry coverage of the studies



Source: Systematic Literature Review (2026)

Findings from the analysis indicated that 91% of the studies used regression to assess the effect of variables from institutional theory on tax compliance, while only 9% used partial least squares structural equation modeling (PLS-SEM). The findings imply that most scholars apply regression analysis because it is rigorous and simply explains how the variables of institutional theory foster tax compliance, as articulated by Goli and Drechsler (2020). Most scholars use regression analysis to examine how institutional theory variables affect tax compliance because it provides a practical and consistent method for understanding how the regulatory framework, normative practices, and cultural components influence tax compliance. Regression techniques enable researchers to estimate the

direction and strength of relationships among independent variables, middle variables, and dependent variables. The regression analysis, moreover, facilitates hypothesis testing for variables of institutional theory constructs in a simple, practical way, thereby highlighting how institutional variables significantly predict tax compliance across sectors. Furthermore, most institutional and tax compliance studies involve the collection of survey data, and regression models are well-suited to such data. Hence, regression analysis is commonly used in the social sciences to generate empirical analytical evidence to support theory testing, the generalization of findings, and policy recommendations, since it is less complex than multivariate data analysis techniques such as SEM.

Patterns of the articles

The analysis indicates that most studies were conducted in developing countries, particularly in Asia and Africa. This is attributed to low tax compliance, high rates of tax avoidance and evasion, especially in African countries (Schwab et al., 2022). Additionally, this is driven by the ongoing emphasis on using tax collection by the African governments, which treat taxation as the primary source of government revenue in most African and many developing countries. This passion necessitates that most African countries devise strategies to optimize revenue collection through various tax collection strategies, including digitalization. Mpofu (2022) emphasized the need for more studies to assess the influence of institutional theory on tax compliance in developed countries. Thus, scholars have been conducting studies to propose tax compliance strategies for taxpayers in developing countries more than in developed countries. Most Asian countries are also in a developing stage and hence require tax revenue to finance the government budget and development activities. Hence, scholars have also examined the influence of tax compliance in Asian countries. Unlike in developing countries, developed countries are highly modernized and have effective electronic tax collection systems, thereby enhancing tax collection (Anugrah et al., 2025).

Regulatory variables are most often studied because they explain how established enforcement mechanisms, formal rules, and deterrence mechanisms influence taxpayers' attitudes and behaviour (Gebrihet et al., 2023). The deterrence approach advocates that penalties, audits, and the perceived tax authorities' power may reduce noncompliance, while leniency and less enforcement mechanisms encourage non-compliant tax behaviour. Social norms shape taxpayers' expectations and moral obligations regarding acceptable behaviuor. Citizens' perception of tax-

paying as a social responsibility reinforces tax compliance by activating reciprocity, peer conduct, trust, and taxpayers' morals. Therefore, the norms promote tax compliance beyond mere adherence to legal procedures (Cahyonowati et al., 2023). The findings show that tax payment should not depend solely on established legal procedures, but Norms may weaken or strengthen effective tax payment and compliance. Hence, the findings indicate that studies that focus on norms are recommended.

The findings further assert that social perceptions and pressure are important catalysts in promoting tax compliance. Despite its role, cultural influence on tax compliance is less studied because cultural scholars sometimes fail to isolate culture from economic, institutional, and legal features (Lewis et al., 2009). Citizens' trust is usually shaped by culture. Therefore, the culture manipulates taxpayers' norms, values, and trust in government. Moreover, culture shapes perceptions of civic duty and positively influences tax compliance (Tsakumis et al., 2007). Cultural orientations and practices such as power distance, uncertainty avoidance, and individualism shape heterogeneous taxpayers' responses across societies and determine the enforcement mechanisms of tax compliance (Lewis et al., 2006). Therefore, cultural consideration is essential in the formulation of tax compliance enforcement procedures. Based on these facts, further studies assessing the influence of culture on tax compliance across different countries are warranted.

Most studies conducted in developed countries used either a regulatory variable or a normative pillar of the theory, whereas a few incorporated all variables. The findings indicate that none of the analyzed articles used the cultural-cognitive pillar. Furthermore, half of the analyzed articles conducted in developed countries employed the regulatory pillar of the institutional theory. The findings emphasize the enforcement of the tax regulations and systems (Tjan, 2024), which ensures efficiency, transparency, accountability, and accuracy of tax administration. The regulated tax systems also ensure automatic tax compliance among taxpayers, as fines and penalties are automatically captured; thus, taxpayers see the consequences of non-compliance. This being the case, studies mostly focused on the regulation pillar of the theory rather than the normative and cultural-cognitive pillars.

The findings establish that studies in developed countries focus selectively on regulation and normative variables rather than employing all three variables of the theory. This reflects the tendency among scholars in

developed countries to ignore the role of culture in tax compliance. This is probably deliberate, as governments in developed countries have effectively promoted the culture of tax payment among their citizens. However, ignoring the influence of culture on tax compliance denies a holistic understanding of how the institutional theory variables that affect tax compliance in developed countries. This pattern highlights a necessary research gap: examining the role of three variables of institutional theory on tax compliance and conducting studies to analyze how the cultural construct influences tax compliance in developed countries.

The opposite is observed in developing countries, where the variables of the institutional theory are reasonably utilized (though not fully) by studies. The finding suggests that institutional theory studies have attracted scholars to explain tax compliance in developing countries. Also, the findings might suggest more future studies to capture the role of all pillars of the institutional theory, as in developed countries. Despite the thorough use of the theory, the regulation and normative pillars still dominate the cultural-cognitive pillar. The analysis indicated that many studies in developing countries have applied either or both of the regulation and normative pillars, while few studies examined the cultural-cognitive pillar, though it was never used as a stand-alone pillar in any study. Moreover, findings suggest a reasonable application of the regulatory and normative pillars of the theory, whereas only a few studies applied the cultural cognitive pillar. These findings align with reality in most developing countries, where a weak tax administration framework is associated with poor regulations and normative enforcement, characterized by corruption, bureaucracy, and even a lack of transparency, thereby discouraging tax compliance among taxpayers (Gebrihet et al., 2023).

Furthermore, studies conducted in Asia incorporated all the theory's pillars, either individually or jointly. The findings indicate that half of the studies used normative or regulatory pillars, while the other half used a combination of regulatory, normative, and cultural-cognitive pillars. The findings demonstrate the integration of multiple pillars of institutional theory to explain the status of tax compliance in Asia. The findings further indicate that many articles in Africa have used regulation and normative pillars, while a few have used regulation, normative, and cultural cognitive pillars. The findings demonstrate that, unlike Asian articles, which reasonably utilized the institutional theory construct, African articles focused only on the joint use of the theory's pillars, ignoring the individual influence of each pillar on tax compliance. The findings imply that African

scholars have endeavored to draw on all pillars of institutional theory, despite the cultural-cognitive pillar being applied less.

The analysis indicates that most of the studies focus on SMEs. The findings indicate full utilization and integration of the pillars of the theory among SMEs, whereas articles focused on the banking and finance and telecommunications industries primarily address the normative and regulative pillars. The findings highlight the differences in the nature and level of business conducted by SMEs and corporate entities. The majority of SMEs are at high risk of tax non-compliance due to their operational nature and lower tax prioritization than large corporations. This led scholars to conduct studies to assess how SMEs apply institutional theory variables to enhance tax compliance. Moreover, results suggest the regulative pillar was more frequently utilized than the other pillars. However, the studies also integrated the normative pillar to assess how societal behaviors influence tax compliance, although not to a large extent. The existence of many studies that focus on the regulative pillar suggests that scholars believe that, in most countries, enforcing the regulations is essential to promote tax compliance. Moreover, the analysis indicates that studies on the cultural pillar are almost absent. This study emphasizes that educating society on tax compliance is paramount for promoting it through social strategies, rather than relying on regulatory enforcement. Hence, the researchers should target all pillars of the institutional theory equally in future research.

Literature gaps

Findings indicate a gap in the full utilization of institutional theory in explaining tax compliance across articles. Only 22% of the analyzed articles used all three pillars of the theory to explain tax compliance, while the remaining 78% used either one or two of the pillars. Thus, researchers have not fully utilized variables from institutional theory in their studies. Also, most scholars fail to integrate the cultural cognitive pillar with tax compliance. The analysis has evidenced a small number of studies examining the role of the cultural cognitive pillar in tax compliance across countries. This is a call to scholars to conduct more studies that capture the role of cultural cognition in tax compliance, as it also contributes to tax compliance among taxpayers. Moreover, studies conducted only in developed countries or those that combine developed and developing countries are scarce.

CONCLUSION

To conclude, the findings suggest that the variables of institutional theory have not been fully utilized to explain tax compliance across institutions and individual taxpayers. Since the studies adequately cover the regulative construct, followed by the normative construct. However, the findings indicate that the cultural construct variable has attracted few scholars. Therefore, the study demonstrates that institutional theory appears highly effective in explaining the roles of the normative and regulative pillars in tax compliance, whereas the cultural-cognitive pillar is scarcely studied. Moreover, the studies focus on developing countries, leaving developed countries and intercountry studies underexplored. The studies also focus heavily on developing countries, particularly in Africa and some Asian countries, where tax compliance rates are low. The study generally concludes that there is a gap in the application of institutional theory variables. Therefore, contemporary studies have not comprehensively explained the application of institutional theory to address the tax non-compliance challenge faced by most countries in Africa, as well as by some countries in Asia and elsewhere.

RECOMMENDATIONS

Policymakers should incorporate institutional variables, regulations, norms, and culture when formulating or amending tax policies. In the future, studies should assess the role of cultural cognition in tax compliance globally, across the continent, or in individual countries, given the limited studies, as evidenced by this study. The studies should also integrate all constructs of institutional theory, i.e., regulations, norms, and culture, to enhance the holistic application of the institutional theory. Comparative studies and those that employ moderating, mediating, and control variables are highly recommended in the future.

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Untangling the Complex Dynamics Between Philosophy and Culture

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Abstract
Philosophy has long suffered from misconceptions, ranging from being perceived as an abstract, impractical discipline remote from the concerns of life to being fallaciously viewed as anti-religious or anti-God. Additionally, philosophy is often mistakenly perceived as an outdated and obsolete discipline. Similarly, it is frequently conflated with culture. However, philosophy remains an essential, timeless component of human endeavour, driving critical inquiry and meaning-seeking. This study challenges pervasive misconceptions surrounding philosophy and seeks to reaffirm its timeless relevance in human endeavours by demonstrating its intricate relationship with culture. Through critical evaluation and expository methods, this study navigates beyond superficial understandings to illuminate the profound impact of philosophy on human experiences, cultural narratives, and existential understanding. The research draws on the philosophical ideas of Nietzsche and Heidegger to establish its central thesis, providing an in-depth knowledge of the intricate relationship between philosophy and culture. By and large, it proffers answers to these research questions: What are the main misapprehensions about the relevance and significance of philosophy, and how can an examination of its relationship with culture help to dispel these misconceptions? How do the philosophical theories of Nietzsche and Heidegger shed light on this relationship, and what does this mean for our comprehension of the relevance of philosophy in human endeavours?

Keywords: *Culture and philosophy, critical evaluation, misconception, Nietzsche, Heidegger*

INTRODUCTION

Philosophy, a discipline steeped in history and complexity, has long elicited diverse reactions from the general public. While some view philosophy with disdain and disinterest, seeing it as irrelevant or
disconnected from everyday life, others are intimidated by its abstract nature and technical vocabulary. Erroneous associations with mysticism, occultism, or esotericism persist, and some perceive philosophy as empty, confusing, or useless. These misconceptions stem from a lack of understanding or exposure to philosophy's practical applications and benefits. However, philosophy encompasses more than abstract theories. Broadly defined, it includes the beliefs, customs, arts, ways of life, and social organisation of a particular group making it deeply intertwined with culture, yet not reducible to it. Both domains include ideas, codes, customs, and attitudes, but philosophy retains its critical and interrogative stance, distinguishing it from the broader cultural context.

This paper contends that philosophy is neither an obsolete nor an isolated discipline, but rather an indispensable and dynamic force that actively shapes and is shaped by culture. By dispelling persistent misconceptions—such as the notions that philosophy is strictly abstract, irrelevant, or inherently anti-religious—this study demonstrates that philosophy's vitality lies precisely in its ongoing dialogue with cultural contexts.

This paper's concerted examination of how Nietzsche and Heidegger's philosophies demonstrate the mutual constitution of philosophy and culture distinguishes it from previous discourse, such as Akhter and Lamba (2022), Agbanusi (2015), and Essien (2015). Instead of treating philosophy and culture as separate or conflated domains, this paper shows—through critical and expository engagement with these thinkers—that philosophy provides the tools for interrogating cultural narratives and existential questions, while culture offers philosophy its lived ground and urgency. Finally, the paper considers the broader implications of this relationship for the relevance of philosophy in contemporary life. By making explicit how philosophy and culture shape human values, norms, moral principles that guide human behaviour, preserve heritage and customs, foster social cohesion, cooperation, and personal growth, and provide collective meaning, the study challenges existing binaries and misunderstandings and offers a framework for understanding their dynamic, mutually informing roles.

METHODOLOGICAL FRAMING

This paper employs a critical and expository methodology. Texts and concepts are selected for their relevance to the theme of the mutual constitution of philosophy and culture, with particular emphasis on works that explicitly address the intersection of these domains. To guarantee a thorough viewpoint, primary and secondary materials from both philosophical and cultural studies are explored. Heidegger and Nietzsche are selected as interpretive anchors because of their significant perspectives on the interplay between philosophy and culture. Their writings are examined for their portrayal of more general trends in continental philosophy as well as for their theoretical discoveries. The paper clarifies how each thinker negotiates the interaction between philosophical inquiry and cultural context through close reading and comparative analysis, using their viewpoints as fundamental points of reference for the larger argument.

CONCEPTUAL CLARIFICATION OF TERMS

Philosophy and its Challenges of Definition

Philosophy is a dynamic and multifaceted discipline that defies a single definition. It is a systematic and critical exposition of existence, reason, knowledge, and value. It also looks at the mind and language. At its core, philosophy is the relentless pursuit of wisdom, a continuous quest for meaning, intelligibility, and answers to life's profound questions. According to Plato, philosophers have an insatiable thirst for knowledge, driven by an unrelenting passion for truth and reality (Rowe, 1993). This description aligns with the etymological origins of the term "philosophy," derived from the Greek words "*philos"* (meaning "love") and "*sophia"* (meaning "wisdom"). As Pythagoras claimed, philosophy is the love of wisdom, not wisdom itself. This etymological understanding is reinforced by scholars such as Roark (1982), Ogbinaka (2010), Obioha (2014), and Olubanjo-olufowobi (2022). Akande (2022) further emphasises that philosophy is present whenever individuals actively seek wisdom. This underscores the notion that philosophy is an act of loving wisdom, rather than wisdom per se.

The question of what philosophy is, is inherently philosophical, sparking ongoing debates and discussions. This is evident in the myriad definitions postulated by various philosophers and scholars. As Bertrand Russell aptly noted, "philosophy" remains an elusive term, defying a definitive definition (Russell, 2009). The varied definitions of philosophy can be attributed to factors such as diverse intellectual backgrounds, differing ideologies,

historical epochs, cultural perspectives, and the ambitions of individual philosophers. Bolstering this, Mbaegbu (2014) writes:

> *People often confine this definition within the branch of philosophy in which they are tutored, the era in which they live, or their moral or cultural biases. Others, in undue haste to answer the question or for lack of knowledge, define philosophy merely by its tools or method of inquiry, often highlighting the difficulties inherent in both.*

Defining philosophy from a moralist perspective, Socrates (470–399 BCE), views philosophy as "a reflective self-examination of principles of the just and happy life", while David Hume refers to it simply as "the moral science" (Agbanusi, 2015). From the hedonistic point of view, Epicurus (470–399 BCE) defines philosophy as "an activity which secures the happy life through discussion and argument"(Omoregbe, 2011). Plato (428-347 BCE) viewed philosophy as both science and art, as evidenced by his conception of it as "the science which is the science of itself and the other sciences as well" and "the noblest and greatest of art" (Agbanusi, 2015). Buttressing Plato's conception of philosophy as science and its etymological meaning, René Descartes defined philosophy as "the mother of the sciences" and "the study of Wisdom" respectively (Rorty, 2009). Reverberating Plato's idea of philosophy as an art, Margolis (1968) argued that philosophy is creative work, and philosophers approach it in many different ways. Since there is no single method that all philosophers follow, we study past thinkers to see how they tackled philosophical problems.

Some philosophers and scholars view philosophy as a search. Hence, Aristotle (384–322 BCE) believed that Philosophy is the ultimate search for truth. Amaele (2007) describes philosophy as a systematic search for truth and reality, focusing on people and the existence of things both within and beyond experience. Philosophy uses reason to bring together ideas that seem unfamiliar in the natural world and helps us understand our place in it. (Aderibigbe, 1998). Omoregbe (2011) sees philosophy as a rational search for answers to question that come up when we reflect on human experience, and as a rational search for answers to basic questions about the ultimate meaning of reality as a whole and of human life in particular.

Despite the debates surrounding its meaning and definition, philosophy's unique nature is evident in its critical and analytical approach. Philosophers engage with topics with a commitment to critical thinking, carefully separating emotional considerations from objective analysis. This critical

stance is complemented by philosophy's argumentative nature, fostering the inconclusiveness of answers to profound questions. This, in turn, enables the questioning of authority, encouraging the exploration of new ideas and perspectives. Furthermore, philosophy's broad scope and subject matter encompass various branches, schools of thought, and methods of inquiry.

Philosophy's rational inquiry seeks to dispel ignorance, enrich understanding, broaden experience, and expand horizons through critical examination and synthesis of knowledge. Bertrand Russell aptly captured the essence of philosophy, noting that it endeavours to respond to "ultimate questions" – questions concerning the comprehensibility, rationality, or coherence of fundamental notions and assumptions (Agbanusi, 2015). Russell characterised philosophy as "a critical and rigorous intellectual activity." Ultimately, philosophy's core lies in its pursuit of wisdom, driving individuals to explore, question, and seek answers to life's most profound and enduring questions. Through its critical, analytical, and argumentative nature, philosophy offers a distinctive framework for examining the complexities of human existence and the world around us.

Culture and Its Components: Towards a Definition

The word "culture" is derived from the Latin cultus, meaning "care," and from the French *colere*, meaning "to till," as in "till the ground" (Berger, 2000). Thus etymologically, culture means "to tend to the earth and grow", "cultivation and nurture", or "act of promoting growth in plants. It refers to the process of nurturing and perfecting anything until the result inspires our respect and adoration. The concept of culture is a complex one, defined from various perspectives and disciplines. Haranguing its complexity, Schmitt (2019), quoting Tylor (1871), asserts that culture is a complex whole comprising knowledge, beliefs, art, moral laws, customs, and any other capabilities and habits acquired by humans as members of society. This implies that culture is all of the knowledge and traditions that people have acquired over their shared history. He made it quite evident in Tylor (1881), as cited by Larsen (2013), that culture, in its broadest sense, belongs to humans alone. This is because culture is transmitted not by biological heredity, but rather is learned within society. Culture is thus the pattern of learned behaviours whose components are shared and transmitted by the members of a particular society from one generation to another.

Customs, traditions, religion, and beliefs (including notions of time, roles, and hierarchies); clothing; language and proverbs; artistic and craft

creations; manner of life; social networks; outlook on life; and the institutions and technologies/tools of the civilisation are all examples of these components. It is anything that is communicated from one generation to the next through human behavioural patterns and technology. Schaefer and Lamm (1997) provided an unambiguous yet insightful description of culture when they argued that culture includes the values, ideas, practices, and artefacts of groups of people; the totality of learned, socially transmitted customs, knowledge, material objects, and behaviour.

Culture, therefore, is the identity of a people as a distinct entity. Recognising that every person is a representative of their own culture, which varies geographically, Akhter and Lamba (2022) state that cultures can differ in terms of norms, conduct, cuisines and culinary, persuasions, customs, treaties, contraception, attire or costumes, courtesies, dialogue or communication, time, concepts, facilities, calendars, currencies, contracts, relationships, gentleness and lines, courting, questions, crossing, commercialism, cooperation and conflict, synergy, and crafts. In the words of Edo (2012), culture is the total way of life of a people within a given society. It is the manner of life, particularly the prevailing beliefs and practices, of a specific group of people during a specific period. This total way of life according to Edo (2012), includes the type of food they eat, the way they get the food and how they eat it, the typeof dress they wear, their belief about the existence of this world, how they worship their Creator, what they think about other people, how they marry and beget children, how they rule themselves, the language they speak *etc*. Providing another definition of culture from an anthropological perspective, Fairchild (1967) defined it thus:

> *A collective name for all behaviour patterns socially acquired and transmitted through symbols; hence a name for all the distinctive achievements of human groups, including not only such items as language, tool-making, industry, art, science, law, government, morals and religion but also the material instruments or artefacts in which cultural achievements are embodied and by which intellectual cultural features are given practical effect, such as buildings, tools, machines, communication devices, art objects, etc. (p.80).*

Fundamentals of Culture

Expatiating Fairchild's definition of culture, Berger (2000) highlights some salient elements/topics contained in the definition as follows: i) Behaviour Patterns which refers to the behavioural norms and rules that are prevalent within social groupings. ii) Socially Acquired. These are the kinds of behaviours one learns as a child growing up in a family in a certain place.

One's upbringing, the family's religion, and a host of other factors all have a significant impact on one's behaviour.iii) The Distinctive Achievements of Human Groups. We are not only unique individuals but also members of society; it is in communities that we develop into human beings and get enculturated. iv) Artefacts in which cultural achievements are embodied include the popular culture texts that appear in the media as well as other non-mediated (or indirectly mediated) facets of popular culture, like dietary habits, fashion trends, language use, sexual practices, and artefacts (also known as "material culture"). Culture embodies traditional knowledge and skills, encompassing indigenous understanding of natural resource utilisation and management. This includes knowledge of botanical properties and their medicinal applications, as well as social interaction patterns that foster the welfare and identity of both groups and individuals (UNESCO 2017). Cultural heritage is deeply rooted in traditional practices, providing a sense of continuity and shared identity among community members.

Unravelling the Complex Dynamics between Philosophy and Culture

The relationship between philosophy and culture is intricate, with the two concepts being intertwined yet distinct. As Mbaegbu (2014) aptly notes, "philosophy and culture are two related concepts separated by a layer so thin that this thinness has been a source of much-confused thinking" (p. 6). This nuanced relationship has led to a tendency to conflate philosophy with culture, highlighting the need for careful consideration and distinction between the two concepts.

Friedrich Nietzsche and Martin Heidegger are two towering figures in Western philosophy whose ideas have left an indelible mark on the development of various philosophical movements and disciplines. Their views on philosophy and culture have been particularly influential, profoundly shaping the trajectory of modern thought.

Friedrich Nietzsche (1844-1900) on the Relationship between Philosophy and Culture

The relationship between philosophy and culture was explored by Nietzsche (1973; 1997), a social critic who challenged conventional norms, values, and assumptions that underlie Western culture, emphasising individual creativity, self-overcoming, and liberation. Nietzsche argued that philosophy is both a reflection of the culture in which it emerges and a critique of dominant cultural values; a form of cultural diagnosis that examines the origins, functions, and psychological needs fulfilled by

dominant moral frameworks. According to him, traditional morality, religion, and cultural norms imposed a kind of "herd mentality" on individuals, stifling their creativity, individuality, and potential for self-overcoming. Individuals who should be free to create their own values and meaning in life are now conforming to external authorities or traditional norms that limit and constrain them. Philosophy as a critical and transformative force that challenges and re-evaluates dominant cultural values, norms, and beliefs should question and subvert established cultural narratives, promoting individual creativity, self-overcoming, and the will to power. Thereby promoting new perspectives and ways of thinking.

Martin Heidegger (1889-1976) on the Relationship between Philosophy and Culture

Heidegger, a renowned German philosopher, delved into the intricate relationship between philosophy and culture in his seminal works, "Being and Time" (1962), "The Origin of the Work of Art" (2017), and "What is Called Thinking?" (1968). Heidegger's philosophical inquiry was driven by a critique of modern culture, which he believed had become overly enamoured with technology, rationality, and efficiency (Guignon, 1993). This focus, he argued, led to a profound forgetfulness of being, causing humans to become disconnected from their fundamental existence. He introduced the concept of "world" (Welt) to describe the shared, meaningful environment that humans inhabit. This concept is central to his understanding of culture, which he saw as a way of being in the world that shapes our understanding of reality (Guignon, 1993). Culture, in this sense, is not merely a collection of customs, values, and beliefs, but a fundamental way of understanding the world.

Heidegger's philosophical framework emphasises the significant role that culture plays in shaping our perception of reality, providing a shared understanding of the world, and influencing our values and beliefs (Ricoeur, 1976). Culture also provides a context for philosophical inquiry, shapes our understanding of key philosophical concepts, and fosters critical thinking and reflection. For instance, culture influences our perception of reality, shaping our understanding of the world and our place within it (Heidegger, 1962; Guignon, 1993). Additionally, culture provides a shared understanding of the world, which is rooted in tradition and history (Heidegger, 2017; Gadamer, 1975). Furthermore, culture shapes our values and beliefs, influencing our moral and ethical frameworks (Heidegger, 2017; Ricoeur, 1976). It also provides a context for philosophical inquiry,

shaping the questions we ask and the answers we seek (Heidegger, 1967; Wrathall, 2010).

Heidegger held that philosophy plays a crucial role in culture, serving as a catalyst for critical thinking, reflection, and transformation. According to Heidegger, philosophy's role in culture can be discussed under five main points. Firstly, philosophy questions the underlying assumptions and values of a culture, revealing the taken-for-granted and the unconscious (Heidegger, 1968; Guignon, 1993). This questioning enables individuals to think critically about their cultural practices and institutions, fostering a deeper understanding of the world around them. Secondly, philosophy seeks to disclose the meaning of being, which is the fundamental question underlying all cultural practices and institutions (Heidegger, 1962; Wrathall, 2010). By exploring this question, philosophy encourages individuals to reflect on their existence and the nature of reality. Thirdly, philosophy critiques the dominant cultural narratives and challenges the status quo, revealing how culture shapes our understanding of the world (Heidegger, 1962; Young, 2001). This critique enables individuals to think more critically about the cultural norms and values that shape their lives.

Fourthly, philosophy fosters critical thinking and reflection, enabling individuals to think more deeply about their cultural practices and institutions (Heidegger, 1968; Gadamer, 1975). By encouraging critical thinking, philosophy empowers individuals to make informed decisions about their lives and to participate actively in shaping their cultural heritage. Lastly, philosophy preserves cultural heritage by examining and interpreting the cultural traditions and history of a people (Heidegger, 2017; Ricoeur, 1976). By preserving cultural heritage, philosophy ensures that the cultural traditions and values of a people are passed down to future generations.

The Intersection of Philosophy and Culture: A Discursive Analysis

Culture is not philosophy but entails philosophy through proverbs, wise-saying, folklores, artworks (artefacts, sculptures and crafts) *etc*. which are full of vividly articulated wisdom and are produced from deep reflection on human, their interactions with themselves and their natural world, and the complexities of their being; the fleeting nature of human existence, the ups and downs of life, the intensity of human control over the natural world, human weakness and strength, happiness and sadness, triumphs and setbacks, human finitude, experiences of pain, misery, illness, death, and decay, human greatness and anxiety, *etc*. Not only does culture entail

philosophy, but it is rooted in and originated from philosophy. Culture, as a philosophical emergence, shares a common feature with philosophy, which is an intellectual, moral, and communal substance.

Its etymology, which describes philosophy as the "love of wisdom," conveys an irresistible desire to think, implying that philosophy is a reflective activity. By examining and interpreting the ideas, values, and beliefs of past cultures, philosophy helps preserve and transmit cultural heritage. What is known as culture or community thoughts emerges from the introspective thoughts of various individuals within a particular society, which together create cultural norms that are transmitted and preserved from generation to generation. This was sustained by Omoregbe when he asserted that:

> *The term "community thought" can mean nothing other than the collective thoughts of individuals within a community. Consciousness is always an individual phenomenon, and thinking is a personal activity. Thoughts and ideas put forward by individual thinkers eventually become the property of all in a given commodity, but this does not mean that they had no original individual thinker (p. 10).*

Culture itself has an impact on philosophy. Philosophers' questions and answers, as well as the methods or paradigms they employ to address these questions, are influenced by their cultural background. Since culture shapes a philosopher's perspective on a subject matter, philosophers are often regarded as products of their cultures. Culture is what philosophers use as their raw material, their fieldwork for analytical experimentation. The framework of intellectual reflection culture provides the source of academic philosophy. It is in this sense that Takov and Tosam (2016) opined that "every philosophy emerges as a reaction to, or as justification for a particular culture, and it is for this reason that philosophy may differ from one culture to another".

The traditional ways of living, believing, and thinking were criticised by various thinkers who pushed the boundaries of thought to create Western philosophy in Ancient Greece. For instance, before Thales, who is often considered the first Western philosopher, people sought to answer fundamental questions through divine revelation, making recourse to God or gods by asking those who know the ways of the gods. Such a culture was challenged by Thales, who provided a rational explanation of the causes of nature (Olubanjo-Olufowobi, 2022). Moral philosophy originated from Socrates in reaction against the corrupt socio-political sphere of Athens (Omoregbe, 2011). Epicurus challenged the culture of excessive reverence

for the gods, which led to a fear of death and a fear of life after death. Asserting that the gods have no influence on human lives and that the soul is an immaterial substance, evaporating at death (Omoregbe, 2011). Existentialism emerged in response to the culture of nihilism in late nineteenth-century Europe (Aho, 2023). These are just a few examples of how philosophy emerges as a counterpoint to certain cultures.

However, philosophy may not always emerge as a defence or reaction to culture, e.g., Aristotle's logic. Beyond reacting to or explaining a particular culture, philosophy as an academic endeavour engages in several activities which transcend one's cultural perspective. As a professional thinker, a philosopher possesses the mental fortitude to go deeper than a cursory understanding of challenging and intricate life issues. Philosophy is an inquiry that aims to direct behaviour through reflective, critical thinking, broadening our intellectual horizons, examining our presumptions, and making sense of the values and beliefs we live by. Cultural anachronism can be avoided by using the rational prism that it provides. It gives the ability to reflect, consider, critique, and ultimately embrace or reject any culture. The confines and shackles of ignorance, bias, superstition, narrow-mindedness, and cultural absolutism are all things that philosophy helps people escape. The ability to think critically and creatively that philosophy offers allows people to reject the deceptions and false impressions created by cultural manipulations that are used as tools of oppression and slavery. Philosophy thus catalyses progress.

As an open-minded discipline, it fosters an understanding that, as individuals, we are ambassadors of distinct cultures. When evaluating other cultures, philosophy frees people from using the norms of their own culture as a benchmark, instead relying on the standards of the specific culture in question. In that way, liberating one from ethnocentrism, the notion that one's own culture is of higher standards, more accurate or genuine than all others. Philosophy encourages tolerance and understanding by exploring diverse perspectives, promoting empathy, and challenging dogmatic thinking.

CONCLUSION

This research offers a multi-layered account of the longstanding and complex relationship between philosophy and culture, advancing the view that they are independent yet fundamentally complementary phenomena. The analysis demonstrates that philosophy shapes cultural norms, values, and beliefs, while culture, in turn, provides the context and material for

philosophical inquiry. Both are deeply tied to the human condition and presuppose the rational nature of human beings. A central intellectual contribution of this work is the framing of culture not only as a product of philosophical reflection but also as a raw material and inescapable target of philosophical scrutiny. Philosophy acts as a rational lens, ensuring that culture remains dynamic rather than rigid or dogmatic, and enriching it through critical engagement. Conversely, the ever-evolving nature of culture continually challenges and inspires philosophical thought.

Accenting the mutual constitution of philosophy and culture—especially through the interpretive anchors of Nietzsche and Heidegger—this research provides new insights for scholars, policymakers, and cultural leaders. It underscores the inescapability of philosophy in every dimension of human life and its vital role in shaping and interrogating culture. In the long run, the study affirms the enduring value of philosophy as a pursuit that encompasses all facets of human endeavour, fostering a richer understanding of both ourselves and the world we inhabit.

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"Untie our hands": Teachers' and parents' social representations of school arson in Kenya

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Abstract
School arson, primarily burning down dormitories in boarding schools, is common in Kenya, leading to intense discussions among opinion makers such as government officials and newspaper columnists. Publications thus far have not reported the views of teachers and parents. This paper explores teachers' and parents' understandings of school arson through an inductive thematic analysis of focus group discussions held with 32 parents and 32 teachers in Kenya. Discussions focussed on the broad issues of contemporary Kenyan society rather than on the specific incidents of arson in particular schools. A central concern was the perceived role of international practices in undermining effective African parenting and disciplining strategies, with a broader commentary on what it means to be Kenyan, or an African, in the current postcolonial context.

Keywords: *Kenya, arson, thematic analysis, African identity, schools, childrearing practices*

INTRODUCTION

School violence grabs international attention when it involves school shootings with multiple deaths (Finley, 2014). School violence involving arson, and which is perpetrated by learners, is not as "highly mediatized" (Muschert, 2013) as school shootings in America and Europe. However, in Kenya, this form of school violence is a recurrent problem, and it results in the destruction of property, and sometimes results in loss of human life (Kinyanjui, 1976; Malenya, 2016).

News of school fires is often received with shock, anger and condemnation expressed through media reports as well as national and international debate on what would drive such young children to act so violently (Authors). In 2016, the school fires crisis seemed to have reached a tipping point with more than 120 secondary schools set on fire. Most of these schools were boys' secondary schools.

Finley (2003) has noted that existing research into school violence ignores teachers' insights into school violence, and (Ricketts, 2007) has argued that teachers' insights into school violence are critical to understanding the problem and finding solutions. In the Kenyan context, discussions on school unrest/school fires crisis are often carried out in the print media. The crisis has also been a subject of four government taskforces that have generated reports. In both print media and government reports, the discussions have centered around finding the underlying causes of the problem and attempts to make recommendations on how to deter recurrence. However, these discussions have been carried out by people outside the school system (journalists and taskforce members appointed by the ministry of education to generate government reports) and whose views are not based on lived experiences. Therefore, we adopt the position that newspapers and government reports provide an 'outsider' view of school unrest and arson. We argue that the people who live through the experience (teachers, parents and students) would provide an 'insider' view of the problem.

The objective of this study is to explore the different understandings of school arson among parents and teachers revealed in focus group discussions. We propose a shift in methodology in the way research into school arson is carried out: from looking for causes and solutions to adopting a constructivist approach of exploring the different understandings of school arson. We use the social representations theory (Moscovici, 2001) to achieve this objective. Social representations theory provides a means through which we can examine how individuals within social groups make sense of the world around them and how these understandings change, develop and interact (Flick et al., 2015). Crucially, social representations theory allows for competing, even contradictory, meanings of reality to exist in the same community, culture and individual (Lincoln & Guba, 2013; Moscovici, 2001; Voelklein & Howarth, 2005). We explore the different understandings of school arson among teachers and parents selected from four boys' secondary schools selected using extreme and typical case study sampling. Two schools had experienced deliberate incidents of school arson and two had not.

METHODOLOGY

Sample

We used purposive sampling because it allowed us to focus on the characteristics of the population that were of interest and which were

relevant to the research question/s (Nieuwenhuis, 2007), and that would help us achieve the objectives of the study.

We used two types of purposive sampling to select the sample: typical case and extreme case sampling. Typical case sampling is used when the aim is to focus on the normality or typicality of the cases (Collins, 2010). The term typicality, in this case, was applied to select a typical boys' secondary school in Kenya that had experienced incidents of arson. Findings from such a school can be compared to similar samples. However, the burning of schools in 2016 in Kenya brought to the fore two incidents that attracted more attention than the other cases: one school was a national school, and another school (a county school) had seven dormitories burnt in one night. The two schools helped meet the criteria of extreme case sampling, that is, cases that demonstrate the phenomenon of interest in an extreme or in an unusual way (Collins, 2010).

A national school admits top students who scored grade A in the national examination from across the country. A county school, on the other hand, admits grade B students from across the country but reserves about twenty percent of the vacancies for students from within the county. For comparison purposes and to increase the sample, two schools of equal status (national and county) that did not experience incidents of arson were also included in the sample. In total, four schools were included in the sample. The sample was further stratified before the final selection of focus group participants. The teaching staff and parents were divided into two groups: male and female before a sample of eight teachers (four male and four female) and eight parents (four male and four female) were drawn purposively from each school. A total of 32 parents and 32 teachers were interviewed in focus groups comprising eight participants.

Focus groups

Focus group discussions were held with parents and teachers in order to explore their understandings of school arson. Focus groups were scheduled and conducted by the first author.

Permission to conduct the study was sought from the National Commission for Science, Technology and Innovation (NACOSTI) in Kenya. Further permission was sought from the respective County Directors and sub-county directors of education depending on the location of the school. Access to the schools was provided by the headteachers who appointed a link person (Senior teacher or Dean of Studies or Deputy headteachers)

who liaised with the first author to locate key informants from among the teachers and parents. The teachers were recruited on school days during their free time (lunch break or after classes at 4 pm Monday to Friday). The first author interacted with the teachers and explained the nature of the study before selecting key informants. The selected teachers signed consent forms before the focus groups were scheduled.

The parents were recruited on the days when the Board of Management meetings were scheduled in some schools or during visiting days in others or parent-teacher consultation days. The link persons helped in the recruitment especially in helping identify the parents who wer too new in the school to have adequate information about the school fires. The parents who were recruited also signed consent forms before the focus groups were scheduled. The focus groups discussions were held in the school libraries or boardrooms depending on availability. The focus group discussions lasted two hours on average. The longest focus group discussion lasted two hours and fifty-three minutes.

The focus group discussions were conducted between October 2017 and February 2018. The discussions were transcribed in March 2018 and uploaded onto ATLAS.ti version 8 for coding.

Ethical considerations

The research participants were assured of confidentiality during the focus group discussions. The problem of school arson is sensitive. School communities that experience arson are sometimes forced to live with the enduring stigma. It is for this reason that the identity of the respondents will be strictly protected and any information that may reveal a respondent's identity will be anonymized in the results section. Ethics permission to conduct the study was also obtained through Stellenbosch University Ethics Committee.

Data analysis

The data were analysed using reflexive thematic analysis; a theoretically flexible method of organising, describing and interpreting qualitative data (Braun & Clarke, 2012a, 2022) The choice of social representations theory, based on its flexibility, allowed for the inductive exploration of the teachers' and parents' constructions of meaning and the meanings attached to school arson. Besides allowing for inductive exploration of meaning, it provided a tool with which we could "…illuminate the process of social

constructions of meaning" (Joffe, 2012) through coding and theme development.

The focus group transcripts were grouped in ATLAS.ti according to the type of school (national or county), according to whether they had experienced arson in 2016 or not (arson vs non-arson schools) and according to the category of participants (teachers or parents). The transcripts were read for the first time to check for typographic errors and misspelling of participants' names. The transcripts were then read a second time while listening to the audio recordings to check for accuracy in the transcription process. The third round of reading was done to anonymize the participants' identity before the transcripts were uploaded onto ATLAS.ti version 8 for coding.

In ATLAS.ti, the transcripts (further referred to as the data) underwent two cycles of coding. The first cycle of coding generated initial codes using phrases and words drawn from the participants and the researchers' interpretation of the data. The second cycle of coding involved checking for repeated codes and deleting them and checking for typographic errors.

The final list of codes was then grouped and merged into sub-themes and themes based on similarities and common words (Braun & Clarke, 2012; Nowell, Norris, White, & Moules, 2017). The sub-themes ranged from students protesting against bad school living conditions to management failures to teachers' failures to teenagers behaving badly due to hormones as well as lack of corporal punishment. The sub-themes were re-examined to identify the meaningful patterns that were relevant to the research question.

A further review of the sub-themes helped to generate preliminary/broader themes (Braun & Clarke, 2022) or "… tentative and temporary" candidate themes (Terry, 2015) such as possible causes, suggested solutions, emotional reactions towards school arson and school cultures that make student unrest more likely. The review of themes involved combining smaller repetitive themes and renaming others to ensure that they represented the data (Clarke & Braun, 2015). For instance, the sub-themes *'parenting the modern child', 'liberal parents', and 'conservative teachers'* were merged to create the main theme *'Influence of Western culture on family structure/parenting'.*

The process of combining sub-themes to create he main themes was repeated until all the themes that helped to meaningfully answer the research question and coherently represent the views of teachers and parents were defined and named. They are discussed below.

RESULTS

The focus group discussions revealed that the focus for both parents and teachers was on finding out why children are engaging in such violent acts and what can be done about it.

In this section we explore the three main themes that we developed:

i) *Influence of Western culture on family structure/parenting*
ii) *Crisis of authority*
iii) *To cane or not to cane*

Influence of Western culture on family structure/parenting

In line with many studies on parenting and child care in African contexts, this study revealed the many tensions that arise between modernity and traditionalism in childcare practices. There was also the question of the role of Western culture parenting styles that emphasise individualism as opposed to the collectivism of African culture. Teachers and parents reported that the problem of school fires goes beyond the usual problems of children protesting maltreatment by the school administration, insufficient food and bad living conditions. The teachers and parents expressed fear that the society, especially the structure of the family, seems to have changed due to the influence of Western culture. The quotation below captures this shift from communal family structure to more nuclear family structures:

> And when you sit down and think deeply, I talked about the 19th and the 20th Century kind of, you know, the African child was brought up in a community of a family, large family, that was in the 80s, 90s, 70s. But now we are talking of a nuclear family where people live in maybe self-contained houses, each child from age 2 or even 1 has a room… (Ken, teacher in a school that experienced arson)

The teacher's reference to a nuclear family structure points towards a view that this change comes with attendant problems such as the emergence of a generation of children who are not grounded in African culture and values. This implies that the breakdown in communal living that facilitated the teaching of African culture and values has resulted in children who are not

well-behaved and who engage in gross misconduct. This is illustrated by the quotation below:

> … our students don't come from the same kind of family setup. Some come from single parents, others are orphans, some parents are separated, absent parents. So, these issues of family are coming back to school because the real parent is absent… (Kanini, parent in a school that did not experience arson)

Parents in another focus group discussion expressed the view that the generation of parents that is bringing up children is equally affected by Western culture. This generation has lost touch with their African roots, and therefore, they have nothing much in terms of African culture to pass on to their children. The discussions alluded to the fact perhaps students who set buildings on fire had not been taught about the cultural implications of setting a house on fire. A parent summarized the view in the quotation below:

> It's a kind of…it's a generational lifestyle that we want to blame on our children… Some of us, you don't even know about your cultures anymore, we ignored them like they are saying when you put on a house on fire, it's like you are killing someone. There is a child somewhere who does not even know what that means, and they are within this community. So, you see, it's a lot. It's a lot of other things. What we need to come down and tell ourselves is that the present parenting generation, after the 70s, has failed. (Jeniffer, parent in a school that experienced arson)

Besides influencing family structure, Western culture also seems to be an underlying factor in the conflict between how parents and teachers manage children's behavior. Therefore, the support that teachers expect from parents in managing children's behaviour is not forthcoming. The focus group discussions revealed that teachers ordinarily try to enforce rules but parents seem to adopt a more Western 'liberal approach' of reasoning and negotiating with children instead of demanding strict obedience. The parents seem more tolerant of the "modern child", but teachers hold the view that the child may be modernized but the society has not quite changed and parents need to maintain the more traditional African approach of raising children. The quotation below captures this conflict:

> The "modern" child. And I have also put it in quotes that we tell them they are modern, but all the same, we should know the norms in the society have never changed. They have never changed. And even parents, when they bring their children to school, they expect that child, once they go home, they at least manifest that change which the teacher has instilled: good morals. At the same time, they are not supporting us while the child is at home. So, we find ourselves in conflict trying to bring out a child, the best

> out of this child. But once they are out of school, that everything is lost. (Chengo, teacher in a school that experienced arson)

The view put forward by the teachers is that the liberal approach that parents have adopted has resulted in children who are out of control and whose behavior can only be managed by teachers. Consequently, the lack of support from parents in managing children's behavior overwhelms the teachers as expressed in the quotation below:

> Interviewer: Parents stand accused?
> Respondent: Yes. So, we really are carrying burdens … There are also those parents who their sons wrong them at home during the holiday, "You wait until you open school, I am going to report you to the teachers." So, they say when schools open, I am going to report you to the teachers … So, they feel like the child has grown out of their hand; it's only the teachers who can handle them … (Wesley, teacher in a school that did not experience arson)

Underlying the position expressed by the parent above is the practical challenge brought about by industrialization, urbanization and the structure of paid labor. These changes have forced parents, sometimes both parents, to work outside the home for long hours. As a result, continuous monitoring of children's behavior is not possible.

Crisis of authority

Closely linked to the influence of Western culture on family structure is the loss of authority. The discussions revealed that the changes, occasioned by the influence of Western culture, on the structure of African lifestyles and cultures have brought about a crisis of authority. Both teachers and parents suggested that they are no longer in control of how children behave. According to the teachers and parents the crisis has been caused by the emergence of the internet and the enactment of the Children's Act 2001 (Government of Kenya, 2001). We note here that The Children's Act 2001 was enacted in 2001 in Kenya to safeguard children's welfare and it was based on the UN Convention on The Rights of the Child (United Nations, 1989).

This theme constitutes two sub-themes discussed below:

Powerless teachers and parents

Teachers, for instance, report that they find themselves powerless in the way they teach. The knowledge they possess is challenged by what children can access through the internet. The influence of technology directly

challenges the authority of the teacher as the "repository" of knowledge that children should learn. The quotations below illustrate this problem:

> Respondent: They [children] are more hands-on on technology than the old media of reading books and all that. So, kind of, as a teacher, you are helpless. You cannot teach the skills which are required now by the kids, and which have a lot of interest … So, kind of we are in a 19th Century world with 21st Century kids. (Chengo, teacher in a school that experienced arson)

> Respondent: I still blame openness or unlimited access to information, especially on social media. (Allan, parent in a school that did not experience arson)

> Respondent: Because students, I think, had a healthy regard for teachers then than they do now.
> Interviewer: They have changed?
> Respondent: They have changed.
> Interviewer: Why? How?
> Respondent: One, they don't think teachers are solely the stepping stone to a better future; they seem to have other ideas, especially with technological advancement. So, there was a time students highly regarded teachers and they felt that with the teacher, they would go places. But now there are different views, students have a different approach. (Agnes, teacher in a school that did not experience arson)

The authority of parents has also been challenged. The parent's word is no longer the law:

> Respondent: I think they are way, way ahead of us and even if you sit down with a million parents you will find that there's a gap.
> Interviewer: So even as you grapple with "what is the problem", you are in different worlds?
> Respondent: Yeah. Seriously there is a gap.
> Interviewer: There is a gap between you and your children?
> Respondent: There is. (Janet, parent in a school that experienced arson)

The views above bring to the fore the key question of what exactly is authority in contemporary Africa and how does it differ from authority in pre-colonial Africa?

Children's rights

The second cause of this crisis of authority is the enactment of the Children's Act 2001 (Kenya, 2001) which outlawed the use of corporal punishment to protect children from physical harm. However, both parents and teachers are in agreement that the outlawing of the use of corporal punishment is not African, and it is an affront to the authority of the teacher

and the parent. The Children's Act "tied their hands" and they are therefore helpless in the face of gross misbehavior by children such as school arson. This is illustrated by the views expressed in the quotations below:

> Respondent: [Translated from Kiswahili] And what has mainly brought about this problem is denying the child corporal punishment. (Sammy, parent in school that experienced arson)

> Respondent: This is something you need to tell them, let the child be a child. I am saying this because, in my observation, the laws which as a country we are adopting, my colleague has just mentioned that maybe in the UK, in the US, their law has really permitted the child a lot of freedom and they are facing a lot of challenges in dealing with these teens. Now, we as a country, instead of learning from their mistakes, we want to follow the same route, go through the same problems they are going through, yet they are trying to come out of it, but we are encouraging ourselves to go into the problems. Why are we not in a position to avert these problems and let the Kenyan child be the Kenyan child? (Alice, teacher in a school that experienced arson)

> Respondent: I want to mention something … the government has also brought in issues that have widened the gap between the kids and their parents … it is very sad that you as a mother when you talk to your child … and they tell you about children's rights, you cannot cane me anymore … if you send me to go to the market, it's child abuse … (Sylvia, parent in a school that experienced arson)

> Respondent: … the new Act talks so much about rights and as opposed to values. Now, if you suppress the values and you have rights, then you are going to have a child who will not respect you because of "I have my rights" … But school is more of training and mentoring; we teach them more of values than rights; respect your grownup, the teacher is a grownup … (Charles, teacher in a school that did not experience arson)

According to teachers, the Children's Act (2001) protects the child but not the teacher. The fact that the Act proposes punishment (fines and imprisonment) for any adult found using corporal punishment makes teachers vulnerable:

> Interviewer: You think the Act doesn't help the teacher?
> Respondent: It is more friendly to the child and not the teacher. Actually, they don't protect the teacher at all. (John, Teacher in a school that did not experience arson)

The teachers felt that the Children's Act "ties their hand" to the extent that even in the face of attack from students, the teachers cannot defend themselves. These sentiments are captured in the quotation below:

> Respondent: Yes, I think our hands are tied.
> Interviewer: The teacher's hands are tied?

> Respondent: Are tied completely … That's why the primary kids in Samburu caned the teachers in broad daylight. There is no respect, by the way. Sometime back, these kids used to have some fear which I equate to some respect. It's no longer there. So, they do mistakes and there is nothing we can do. (**Oscar**, teacher in a school that experienced arson)

To cane or not to cane

The discourse surrounding school arson in Kenya is often accompanied by attempts to find solutions to the problem. This was also the case in the focus group discussions with teachers and parents. Parents and teachers held the view that corporal punishment is the best way of managing misbehavior by children/students. Hence, when asked what solution they propose to end the school arson problem, both teachers and parents proposed a review of the Children's Act to allow for the return of corporal punishment. The quotations below capture this sentiment:

> Respondent: Kiboko ni lazima. *(Corporal punishment is a must.)*
> Interviewer: Kiboko ni lazima? *(Corporal punishment is a must?)*
> Respondent: Hata Biblia inaruhusu *(even the Bible allows corporal punishment)*. (**Anderson**, parent in a school that experienced arson)
> Interviewer: What do you do when your child misbehaves at home?
> Respondent: I cane him. I am guided by the Bible. So, I instil discipline the Bible way. *(Laughter from other respondents)*
> Interviewer: But the Children's Act 2001 outlawed the use of the cane? What about the children's rights that we have just talked about?
> Respondent: I have heard about them, but I think the cane works. (**Janice**, parent in a school that did not experience arson)
> Respondent 1: The thing is, withhold that kiboko (*the cane*).
> Respondent 2: And you know what the Bible says about that kiboko.
> Respondent 1: Spare the rod.
> Respondent 3: Not even that: foolishness is bound in the heart of a child.
> Respondent 2: And to remove …
> Respondent 1: Only a *kiboko* (*cane*). (Malack (1), Allan (2) and Emma (3), parents in a school that did not experience arson)

To illustrate why corporal punishment is favored, a teacher explains how ineffective guidance and counselling (the alternative to corporal punishment suggested by the ministry of education) has been. In this school, the teachers had quietly reintroduced the use of corporal punishment. Another teacher recommends "guided caning". The quotations below aptly capture these views:

> Respondent: We have tried G & C (guidance and counselling) and I can tell you for free that it is not working. What these students fear is the use of the cane.
> Interviewer: *You're sure?*

> Respondent: Yes. And in our first meeting this … this term, we actually decided that if possible, we should re-introduce the cane quietly (Laughter by all). But you know our hands are tied. (Nancy, teacher in a school that experienced arson)
>
> Respondent*:* They should also bring this issue of guided caning kidogo (just a little bit).
>
> Interviewer: You want the cane back in school?
> Respondent: Guided caning. You know even before, when it was there, it was specifically done by the headteacher, even the cane that the head could use, it had specification on how it was being done. (Michael, teacher in a school that did not experience arson)

The fact that both teachers and parents are in agreement that there is need to bring back corporal punishment in order to manage students' misbehaviour, and school arson in particular, raises a more fundamental question about the difficulty of fully complying with the UN convention on the rights of the child in African contexts.

DISCUSSION

The three central themes point to one critical issue: a perceived underlying problem of loss of African identity and culture. The loss of African identity and culture that parents and teachers allude to in the focus group discussions brings to the fore the history of Western education in colonial Africa. (Healy-Clancy, 2013) has noted that Western education was a joint venture between colonial administrations and missionaries, whose main agenda is summarized below:

> … '[t]he best education of youth born heathen, … must be given through the instrumentality of missionary institutions in their respective countries', although 'under the paternal care' of American missionaries there. (p. 20)

Similarly, (Sifuna & Otiende, 2006) have summarized the aims of the introduction of Western education in colonial Africa, thus:

> Colonial administrations and the missionaries attached so much importance to education that it had to be organized to inculcate the values of western civilisation in the minds of those who were to loyally serve the occupying power. The advantages to be gained by Africans were not primary objectives of colonial education. A foreign culture was imposed through Christianity and education." (pp. 189–190)

The statements above support the view that colonial education directly affected the structure of African societies because the values introduced

were far removed from African culture. Independent Africa did not overhaul colonial culture. In Kenya, for instance, the current structure of schools, including boarding schools, is a carry-over from the structure put in place by the British colonial government. In his memoir, (wa Thiong'o, 2012) explains his experience of schooling in a typical elite Kenyan boarding school:

> In general, the Alliance classroom of our times abstracted knowledge from local reality. There were no attempts to mine local knowledge. In literature classrooms for instance, … English texts were the norm and Europe the cultural reference. (p. 63)

It is, therefore, not surprising that in present-day Kenya parents and teachers would lament about the loss of African identity and culture among children and point out that there is "acculturation" of young children through Western education. They further point out that this "acculturation" is a possible major cause of school arson. (Healy-Clancy, 2013) makes a comment that resonates with this view:

> Like educated elites throughout much of Africa in the late nineteenth through mid-twentieth centuries, mission educated Africans in South Africa found the skills and expectations they had forged in the classroom clashed radically with the constraints facing them outside … (p. 1)

A perceived change in African culture occasions a crisis because it challenges the dynamics of the relationship between adults and children. According to (Sifuna & Otiende, 2006), destroying social systems, breaking up extended families and encouraging individualism were some of the aims of Western colonial education. It is this breakdown of the African society that has affected the upbringing of children in Kenya and occasioned a crisis of authority. The extended family is no longer involved in the communal duty of bringing up children, and the parents are overwhelmed due to the pressures of modern living.

It is probable that the involvement of the extended family in bringing up children was beneficial, but literature is scanty on whether children engaged in violent behavior in pre-colonial times and what, if any, measures adults employed to deal with misbehavior.

One consequence of colonialism and the introduction of Western education was that Kenya became a more open liberal society that has become a party to international charters and treaties. However, these international charters and treaties such as the United Nations Convention on the Rights of the Child (Nations, 1989) advocate for rights such as a ban on the use of

physical punishment which seems to go against deeply held beliefs about the upbringing of children. Results of an assessment of violence against children in Eastern and Southern Africa regions by (Zuberi, 2005) revealed that there is a shared belief by almost all countries that children should be submissive and that physical discipline is seen as an important and necessary element of child rearing.

For parents and teachers, a ban on corporal punishment has precipitated a crisis of authority. When teachers and parents express a sense of helplessness in managing children's violent behavior, they are alluding to the conflict between their deeply held belief of using physical punishment to manage misbehavior and the advocacy for children's rights that prohibits the use of corporal punishment on children. (Sarrica & Contarello, 2004) have noted, in reference to the social representation's theory, that it is possible for different groups within the same cultural framework to take up distinct positions in the representational field. Although the government passed the Children's Act (Kenya, 2001) and banned corporal punishment to protect the rights of children, parents and teachers consider the passing of the Act an affront to their authority. Perhaps as (Miamingi, 2022) has argued, there is a need, in the Kenyan context as well as in Africa, to pay attention to "…issues of legitimacy, particularly cultural legitimacy within the regional context in view of existing philosophies and cultural heritage on childhood in Africa" when domesticating international charters such as the charter on child rights.

The need to find a solution to the problem of school arson was central in the focus group discussions. The parents and teachers suggested that the Children's Act (Kenya, 2001) be amended to make room for the reintroduction of corporal punishment. The irony of this suggestion is in prescribing a violent solution for a school violence problem. The increased need to re-assert their authority through advocating for the reintroduction of corporal punishment is akin to what (Wojciechowski, 2005) refers to as the "syndrome of endangered authority" which is characterized by an increased need to maintain authority through the use of domination and force.

Straus (2009) has noted that "corporal punishment is so widespread that it is part of growing up for most children in most countries of the world" and that it is "taken for granted as part and parcel of the lives of parents and children" (p. 11). It is considered "normal"; therefore, it is not surprising for the teachers and parents to consider it a default solution to school arson

in Kenya. Straus (2009) further notes, "…those who advocate for corporal punishment also believe that the family is in jeopardy and society is in ruin because of permissiveness in bringing up children" (p. 15). The focus group discussions raised the issue of bad parenting that has brought about a new phenomenon of a "modern child". Part of the explanation for the emergence of a "modern child" is that the Kenyan society is getting more and more Westernized and urbanized and affecting the upbringing of children. As a consequence, teachers are dealing with children who are not well brought up, who are defiant and disrespectful towards teachers, hence the school arson crisis.

Adams (1998) posits that one of the reasons corporal punishments persists is that it is so rooted in the culture and history that it becomes difficult to eradicate, despite legislation (p. 121). Secondly, the widespread use of corporal punishment is a result of its biblical foundations. Those who advocate for it often use the Bible to justify it: "He who spares the rod hates his son…" (Proverbs 13: 24). Many of the teachers and parents in the focus group discussions referred to this verse.

CONCLUSION

A significant feature of the parents' and teachers' talk about school arson is the fact that in all discussions, talk moved rapidly to focus on broad issues about contemporary Kenyan society rather than on the specifics of what has happened at particular schools. It is difficult to discern why our participants, consistently and across different groups, with whom we interacted all spoke about these broader social concerns rather than about specifics. We could speculate, for example, that parents and teachers may feel overwhelmed and at a loss as to how to respond to school fires, and hence broaden the discussion, or that the talk may be emblematic of broader discussions about contemporary Kenyan identity. From the experience of the first author, who is herself a Kenyan educator, the discussions are indeed similar to broader discussions in Kenya, but the question of why in our study the focus of discussions became so broad is not possible to answer definitively. Secondly, adopting the social constructivist approach to study the lived experiences of the 'insiders' has helped demonstrate that school arson in the Kenyan context is not a linear problem of finding causes and solutions as presented in the media and in government reports. It is a more complex problem that requires that we look beyond students' behaviour and interrogate the social-cultural, the historical and the legal aspects, as well as the broader issue of children's rights in understanding the problem.

What is also clear is that discussions about school arson did indeed constellate these broader discussions about what it means to be a Kenyan, or an African, in the current postcolonial context. Throughout the talk there is the invocation of a supposed split between a constructed (and possibly idealized) past in which everyone knew their place and parents and teachers could exercise authority in a culturally appropriate way, and a contemporary Kenya in which appropriate cultural authority and discipline methods have been undermined by views and practices which originate in the West. The question of authority and how it is legitimated in contemporary African and other postcolonial education contexts is clearly an important issue for further research.

LIMITATIONS OF THE STUDY

The study is based on interviews with 32 teachers and 32 parents; it is not possible to generalize the results to a larger population. Secondly, the respondents were from boys' school primarily because the study focused on school fires that happened in 2016 most of which happened in boys' schools. There is need for further research on the experiences of parents and teachers from girls' schools. Thirdly, the data is more than seven years old and conditions may have changed. For instance, one of the schools included in the study as a non-arson school experienced arson before the study was completed. However, school fires, and especially deliberate firesetting, continue to be experienced in Kenyan schools and the problem has not been comprehensively solved.

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Declaration of interest

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Digital Student Management Systems in East African Higher Education: A Systematic Review of Managerial Practices

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Abstract
This systematic review consolidates insights regarding the management of digital student management systems (DSMS) by university administrators within East Africa. These integrated platforms oversee admissions, registration, record keeping, and communication functions. A comprehensive search was conducted across four key databases: Google Scholar, Scopus, Web of Science, and African Journals Online, employing structured keywords and platform-specific terms, supplemented by reference list reviews to ensure exhaustive source capture. The review included peer-reviewed articles and institutional reports published in English from January 2010 through August 15, 2024, focusing on DSMS or student information systems within higher education institutions across the East African Community (including Tanzania, Kenya, Uganda, Rwanda, Burundi, and South Sudan), as well as Ethiopia and Sudan. Study quality was appraised using the Mixed Methods Appraisal Tool (MMAT). Of the 47 screened records, 15 met all inclusion criteria. Despite the limited and uneven distribution of evidence across countries, the findings suggest a consistent framework: effective DSMS implementation relies on six interconnected managerial practices. These are: visionary leadership with clear policy guidance; ongoing investment in staff capacity building and digital literacy; proactive resource allocation for ICT infrastructure; systematic monitoring and utilisation of student data to inform decision-making; robust cybersecurity and risk management protocols; and active engagement and support for system users. Universities that prioritised these practices and aligned their systems with national digital strategies reported enhancements in operational efficiency and student services. Conversely, institutions with fragmented systems or limited expertise continued to face challenges. The review underscores the need for context-sensitive research and emphasises that strengthening managerial capacity and promoting cross-institutional collaboration will be vital to advancing DSMS in East Africa.

Keywords: *Digital Student Management Systems; Higher Education; Managerial Practices; Student Information Systems; Digital Governance*

INTRODUCTION

Within the framework of global digital transformation, higher education institutions are increasingly integrating digital technologies to enhance service delivery, institutional efficiency, and governance. A central aspect of this development is the management of student data through digital student management systems (DSMS). These systems are comprehensive, integrated platforms that encompass modules such as admissions, registration, course management, assessment, analytics, and communication, consolidating functionalities that, in traditional setups, are often managed by separate student information systems (SIS), which primarily focus on demographic and academic record storage. By unifying these modules, DSMS facilitate real-time access to detailed student data, automate administrative processes, and enable data-driven decision-making. Furthermore, these systems interoperate with learning management systems and other institutional applications to deliver personalized digital services to students and staff. The COVID-19 pandemic, coupled with the African Union's Digital Transformation Strategy (2020–2030), has expedited the deployment of DSMS across the African continent, as universities sought to maintain remote operations and adhere to evolving digital governance standards.

In East Africa, universities within the East African Community (Tanzania, Kenya, Uganda, Rwanda, Burundi, South Sudan) along with Ethiopia and Sudan have initiated DSMS projects. Regional entities like the East African Community (EAC) and the Inter-University Council for East Africa (IUCEA) actively promote harmonised data standards and facilitate cross-border student mobility. Nevertheless, the adoption of DSMS varies across institutions due to differences in infrastructure, managerial capacity, and policy alignment. Many DSMS initiatives rely on donor support and focus primarily on technical deployment, often overlooking the importance of fostering local ownership and ensuring long-term sustainability, which leads to fragmented systems that are underused. Institutions continue to encounter challenges such as unreliable electricity and internet access, resistance to change, insufficient training, and policy misalignment. These contextual factors influence the managerial practices discussed in this review.

Effective DSMS implementation and sustainability depend on managerial practices such as strategic planning, resource mobilisation, staff capacity

building, and performance monitoring. University leaders must align systems with institutional goals, promote digital cultures, and manage resistance to change. However, there is limited consolidated evidence on managerial practices supporting DSMS in East Africa. Existing studies often focus on system functionality, teaching and learning, or user experiences, leaving administrative and governance aspects less examined. This review addresses this gap by synthesising empirical evidence on managerial practices across the region.

This study conducts a systematic review of literature published between January 2010 and 15 August 2024 to synthesize evidence regarding managerial practices that facilitate Digital Service Management Systems (DSMS) within higher education institutions in East Africa. The timeframe from 2010 is selected to coincide with the onset of significant digital reforms and external investments in university information systems across the region. The selection of studies emphasizes institutions within the East African Community (Tanzania, Kenya, Uganda, Rwanda, Burundi, South Sudan), as well as Ethiopia and Sudan, to reflect the broader scope targeted by recent regional harmonization initiatives. By analyzing managerial processes rather than technical characteristics, the review seeks to inform policies on digital governance and capacity-building efforts.

LITERATURE REVIEW

The following literature review outlines conceptual definitions and the global context for DSMS and managerial practices, establishing a foundation for the East Africa-specific systematic review that comes afterwards.

Conceptualising Digital Student Management Systems in Higher Education

Digital Student Management Systems (DSMS), occasionally designated as student information systems, constitute integrated platforms that facilitate the entire student lifecycle, from initial admission through to graduation. Unlike conventional SIS, which primarily serve to store student records, modern DSMS incorporate functionalities such as admissions, course registration, timetable management, assessment, analytics, communication, and workflow automation. These systems are increasingly cloud-based and modular, interfacing seamlessly with learning management systems and other campus services to foster a cohesive digital environment. Within the East African region, prevalent DSMS include ARIS, SARIS, and AIMS; these platforms not only manage institutional data but also offer self-service portals and dashboards for both students and

administrators. Consequently, DSMS represent a critical component of institutional infrastructure, underpinning data-driven governance and student support mechanisms.

Managerial Practices and Digital Transformation in Universities

Implementing a Digital School Management System (DSMS) extends beyond mere technological deployment; it necessitates robust managerial practices, including strategic leadership, institutional planning, change management, and capacity development. University leadership must ensure alignment of DSMS implementation with overarching institutional objectives and foster an organizational culture receptive to digital innovation. Effective leaders articulate a compelling vision for digital transformation and secure stakeholder buy-in across all levels (Hashim et al., 2022; Musa, 2023). For instance, successful cases of Student Information System (SIS) adoption in East Africa have involved university administrators establishing dedicated ICT governance committees and championing interdisciplinary initiatives, thereby mitigating resistance and promoting interdepartmental collaboration (Mayanja et al., 2019; Mugeni et al., 2020). Conversely, weak or fragmented leadership has been associated with project stagnation and user resistance (Musa, 2023; Sabiraguha et al., 2023). Therefore, managerial practices emerge as critical determinants of success in translating technological systems into enduring organizational change. This perspective corroborates research on change management strategies emphasizing that technological transitions should be congruent with institutional goals and involve key stakeholders (Guerra-López & Dallal, 2021).

Adoption and Challenges of DSMS in African Higher Education

While the adoption of Digital Student Management Systems (DSMS) is progressively increasing across the African continent, institutions frequently encounter significant obstacles to achieving full-scale implementation. Predominant challenges encompass inadequate information and communication technology (ICT) infrastructure, unreliable electricity and internet connectivity, limited technical expertise among staff, financial constraints, and fragmented policy environments (Gkrimpizi et al., 2023). In numerous instances, systems are introduced with support from external donors but lack institutional ownership and comprehensive planning for sustainable long-term maintenance (Musa, 2023; Gkrimpizi et al., 2023). Furthermore, implementation efforts are often characterized by a top-down approach, with minimal engagement from end-users or mid-level managers, resulting in underutilization and resistance to change. These dynamics underscore the critical importance of

integrating digital solutions within broader institutional change processes, fostered through inclusive leadership. Empirical investigations within African universities have documented cases where new student information systems were technically operational but were minimally utilized due to staff reliance on parallel manual processes (Anyeko, 2016). Such challenges highlight that technology adoption in higher education is equally a managerial and human issue as it is a technical one (Ntorukiri et al., 2022).

Institutional Leadership and ICT Governance in East Africa

East African nations such as Tanzania, Kenya, Uganda, and Rwanda have enacted national digital education policies aimed at promoting the integration of ICT within higher education. Nonetheless, the practical implementation of Digital Student Management Systems (DSMS) exhibits considerable variation among universities in the region. Some institutions have established centralized e-campus systems that consolidate multiple functions, whereas others continue to operate with semi-manual or fragmented digital platforms. Empirical evidence indicates that universities possessing robust ICT governance frameworks and committed leadership tend to demonstrate more effective DSMS deployment, while deficiencies in leadership and misaligned policies often hamper digitalization initiatives (Hashim et al., 2022; Musa, 2023; Sabiraguha et al., 2023). For example, Ugandan universities that have implemented explicit ICT policies and established governance bodies inclusive of stakeholder representatives report smoother implementation of Student Information Systems (SIS) (Ochwo et al., 2018). Conversely, a recent investigation in Burundi revealed that the lack of strategic leadership and coherent policy frameworks significantly obstructed the success of a newly introduced university information system (Sabiraguha et al., 2023). Many institutions continue to face challenges in aligning technological advancement with managerial capabilities, organizational culture, and formal change-management procedures (Musa, 2023; Hashim et al., 2022). These findings underscore the critical importance of leadership and governance capacity in steering institutions through the process of digital transformation.

Identified Gaps in Existing Research

Most existing research on digital student management systems (DSMS) in African universities predominantly concentrates on system functionality and user experience, with limited attention to managerial practices and governance frameworks. Additionally, regional disparities in institutional maturity and policy enforcement are often neglected in broader analyses across sub-Saharan Africa. There is a notable lack of systematic evidence

synthesising how East African institutions oversee DSMS from leadership and governance standpoints. This deficiency highlights the importance and timeliness of the current review, which seeks to identify best practices and inform policy and institutional reforms. By centering on East Africa, the study engages with a context characterized by common challenges such as resource limitations and capacity gaps, alongside existing collaborative frameworks, yet documented managerial experiences remain underexplored. Consequently, this review contributes to closing a significant knowledge gap by linking the technical aspects of DSMS implementation with the managerial and institutional factors that influence their success or failure.

METHODOLOGY

Research Design

The review employed the PRISMA 2020 systematic review framework (Page et al., 2021) to facilitate transparent and reproducible documentation of the processes involved in identification, screening, and eligibility assessment. PRISMA 2020 is extensively recognized as the prevailing standard for systematic reviews that synthesize both qualitative and quantitative evidence in social science research, thereby rendering it suitable for the examination of managerial practices within East African higher education institutions. Conforming to PRISMA principles involved a methodical approach to conducting literature searches, selecting relevant studies, extracting data, and synthesizing findings, as delineated below.

Research Question

The review was guided by the question: *What managerial practices do higher education managers in East African countries employ to improve digital student management systems?* This question focuses on the actions and strategies of university leadership and management in implementing, using, and maintaining DSMS to support student services.

Eligibility Criteria

The inclusion and exclusion criteria for selecting studies are detailed in Table 1A. These criteria were established to ensure the review stays focused on pertinent literature.

Table 1A:
Inclusion and Exclusion Criteria

Inclusion Criteria	Exclusion Criteria
Focus on digital student management systems (DSMS) or student information systems.	Focus only on technical or software development aspects.
Addresses managerial practices in higher education institutions.	Discusses ICT broadly without a specific focus on DSMS.
Study conducted in East African countries (e.g., Tanzania, Kenya, Uganda, Rwanda, Burundi, South Sudan, and Ethiopia).	Conducted outside East Africa.
Published between January 2010 and 15 August 2024.	Published before 2010.
Written in English.	Published in other languages.
Available in full text via the selected databases (Google Scholar, Scopus, Web of Science, African Journals Online).	Abstract-only or inaccessible full-text documents.
Includes empirical studies, case studies, or institutional reports.	Editorials, opinion pieces, or non-empirical sources.

Information Sources

This review systematically searched four databases: Google Scholar, Scopus, Web of Science, and African Journals Online to encompass both international and regional literature. We employed structured Boolean strings to combine keywords with platform names, thereby optimising the retrieval of relevant results. The searches were carried out between July 2024 and August 15, 2024.

We also reviewed the reference lists of all included articles (snowballing) and reached out to authors or consulted institutional repositories when full texts were unavailable. Only publications in English were included.

Search Strategy

Structured Boolean search terms were employed in Google Scholar to optimise relevant results. The search combined keywords related to student systems and management, as illustrated in Table 1B:

Table 1B:
Search Terms and Naming Conventions

Category	Terms / Phrases Used in Boolean Search	Notes on Inclusion
Functional synonyms	"Student management system", "student information system", "student record system", "academic record system", "student administration system", "student portal", "academic registry system"	Captures institutional differences in terminology; widely used across East African universities.
Brand/platform names	"ARIS", "SARIS", "AIMS", "AIMS-ERP", "Banner", "PeopleSoft", "Academia ERP", "HESA", "TUMIS", "UIMS", "eCampus"	Reflects specific products in East African institutions (e.g., ARIS at the University of Dar es Salaam, SARIS at OUT).
Functional modules / related systems	"Learning management system", "LMS integration", "student database", "academic management software"	Included to capture studies referring to DSMS via module integration.
Managerial / governance keywords	management, administration, leadership, governance, policy, registry, institutional planning	Ensures the search returned management-focused, not purely technical, studies.
Regional/geographic scope	"East Africa", "Tanzania", "Kenya", "Uganda", "Rwanda", "Burundi", "South Sudan", "Ethiopia"	Specifies inclusion criteria for regional focus.

Scoping searches with various combinations of these clusters (functional terms + platform names + management keywords + country names) were conducted. This approach yielded an initial pool of 47 records, consistent with expectations for a niche topic focused on managerial practices in East African higher education.

Study Selection, Data Extraction, and Synthesis

The study selection process followed PRISMA guidelines and is summarised in the PRISMA flow diagram (Figure 1). After the initial identification of 47 records, screening was performed in two major stages, as shown below, divided into four phases: identification, screening, eligibility, and inclusion, as indicated in Figure 1. The stages are:

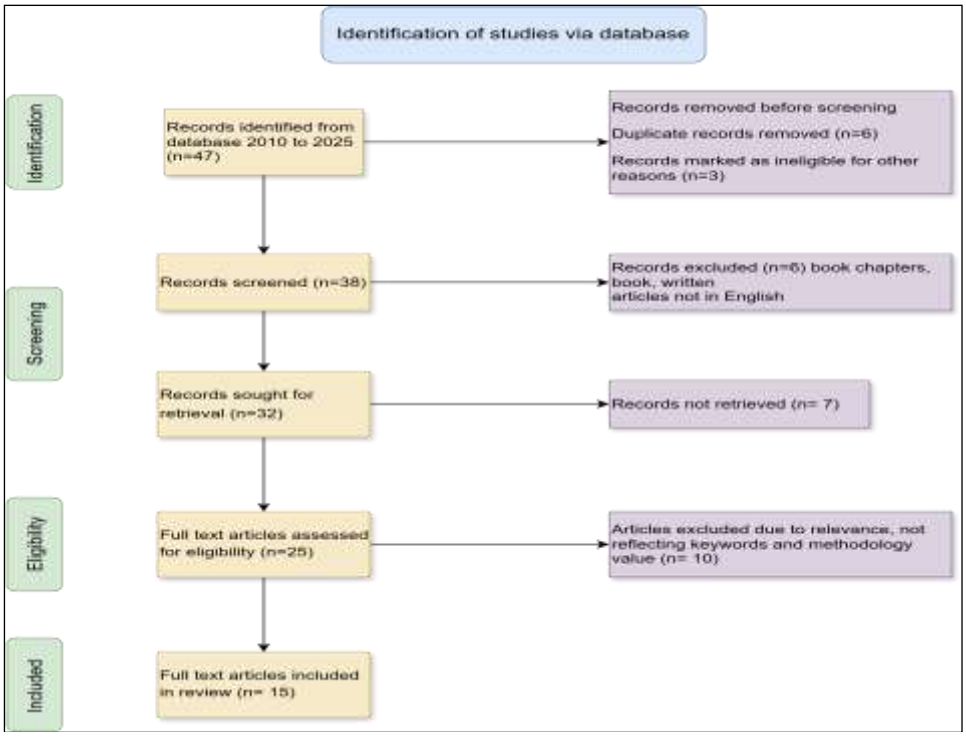
i) Title/Abstract screening involved removing duplicates and assessing titles and abstracts of 40 unique records against the inclusion criteria. At this stage, studies that clearly did not meet the criteria (e.g.,

focused solely on technical aspects or outside East Africa) were excluded. This resulted in a subset of studies for full-text review.

ii) Full-text review involved reading a total of 18 studies in their entirety. During the full-text analysis, 3 studies were excluded because they did not sufficiently focus on DSMS managerial practices (for example, one paper discussed general ICT policy without mentioning student systems, and two others were identified as commentary pieces without empirical data). This process resulted in 15 studies meeting all criteria and being included in the final synthesis.

Data from each included study were systematically extracted using a literature matrix that documented bibliographic information, contextual details such as country and institution, study design or type, key findings related to DSMS managerial practices, and identified themes. A qualitative thematic synthesis was subsequently performed. Recurring concepts within the findings were organized into thematic categories aligned with managerial practices. Each identified theme was supported by evidence from multiple studies, and in cases where a theme was supported by only a single study, this was explicitly noted to prevent overgeneralization. Through thematic analysis across diverse cases, the review elucidated broader patterns and best practices reflective of the varied contexts examined.

Figure 1:
PRISMA Flow Diagram depicting the number of records identified, screened, excluded, and included at each stage of the review.



Quality Appraisal

To give readers confidence in the findings, each included study was assessed using the Mixed Methods Appraisal Tool (MMAT, version 2018). This checklist evaluates whether a study asks clear questions, uses appropriate sampling and data collection methods, analyses data properly, and draws conclusions that fit the evidence. Of the 15 studies, eight met most of the MMAT criteria (scoring 75% or above), five were moderate (50–74%), and two scored below half. Common shortcomings included small sample sizes, limited details on data collection procedures, and minimal reflection on researcher bias in qualitative work.

RESULTS

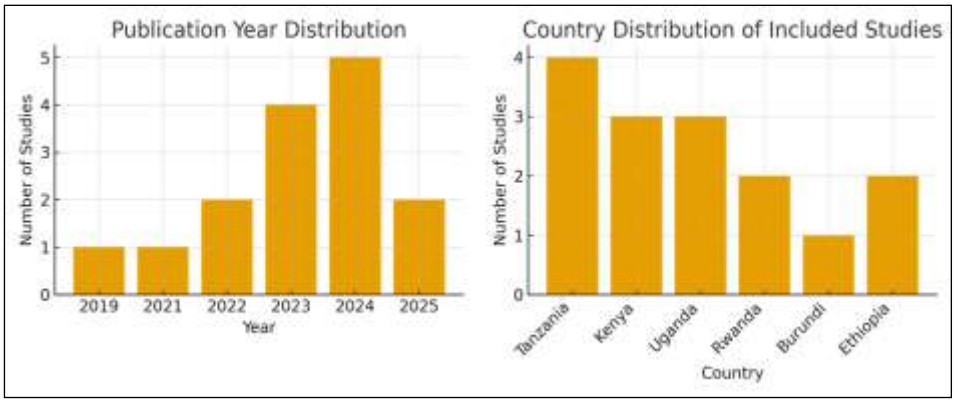
This section presents the findings of the systematic review, organised in two main parts. The first provides a descriptive overview of the included studies, offering context on publication trends and country representation. The second part is a thematic analysis aligned with the review question,

synthesising the best managerial practices identified in DSMS implementation across East African higher education institutions. Each thematic finding is derived from patterns recurring across multiple studies.

Descriptive Statistical Results

A total of 15 studies met the inclusion criteria and form the basis of this review. Research on DSMS in East African higher education has increased in recent years, with over two-thirds of the included studies published since 2019. There was a notable rise in publications after 2020, likely reflecting the growing importance of digital solutions in response to the COVID-19 pandemic and related educational reforms. Geographically, Uganda and Kenya accounted for the majority of studies, reflecting these countries' relatively developed ICT infrastructures and keen interest in higher education digital governance. Specifically, about five of the included studies were conducted in Ugandan universities and four in Kenyan universities. Tanzania was the focus of around three studies, while Rwanda, Burundi, and Ethiopia each had one to two studies within the corpus. This distribution highlights that most research has concentrated on the larger East African countries, with fewer studies in Rwanda and Burundi, indicating a need for further research in these regions. Figure 2 depicts the publication trends by year and country, with Kenya and Uganda together representing nearly half of the included cases. This descriptive overview provides context for understanding the subsequent synthesized findings.

Figure 2:
Publication year and country distribution of included DSMS studies in East Africa (n = 15). The figure displays a rising trend in publications over time, with peaks around 2022–2024, and emphasises that Kenya, Uganda, and Tanzania are the most frequently studied countries.



Overview of Included Studies

Table 2 summarises each included study, listing author(s), year, country, study design, system/platform, and key managerial practices. This overview provides context for the subsequent thematic analysis.

Thematic Findings

The review identified six key themes concerning managerial practices that affect DSMS success in East African higher education: (1) strategic leadership and policy direction, (2) capacity building and staff training, (3) infrastructure investment and resource allocation, (4) monitoring, evaluation, and data-driven decision-making, (5) security and risk management, and (6) stakeholder engagement and user support. Each theme is discussed below with illustrative examples from the literature.

Strategic Leadership and Policy Direction

Several studies emphasised the critical role of top-level leadership in setting digital priorities and establishing supportive policies for DSMS. For instance, in Uganda and Kenya, proactive university managers developed institutional ICT policies and formal digital strategies to guide the transition from manual to digital systems (Kayiwa et al., 2016; Ochwo et al., 2018). These strategies included formalising electronic student record-keeping and aligning DSMS implementation with the university's strategic plans. When leadership committed to a clear vision – such as a "digital university" initiative championed by vice-chancellors – it created an enabling environment for DSMS adoption. In some cases, as in parts of Sudan and Burundi, the lack of visionary leadership was identified as a barrier to effective digital transformation (Musa, 2023; Sabiraguha et al., 2023). University leaders who did not prioritize ICT innovation or failed to communicate its importance saw their DSMS projects flounder due to organizational inertia. This theme suggests that managerial leadership provides the foundation for successful DSMS projects: leaders must not only endorse the systems but also embed digital goals in institutional policies and assign oversight (e.g., through steering committees) to drive implementation.

Capacity Building and Staff Training

A recurring managerial practice was investing in human capacity, specifically training staff to operate and maintain DSMS effectively. Several universities in the region undertook capacity-building initiatives such as workshops and short ICT courses for administrative staff and academics, to improve digital literacy and system utilisation (Mayanja et al., 2019; Mugeni et al., 2020). For example, in Rwanda, the University of Rwanda organised training sessions on the new Education Business

Management Information System (EBMIS) to ensure that faculty and registry staff could use the software comfortably (Mugeni et al., 2020). Similarly, Ugandan universities have provided continuous professional development on ICT skills, which helped reduce user errors and resistance. However, challenges remain: some institutions reported that low baseline digital competency among staff hindered effective DSMS use even after initial training, underscoring the need for ongoing support. At the University of Rwanda, insufficient follow-up training led to some features of the system going underutilised (Mugeni et al., 2020). This theme highlights that managerial efforts must focus on the people behind the technology. Continuous capacity building, including formal training, mentorship, and knowledge sharing, is crucial to empowering employees to leverage DSMS fully. Without adequate training, even a well-designed system may fail to deliver intended benefits.

Infrastructure Investment and Resource Allocation

Managers in more advanced universities demonstrated proactive financial leadership by prioritising budget allocations for the development and maintenance of ICT infrastructure essential for DSMS operation. These investments typically included procuring servers and networking equipment, ensuring reliable campus internet connectivity, providing sufficient computers or devices for staff who use the system, and establishing data backup and recovery systems. For example, at Mount Kenya University's Kigali campus in Rwanda, targeted investments in a robust Management Information System infrastructure (including high-performance servers and backup power generators) were credited with improving both academic and administrative operations. This facilitated efficient data management and reduced processing delays for tasks such as registration and grade submissions (Mukuru, 2018). In contrast, universities in Tanzania and Burundi reported persistent infrastructural limitations – such as unstable electrical power, low bandwidth internet, and insufficient server capacity – which constrained DSMS performance and hindered effective data integration (Mbuya, 2023; Sabiraguha et al., 2023). In these cases, even when leadership and staff were supportive, the lack of reliable infrastructure meant frequent system downtime and slow access, eroding confidence in the digital system. These disparities underscore the important role of strategic resource mobilisation and infrastructural planning. University managers who secured funding (through government grants, donor projects, or reallocation of internal budgets) to build and sustain the necessary ICT infrastructure were far more successful in institutionalising DSMS. Thus, one of the core managerial responsibilities is to align financial and material resources with the goal of digital

transformation, ensuring that technology initiatives are not undermined by hardware and connectivity gaps.

Monitoring, Evaluation, and Data-Driven Decision Making

Another managerial strategy discussed in the literature involves leveraging data generated by Decision Support Management Systems (DSMS) to enhance institutional decision-making processes. Several studies have observed that when administrators actively utilize comprehensive data from student information systems, it results in more responsive and evidence-based governance (Mbuya, 2023; Sabiraguha et al.; Mutungi et al., 2024). These studies also demonstrated that well-established digital recordkeeping practices at Kenyan Adventist universities are strongly associated with effective managerial decisions, highlighting the critical role of robust DSMS in institutional governance. Through systematic application of data analytics and integrated reporting functionalities, managers can monitor system performance, analyze student enrollment and retention trends, and assess staff workload distribution. For instance, reports on registration statistics enable departments to allocate teaching resources efficiently and identify operational bottlenecks proactively. Although the evidence supporting this theme is limited, it underscores the potential of DSMS as a managerial instrument beyond mere transactional functions. Adoption of data-driven management aligns with global best practices in higher education, where analytics are employed for quality assurance and strategic planning (Hashim et al., 2022). East African university administrators who perceive DSMS not solely as operational tools but also as sources of strategic intelligence foster cultures rooted in evidence-based decision-making, ultimately enhancing institutional performance.

Security and Risk Management

Effective digital system management necessitates the implementation of comprehensive cybersecurity protocols and data-protection strategies. Multiple studies have highlighted that as universities digitize sensitive student records, management must proactively address associated risks, including data privacy concerns, security breaches, and system failures. For instance, in Tanzanian institutions, administrators have demonstrated increasing apprehension regarding the security of student information, leading to efforts aimed at training users in digital-security best practices and deploying technical safeguards such as firewalls and secure authentication mechanisms (Mbuya, 2023). One case illustrated that following incidents involving unauthorized grade modifications, the university responded by strengthening user-access controls and appointing

an IT security officer (Mbuya, 2023). Nonetheless, a persistent challenge remains in the limited availability of technical expertise necessary for the full implementation of cybersecurity measures. Often, universities depend on external consultants to manage DSMS security, raising concerns about the long-term sustainability and development of in-house technical capacity (Mbuya, 2023). These issues underscore the critical need for capacity-building initiatives in IT risk management at the managerial level. Effective oversight of DSMS extends beyond technological safeguards to include ongoing training and vigilance to maintain data integrity. Furthermore, in some East African universities, the absence of clearly articulated data-protection policies compels managers to develop institution-specific guidelines for privacy and security. Overall, this analysis emphasizes that university management must prioritize DSMS security as a fundamental responsibility, integrating risk assessments, user education, and alignment with national data-protection regulations to ensure compliance and maintain stakeholder trust.

Stakeholder Engagement and User Support

Numerous studies have emphasized the pivotal role of university management in facilitating user adoption of Decision Support Management Systems (DSMS) through the provision of continuous support and stakeholder engagement during the implementation phase. This encompasses both student and staff users of the system. Support initiatives documented in the literature include establishing dedicated helpdesks and IT support teams, organizing orientation sessions, developing user manuals, and creating feedback mechanisms (Githinji et al., 2023; Mugeni et al., 2020). For instance, in Ugandan and Rwandan universities, administrators acknowledged that the introduction of a new student portal necessitated change management at the user level. Consequently, they implemented measures such as step-by-step guides for routine tasks, including course registration and online fee payments, and solicited user feedback via surveys to identify potential challenges (Githinji et al., 2023). These institutions exemplified that consistent communication, prompt technical assistance, and visible responsiveness to user feedback can substantially enhance user confidence and promote system uptake. As a result, satisfaction among students and staff regarding administrative services improved when they perceived adequate support during the transition to digital systems (Hashim et al., 2022). Conversely, some universities continued to exhibit deficiencies in user engagement, largely attributable to insufficient technical support personnel and a lack of ongoing professional development programs for end-users. In such cases, initial enthusiasm for the DSMS often diminished as users encountered

unresolved difficulties. This underscores the necessity for institutional investment in user support infrastructure, such as hiring additional IT support staff or establishing "DSMS champions" within departments, and fostering a user-centric approach. Ultimately, management practices that treat students and staff as partners in digital transformation through consultative processes, training, and ongoing support tend to lead to higher system utilisation and more sustainable success.

Author(s) & Year	Country	Study Design & Sample	DSMS/Platform	Key Managerial Practices / Findings
Anyeko (2016)	Uganda	Doctoral dissertation (case study)	ICT for student administration	ICT improved student administration but hindered by limited infrastructure and staff training.
Kayiwa, Juma & Clement (2016)	Uganda	Mixed-method study of higher education administration	Student records management	ICT adoption improved administrative processes but managerial capacity constraints persisted.
Henry & Njenga (2021)	Kenya	Case study in public universities	Electronic records management	Electronic records systems enhanced service delivery; success depended on training and resource allocation.
Hashim, Mugo & Kiptoo (2022)	Kenya	Survey of stakeholders	Student information system	Stakeholder engagement and communication were critical for successful SIS implementation.
Mohammadi, Alemu & Bekele (2021)	Ethiopia	Mixed-method study	Institutional ICT adoption	Managerial capacity building and staff training were essential for DSMS adoption.
Mbuya (2023)	Tanzania	Case study (SARIS)	SARIS	Capacity building and digital literacy increased utilisation of SARIS.
Mugeni, NagoorMeera & Banamwana (2020)	Rwanda	Survey at University of Rwanda	EBMIS	User satisfaction was influenced by training, support and stakeholder engagement.
Mukuru (2018)	Rwanda	Descriptive study at Mount Kenya University	Management information system	MIS improved academic processes but limited by technical skills and infrastructure.
Ndulu, Kimani & Nsubuga (2023)	East Africa (multi-country)	Policy analysis	Digital transformation initiatives	Highlighted gaps between policy and practice; emphasised leadership and investment.
Ntorukiri, Omondi & Karanja (2022)	Kenya	Survey of universities	Student information system	Identified barriers such as inadequate infrastructure, funding, training and leadership support.
Musa (2023)	Sudan	Case study	E-governance in higher education	DSMS adoption hindered by lack of infrastructure, legal frameworks and managerial commitment.
Mutungi, Nakato & Byaruhanga (2024)	Uganda	Survey / case study	Student information system	Emphasised need for cybersecurity policies, staff training and risk management.

Mutungi, Kibirango & Maiyo (2024)	Kenya	Survey of Adventist universities	Digital records practices	Positive association between digital records management and decision-making; underscored leadership role.
Wahyuni (2024)	Tanzania	Mixed-method study	Digital transformation monitoring	Highlighted monitoring and evaluation of DSMS to inform data-driven decision-making.
Nwachukwu & Ohalete (2024)	Pan-African	Comparative analysis	Strategic leadership & SIS	Strong leadership and governance frameworks were necessary for SIS success across African universities.

Table 2:
Summary of Included Studies

DISCUSSION

This systematic review aimed to synthesise the managerial practices employed by higher education institutions in East African countries to improve Digital Student Management Systems (DSMS). The findings show that, although the adoption of DSMS is gradually increasing across the region, its effectiveness depends heavily on the quality of leadership, institutional capacity, and strategic management decisions. In essence, technology adoption alone is not a cure-all; the managerial environment surrounding it largely determines whether a DSMS achieves its goal of better educational administration.

A key managerial practice identified is the provision of strategic leadership and policy direction, which forms the foundation for successful digital transformation. As echoed by Unwin et al. (2010), visionary leadership in African universities is essential for initiating and sustaining technological change. The reviewed studies affirmed that when university managers clearly defined digital priorities and embedded them into institutional policies, the adoption and performance of DSMS improved significantly (Kayiwa et al., 2016; Musa, 2023; Sabiraguha et al., 2023). For instance, having a formal ICT or digital education strategy gives implementation teams a clear mandate and framework to operate within. In contrast, a lack of direction or poor leadership, as observed in Sudan and Burundi, resulted in minimal uptake of digital solutions despite the availability of systems (Musa, 2023; Sabiraguha et al., 2023). This suggests that leadership commitment and vision are prerequisites for any substantial digital initiative to take root in higher education institutions.

Another essential factor is capacity building through staff training and development. Studies emphasise that digital competence among personnel is crucial for the sustainability of ICT systems (Mayanja et al., 2019; Mugeni et al., 2020). The review found that universities in Uganda and Rwanda that invested in structured ICT training programmes experienced improved DSMS functionality and reduced staff resistance (Mayanja et al., 2019; Mugeni et al., 2020). Employees confident in using new systems become advocates, creating a positive feedback loop of adoption. However, institutions that overlooked training or only offered one-off workshops often faced under-utilisation of the systems and ongoing technical issues because users did not fully understand how to utilise the tools or troubleshoot basic problems. Therefore, management practices must include continuous learning opportunities to keep skills up to date, especially as systems are upgraded or new features are introduced.

Infrastructure investment and resource allocation have become vital managerial practices. The successful implementation of DSMS relies heavily on a robust digital infrastructure, including computers, servers, software, and reliable internet connectivity (Mohamed Hashim et al., 2022). Institutions like Mount Kenya University have significantly improved academic processes through focused investment in management information systems (Mukuru, 2018). Conversely, financial and logistical limitations at some Tanzanian and Burundian universities have restricted system scalability and dependability (Mbuya, 2023; Sabiraguha et al., 2023). This contrast indicates that even with effective management, a lack of fundamental infrastructure cannot be ignored; university leaders must advocate for, or strategically allocate, funds to lay the essential groundwork for technology. Furthermore, policy-level backing is crucial; governments and education regulators in East Africa may need to increase funding or introduce infrastructure programmes for universities, especially those in resource-limited settings, to foster equitable progress in digital transformation.

Additionally, the use of data for managerial decision-making emerged as a transformative approach, though evidence was somewhat limited. Institutions that adopted digital data analytics for monitoring academic processes and student progress reported more responsive and efficient administration (Mbuya, 2023; Sabiraguha et al., 2023). This aligns with the broader trend in higher education management towards data-informed decision-making cultures, where leadership, guided by real-time data, improves quality assurance and institutional responsiveness (Hashim et al., 2022). In our context, this indicates that East African universities could benefit greatly by utilising DSMS data for planning—such as analysing enrolment patterns to shape admission policies or using performance dashboards to identify at-risk students and intervene early. However, developing these data capabilities may require additional training and tools, highlighting a future managerial focus. Mutungi et al. (2024) also provide empirical evidence that strong digital records practices are linked to higher decision quality in universities.

Moreover, cybersecurity and data protection practices are becoming increasingly important in the management of DSMS. As these systems store confidential student and staff information, university managers have begun prioritising digital safety, although challenges persist due to inadequate technical expertise and inconsistent enforcement (Mbuya, 2023). This resonates with Gkrimpizi et al. (2023), who identified weak

cybersecurity frameworks as a common barrier in digital ecosystems within higher education in developing contexts. It is encouraging that some East African universities are taking steps such as formulating ICT security policies and sensitising users about data privacy. Yet, more needs to be done: institutional managers should incorporate regular security audits of DSMS, ensure compliance with emerging data protection laws, and develop contingency plans for data recovery. Neglecting this area could not only jeopardise system integrity but also erode stakeholder trust in digital services.

Lastly, stakeholder engagement and user support, including orientation, helpdesks, and feedback mechanisms, have been crucial in fostering DSMS adoption. The review indicates that institutions that support users through inclusive and participatory approaches achieve greater system acceptance (Githinji et al., 2023). This highlights an important principle: technological change in universities is fundamentally human-centric. By listening to user feedback and making iterative improvements, such as simplifying workflows or providing additional training on frequently misunderstood features, managers can significantly improve user satisfaction. However, gaps remain in providing ongoing support for students and staff, especially in institutions with limited IT support resources. Many universities lack enough personnel to provide timely assistance, leading to frustration when issues occur. This suggests that, as part of DSMS initiatives, university management should plan for adequate support staffing or adopt innovative solutions like peer support programmes. Engaging students, for instance, as tech ambassadors to assist their peers in navigating systems, could be a creative strategy in resource-limited contexts.

In summary, the discussion highlights that the success of DSMS in East Africa is not purely a factor of technology availability but is deeply intertwined with managerial actions and context. The six themes identified work in concert: visionary leadership enables allocation of resources and sets the tone for capacity building; trained staff make better use of infrastructure and adhere to security protocols; engaged stakeholders provide feedback that can guide further leadership decisions, and data from the system informs strategic planning. This interdependency means university managers must adopt a holistic approach, addressing technical, human, and organisational dimensions simultaneously, to realise the full benefits of digital student management systems. Notably, these insights are consistent with global experiences in digital governance of education, but they take on added significance in developing countries' contexts where

resource constraints are real, and the margin for error is small. For East African universities aiming to transform digitally, strengthening managerial practices appears to be just as important as acquiring new technologies.

Literature Verification and Quality Control

During the review process, all cited references were systematically verified through Google Scholar and institutional repositories to confirm their accessibility and authenticity. Sources that could not be reliably located or obtained in full text were excluded and, where feasible, replaced with peer-reviewed studies of equivalent relevance, specifically addressing themes within the African or East African higher education contexts. This rigorous quality assurance procedure ensured that the final collection of studies comprised traceable, verifiable, and publicly accessible sources, thereby enhancing the transparency and reliability of the systematic review. Only those studies satisfying both thematic relevance and verifiability criteria were included in the synthesis. Moreover, in cases of multiple sources covering the same managerial themes, preference was given to the most recent studies to ensure that the review reflects current practices.

Limitations

This review primarily employed literature obtained through Google Scholar. Although this method effectively encompassed a broad spectrum of sources, it may have overlooked studies exclusively indexed in subscription-based databases. Certain pertinent research, particularly from prominent international journals, might have been omitted if not indexed or easily accessible via Google Scholar. Nonetheless, considering the regional emphasis on East African higher education and the significance of grey literature and locally published works, this search strategy was both appropriate and essential for gaining contextual insights.

Another limitation is the relatively small number of eligible studies and the uneven country-level representation among them. With only fifteen studies constituting the core of the synthesis, some countries, such as Rwanda and Burundi, are represented by very few studies. The findings should be regarded as indicative of prevailing managerial practices rather than comprehensive or universally applicable across all higher education institutions in East Africa. Certain successful practices or challenges encountered by specific universities may not have been captured due to a lack of documented experiences in accessible literature. Future research

could broaden the scope by including francophone African contexts or by conducting primary investigations to supplement the existing literature. Despite these limitations, the review offers a systematic summary of existing knowledge and provides a valuable starting point for university leaders and policymakers to understand the key success factors in managing digital student systems.

CONCLUSIONS

This systematic review examined the managerial practices employed by higher education institutions in East African countries to enhance Digital Student Management Systems (DSMS). The findings suggest that DSMS adoption is increasing across the region; however, its effectiveness appears closely associated with the quality and consistency of managerial practices within individual institutions. In essence, how university leaders plan, execute, and support digital initiatives determines whether those initiatives flourish or flounder.

Strategic leadership emerged as an especially influential factor. Institutions that articulated clear digital visions and implemented supportive policies generally achieved stronger DSMS outcomes. Leadership commitment translated into concrete actions like establishing governance committees, integrating DSMS goals into strategic plans, and championing the project to stakeholders, all of which drove success.

Similarly, capacity building through staff training was identified as a key facilitator of digital transformation. The success of DSMS heavily relies on the digital skills and mindset of both academic and administrative staff. Universities that offered ongoing training and support for change management experienced higher utilisation and fewer issues, whereas those with untrained staff faced underuse and recurring technical problems that could have been prevented.

Furthermore, investing in infrastructure and providing adequate resources helped make DSMS operations more dependable and sustainable. Without a solid technological base (power, network, hardware, and maintenance funding), even the best management efforts cannot achieve results. On the other hand, focused investments in technology resulted in smoother operations and increased user satisfaction.

The review also shows that adopting data-driven decision-making, strong cybersecurity, and user support systems helps improve institutional

efficiency and system reliability. These practices ensure that the DSMS not only automates processes but also enhances institutional management and gains the trust of its users. Universities that used DSMS data for planning could respond more quickly to trends, and those that actively involved users fostered a culture of acceptance for new digital tools.

Nonetheless, disparities across institutions reveal that progress in DSMS implementation and use remains inconsistent. Often, this is limited by differences in funding, technical capacity, and organisational readiness. Some universities in the region are pioneers with strong leadership and abundant resources, while others lag behind due to factors beyond the control of individual managers (such as limited government funding or a shortage of qualified IT personnel in the area). Since only fifteen studies met the inclusion criteria and coverage of some countries was limited, these conclusions should be viewed as indicative rather than definitive. There is potential for further research and cross-institutional learning to help refine best practices.

In conclusion, managerial capacity and practices are crucial in the digital transformation of student administration in East Africa. University leaders and decision-makers can utilise the insights from this review to compare their own practices: emphasising leadership and vision, investing in people and infrastructure, leveraging data, protecting systems, and engaging stakeholders. By doing so, higher education institutions in East Africa will be better equipped to harness DSMS to enhance governance, efficiency, and student service delivery, ultimately supporting educational transformation in the region.

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Determinants of Oilseed Export Performance in Tanzania: The Case of Sunflower Seed

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Abstract
This study examines the determinants of sunflower export performance in Tanzania over the period 1990–2023, employing the Autoregressive Distributed Lag (ARDL)–Error Correction Model (ECM) to capture both short-run and long-run effects among macroeconomic, production capacity and trade liberalisation. The empirical results indicate that foreign direct investment (FDI) is the only factor with effects in both periods; a positive and statistically significant effect in the short run and a negative effect in the long run. Meanwhile, production quantity and world prices affect export performance only in the long run, with positive and negative effects, respectively. Based on these findings, the study recommends strengthening production capacity through the adoption of improved seed varieties and the introduction of irrigation schemes to ensure stable output. It also emphasises directing FDI into agro-processing and export value chains to enhance value addition and competitiveness, alongside investing in storage and processing infrastructure to reduce post-harvest losses. Furthermore, given the negative influence of world prices, the study recommends establishing price stabilisation and risk management mechanisms such as improved market information systems, forward contracts, and export price monitoring to help producers and exporters mitigate adverse global price fluctuations and enhance the stability of export earnings.

Keywords: *Sunflower, export, export performance, ARDL- ECM, Oilseeds*

INTRODUCTION

The global oilseeds trade has expanded significantly in both volume and value in recent years. Shipments reached record levels in the early 2020s, surpassing 50 million tons, while export earnings surged between 2020 and 2022 before moderating, though they remained at multi-billion-dollar levels (FAO, 2023; CBI, 2025). Within this market, sunflower seeds have

received particular attention. Data indicate sharp price and value fluctuations after 2021, which temporarily boosted revenues before prices corrected (OEC, 2024). Statistics reveal that between 2022 and 2024, global sunflower seed export volumes peaked at about 8.4 million tonnes in 2022 and then declined to approximately 5.1 million tonnes in 2024, reflecting a clear downward trend. Correspondingly, total export earnings fell from around US $6.8 billion in 2022 to US $5.1 billion in 2023 and US $4.5 billion in 2024, indicating a consistent decline in both shipments and revenue over the period (TrendEconomy, 2026). Global production is dominated by Russia and Argentina, followed by China, the United States, Spain, France, Romania, Turkey, Hungary, Bulgaria, India, Australia, South Africa, and several ex-Yugoslav countries (Kumari & Anirudh, 2024). Regionally, Europe, the Americas, and Australia account for about 80% of global supply, Asia contributes 18%, and Africa only 2% (Tesfaye & Mengistu, 2021).

Africa has broadly mirrored global trends, with sunflower export volume and earnings changing over time. Evidence shows that Africa's sunflower seed exports peaked around 40 000 tonnes in 2022, then declined to about 32 000 tonnes in 2024, indicating a downward trend over the period. In value terms, African sunflower seed export earnings followed a similar pattern: after rising to around US $33 million in 2023, they slightly contracted to approximately US $32 million in 2024, showing that export revenues weakened (MIP, 2025; TrendEconomy, 2026). Sunflower exports, however, showed a mixed pattern: while sunflower seed exports slipped slightly to around 32,000 tons valued at USD 32 million in 2024 (down from USD 33 million in 2023), combined sunflower seed and oil exports expanded markedly to 246,000 tons worth USD 367 million (FAO, 2025).

On the same note, Tanzania has experienced substantial growth in oilseed production and export over the past decade, with exports increasing from about 116,000 tons in 2013 to 223,392 tons in 2023, and earnings rising from USD 1.49 million to USD 2.26 million (FAO, 2025). Sunflower, the country's leading edible oil crop, is a part of this growth. The crop is widely cultivated in the country. A key turning point in Tanzania's sunflower seed production emerged in the 1990s, when the government, NGOs, and development agencies began actively promoting the crop as a poverty-reduction strategy (Isinika et al., 2021; Isinika and Mwajombe, 2018; Msafiri et al., 2023). Data indicate that around one million smallholder farmers grow sunflowers (Farm Africa, 2022), and since the 1990s, the crop

has evolved from a subsistence crop into a key cash crop nationwide (Isinika and Jeckoniah, 2021). By 2017, UNIDO estimated that Tanzania was producing about 350k tons annually, securing a strong position in the global sunflower oilseed landscape (Msemwa et al., 2024). As a result, Tanzania is currently the second-largest sunflower producer in Africa after South Africa, contributing roughly 35% of the continent's output, and ranks between 10th and 11th worldwide (Isinika and Jeckoniah, 2021; Lyanga, 2024).

Despite this strong production capacity, export performance tells a contrasting story. Statistics show that sunflower seed exports in Tanzania have declined sharply over the past decade, falling from 24,592 tons in 2013 to just 531 tons in 2023, with corresponding earnings dropping from USD 1.74 million to USD 245,000 (FAO, 2025). In 2023, the country ranked 67th globally, exporting mainly to markets such as the United States (USD 63.9k), Uganda (USD 41.1k), India (USD 36k), Burundi (USD 27k), and Kenya (USD 19.5k). Some of these destinations, particularly India, Burundi, and the United States, emerged as the fastest-growing markets between 2022 and 2023 (OEC, 2024). This divergence between rising production and declining exports highlights a paradox that raises critical questions about the underlying determinants of the country's sunflower export, an issue that is underexplored by researchers in the country.

Therefore, the present study explores it with its main objective: to investigate the determinants of sunflower export performance in Tanzania from 1990 to 2023. Specifically, the study seeks to examine how macroeconomic variables, production capacity, and trade liberalisation influence the country's sunflower seed exports. This motivation arises from the fact that, although Tanzania is the second-largest sunflower producer in Africa, its exports have declined sharply over the past decade despite increasing production and strong global demand. Unfortunately, the available studies have largely focused on production, export volume and export earnings trends. No evidence that there are studies on the underlying factors shaping the sunflower export performance in Tanzania.

Absence of evidence exposes two critical gaps in the literature: a knowledge gap and an empirical gap. The empirical gap stems from the lack of studies directly examining the drivers of sunflower exports in Tanzania, while the knowledge gap reflects a limited understanding of the crop's export determinants in the national context. Addressing these gaps is vital, as sunflower exports affect the country's foreign exchange earnings, trade balance, and national income. The findings of this study are

aimed at contributing by offering targeted insights into the sunflower sub-sector rather than the broader agricultural sector. Thus, without filling these gaps, policymakers risk relying on incomplete evidence, which can lead to ineffective strategies and missed opportunities. Therefore, to bridge these gaps, the study is guided by the research question: What are the key determinants of sunflower export performance in Tanzania? In answering the question, the study employs the Autoregressive Distributed Lag (ARDL) – Error Correction Model (ECM) technique to capture the determining factors, both in the short-run and long-run.

Additionally, the present study is based on the Eclectic (OLI) Paradigm and the Heckscher–Ohlin framework, which together provide a theoretical foundation for understanding Tanzania's sunflower export performance. These models explain how a country's factor endowments, economic conditions, and international engagement influence its ability to compete and succeed in global markets (Dunning, 1988; Ohlin, 1933).

THEORETICAL REVIEW

The study combines the Eclectic Paradigm (OLI Framework) and Heckscher–Ohlin (H–O) frameworks to provide a comprehensive understanding of Tanzania's sunflower export performance. The study thought it important to use both the OLI and H–O frameworks because they provide a holistic perspective on Tanzania's sunflower exports, linking country-level strategies with factor endowments to inform policy and promote competitive trade.

Eclectic Paradigm (OLI Framework) and Tanzania Sunflower Exports

The Eclectic Paradigm, also known as the OLI framework, explains why countries or firms engage in international production by identifying three sets of advantages: Ownership (O), Location (L), and Internalisation (I). Ownership advantages refer to country-specific or firm-specific resources and capabilities such as technology, capital, and expertise that provide a competitive edge in foreign markets. Location advantages are the characteristics of a country, such as market size, natural resources, infrastructure, and institutional quality, that make it attractive for producing or exporting goods. Internalisation advantages capture the benefits of controlling production, distribution, and marketing processes directly rather than outsourcing, which reduces transaction costs and protects proprietary assets (Dunning, 1988; Narula and Dunning, 2000). It can be seen that the framework is originally about why firms invest abroad, but it

can be applied to export performance because exporting is often a form of international production or market expansion. So, while the framework was designed for FDI, its concepts map onto exporting. Thus, country-level capabilities, national economic conditions, and control over international operations all influence how well a country's product competes globally.

Applying the OLI framework to Tanzania's sunflower exports, ownership and Internalization advantages are reflected in the country's productive capacity and foreign direct investment (FDI). Ownership advantages represent access to resources, technology, and capital that allow for competitive production and processing of sunflower seeds. On the other hand, Internalization highlights the benefits of controlling production, export logistics, and value chain operations internally rather than through external intermediaries, which ensures efficiency and higher value capture. Meanwhile, the location advantages include domestic GDP, exchange rates, world market prices, and trade openness, shaping the country's profitability and competitiveness in global markets by determining market potential, price incentives, and easy access to international trade. Together, these OLI elements explain how Tanzania's country-level capabilities and macroeconomic conditions jointly influence sunflower export performance. Except for Tanzania GDP and exchange rate, that were droped due to multicollinearity, all other variables identified in the OLI framework were econometrically estimated through the ARDL-ECM to their short and long-run effects.

The variables retained were directly included because each directly represents a factor influencing sunflower export performance. Production quantity, for instance, captures the sector's productive capacity, reflecting internalisation and ownership advantages that determine the supply available for export. Similarly, foreign direct investment (FDI) represents ownership and internalisation advantages by providing capital, technology, and managerial expertise that support export-oriented activities. Meanwhile, the world prices capture external market conditions that directly shape profitability and export incentives. Furthermore, trade liberalisation reflects policy liberalisation and the country's integration into international markets, thereby facilitating the ease of exporting sunflower seeds. To that end, the OLI framework provides a clear theoretical basis for selecting variables, while the ARDL-ECM allows for their direct estimation and quantifies their effects, effectively translating theoretical insights into empirical evidence.

It is worth noting that contextual or risk factors, represented by the COVID-19 and Russia–Ukraine war dummies, though they are not mentioned in the OLI model, were also incorporated in the study to account for external shocks. Their inclusion followed their thought effects on sunflower export performance by disrupting supply, demand, and global market conditions, alongside the country's production capacity and key macroeconomic variables.

Heckscher–Ohlin Framework (H-O Framework) and Tanzania Sunflower Exports

The Heckscher–Ohlin (H–O) framework is a classical trade theory that explains international trade patterns based on countries' relative factor endowments. It posits that a country will export goods that intensively use its abundant factors of production and import goods that require factors in which it is relatively scarce (Ohlin, 1933). The model assumes perfect competition, identical technologies across countries, and constant returns to scale, implying that comparative advantage arises from differences in factor abundance rather than technology. Thus, countries rich in land, labour, or capital can produce and export goods that intensively use these resources more efficiently, generating gains from trade and improving overall welfare (Krugman and Obstfeld, 2009).

In the context of Tanzania's sunflower exports, production quantity reflects the endowment of natural resources and productive capacity, which indicates the country's ability to supply sunflower seeds competitively. Similarly, foreign direct investment (FDI) acts as a proxy for capital endowments that enhance production capabilities, while domestic GDP reflects the scale of economic activity that supports trade. Moreover, exchange rates and world prices influence the returns to these factor endowments in international markets, thereby affecting export incentives. In addition, trade openness facilitates the removal of barriers, allowing the country to fully exploit its factor-based comparative advantage. Finally, the COVID-19 and Russia–Ukraine war dummies account for exogenous shocks that may temporarily constrain the use or productivity of these factors.

However, the GDP and exchange rate were later dropped due to multicollinearity, but the remaining variables retain the strong conceptual link to the H–O theory. They were empirically analysed using the ARDL-ECM to estimate how Tanzania's factor endowments and external conditions affect sunflower export performance. The study quantifies the

effects of the said determinants to translate the theoretical foundation into empirical and evidence-based effects.

MATERIAL AND METHOD

Data Source and Variables

The study employs Tanzania's GDP, production quantity, world price, exchange rate, foreign direct investment (FDI), trade openness, and two dummy variables capturing the effects of COVID-19 and the Russia–Ukraine war. These variables were adopted from previous studies of a similar nature, including Achille et al. (2020), Leyaro and Hongoli (2022), Utouh (2024a;2024b), Rashidi (2024), Kabote and Tunguhole (2022), Luhwago (2023), and Kibona et al. (2022), among others. The inclusion of dummies was aggravated by the fact that the global trade exhibited strange patterns in recent years due to the outbreak of COVID-19 and the war between Russia and Ukraine. The present research found it imperative to see if the said shocks extended their impacts to sunflower export in Tanzania.

Secondary data were used throughout the study. Specifically, GDP data were obtained from the World Development Indicators (WDI), while production quantities, exchange rate, export values, and import values were drawn from FAOSTAT. At the same time, FDI data were extracted from the World Bank database. Trade openness was computed using export, import, and GDP data from the same sources.

Finally, the sunflower seed world price was estimated from export quantity and export earnings reported in FAOSTAT, given the unavailability of a complete price series for 1990–2023.

The formula for World Price is:

$$SWP_t = \frac{EE_t}{EQ_t} \quad \ldots\ldots (1)$$

Where: SWP is the Sunflower World Price, EE is the export earnings, EQ is the export quantity, and t is the time. While this method is useful when official price data are unavailable, its main limitation is that the prices are just approximates and may have some measurement errors.

Theoretical Framework of the Model: ARDL - ECM

In this study, the Autoregressive Distributed Lag (ARDL) – Error Correction Model (ARDL-ECM) bounds testing approach developed by Pesaran, Shin, and Smith (2001) is employed as the core estimation technique. The ARDL method is particularly suitable because it can be

applied regardless of whether the explanatory variables are purely stationary at level [I(0)], purely stationary at first difference [I(1)], or a combination of both, provided that none of the variables is integrated of order two [I(2)]. This flexibility makes ARDL ideal for the time series data used in this research, covering the period from 1990 to 2023. In case there is cointegration in the model, which is confirmed through the bounds test, the technique also incorporates an error correction mechanism (ECM) to measure the speed at which short-run deviations adjust towards long-run equilibrium. In this scenario, the method becomes the ARDL-ECM. Moreover, ARDL-ECM allows for different optimal lags for each variable, which helps capture both the short-run dynamics and the long-run equilibrium relationship between export performance and its determinants. This makes it a strong and efficient choice for analysing the dynamic nature of export performance determinants over the study period.

The ARDL model with ECM can be expressed in a general form as follows: for a dependent variable $Y_{t\ and}$ independent variables X_{1t}, X_{2t}, …, X_{kt}, an ARDL (p, q_1, q_2…, qk) is written as:

$$Y_t = \beta_0 + \sum_{i=1}^{p} \emptyset_i Y_{t-i} + \sum_{j=1}^{q_1} \beta_{1j} X_{1,t-j} + \sum_{j=1}^{q_2} \beta_{2j} X_{1,t-j} + \cdots + \sum_{j=1}^{q_k} \beta_{kj} X_{1,t-j} + \varepsilon_t \ldots\ldots\ldots (2)$$

Where p is the lag length for the dependent variable, q_1 is the lag length for each independent variable, and ε_t is an error term.

Once cointegration is established, the ARDL model can be rewritten in an ECM form:

$$\Delta Y_t = \beta_0 + \sum_{i=1}^{p-1} \emptyset_i \Delta_{t-i} + \sum_{j=0}^{q_1-1} \beta_{1j} \Delta X_{1,t-j} + \cdots + \sum_{j=0}^{q_k-1} \beta_{kj} \Delta X_{k,t-j} + \lambda ECT_{t-1} + \varepsilon_t \ldots\ldots (3)$$

Where Δ is a first difference operator, ECT_{t-1} is the lagged coefficient, indicating how quickly deviations from long-run equilibrium are corrected, and λ represents the speed of adjustment coefficient, indicating how quickly deviations from long-run equilibrium are corrected.

Model Specification

Model specifications in this study attempt to investigate the determinants of sunflower export performance from 1990 to 2023. The regression equation is the first difference in reducing the problem of autocorrelation,

which may affect the precision of estimation by overstating the estimates. The research model specification considers the demand conditions in importing countries, similar to those given by Kibona et al. (2022). For sunflowers from Tanzania, the demand is highly price elastic as importers have alternative sources, such as other producers of the said crop in the world. Additionally, the elasticity results from the fact that Tanzania is not such a commanding figure in the export market regarding sunflowers. In this regard, the study estimates the export performance equation (multiple regression analysis) under the supply function (approach). Export trade modelling in this study follows the imperfect substitute model, similar to many scholars like Tekalign and Goshu (2021), Bojan (2021), Amani (2025;2026), Abdullahi et al. (2021), Feyisa (2021), and Utouh and Ng'wina (2024), amongst others. The central assumption about the imperfect substitute model is that neither export nor import is a perfect substitute for domestic products, particularly agricultural products.

Mathematically, the function is given as;

$$EP = F(SWP, PQ, FDI, TL, COVID19, R - U\ War) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (4)$$

Where EP is export performance, SWP is the Sunflower world prices, PQ is production quantities, FDI is foreign direct investment, TL is trade liberalisation proxied by trade openness, and COVID-19 is the dummy for COVID-19, R-U War is the dummy for the Russia-Ukraine war, and F is a function of. Since the study applies time series econometrics analysis as the data analysis method and ARDL-ECM as an estimation technique, equation (3) was then transformed to form econometric models. The econometrics equation was formulated to accommodate the needs of ARDL-ECM for the measurability of the variables. Except for the dummy variables, all other variables were transformed to natural logarithm (ln) to allow coefficients to be interpreted as elasticities, making results easier to understand, comparable across different units, and more relevant for policy analysis, as policymakers often think in terms of growth rates and percentage changes. Dummy variables were not transformed into natural logs because they are categorical variables representing discrete states (0 and 1). For that, the following econometrics model was formulated.

$$\Delta lnEP_t = \alpha_0 + \sum_{i=1}^{p-1} \emptyset_1 \Delta lnEP_{t-1} + \sum_{j=0}^{q1-1} \beta_{1j} \Delta COVID19_{t-j} + \sum_{j=0}^{q2-1} \beta_{2j} \Delta lnSWP_{t-j} + \sum_{j=0}^{q3-1} \beta_{3j} \Delta lnFDI_{t-j} + \sum_{j=0}^{q4-1} \beta_{4j} \Delta R - U\ War_{t-j} + \sum_{j=0}^{q5-1} \beta_{5j} \Delta lnPQ_{t-j} + \sum_{j=0}^{q6-1} \beta_{6j} \Delta lnTL_{t-j} + \lambda ECT_{t-1} + \varepsilon_t \dots\dots\dots\dots\dots\dots (5)$$

Whereby, ε_t, is the error term, β_s stands for the coefficients of the respective determinant, *i* refers to the number of periods (lags), and the sign Δ stands for change in a variable. Similarly, ln represents the natural logarithm of the respective variable.

FINDINGS

Descriptive Statistics

The study descriptively analysed the summary statistics of the variables used in estimating the sunflower equation. Variables were analysed to understand their behaviours regarding their mean, standard deviation, Coefficient of Variation (CV), minimum, and maximum values. Additionally, it was thought essential to assess the skewness of the data to gain prior insights about the state of their normality. As Table 1 shows, the descriptive statistics reveal several notable patterns. Among the continuous variables, lnEP (export value) and lnWPrice (world price) show substantial variation, with coefficients of variation exceeding 13%, indicating pronounced relative dispersion in export performance and international price levels. lnFDI exhibits strong negative skewness (-1.47), suggesting that most observations are clustered at higher FDI levels, with occasional very low inflows. Conversely, lnTL (trade liberalisation) has a negative CV (-22.92) and a narrow range, reflecting that trade policy changes are relatively minor and concentrated below the mean level.

The dummy variables display striking extremes in relative variation. Dummy R-U War and Dummy Covid-19 show extraordinarily high CVs (over 300%), a natural consequence of their binary nature combined with low mean values, emphasising the rarity but potentially large proportional impact of these global shocks. Both dummies also exhibit strong positive

skewness (3.75 and 2.90, respectively), reflecting that most years in the sample did not experience these events, with few years of occurrence representing extreme shocks to the export environment.

Table 1:
The descriptive statistics results

Variable	Mean	Std. Dev.	CV	Min	Max	Skewness
lnEP	11.855	1.682	14.189	8.294	14.370	-0.510
lnGDPT	23.829	0.835	3.505	22.545	25.095	-0.055
lnXR	6.967	0.694	9.961	5.273	7.776	-0.805
lnPQ	12.408	1.294	10.426	10.272	13.973	-0.338
lnFDI	20.042	1.301	6.492	16.118	21.460	-1.469
lnTL	-1.008	0.231	-22.921	-1.427	-0.577	0.055
lnSWP	5.672	0.785	13.834	3.848	7.146	-0.196
Dummy R-U War	0.059	0.239	406.016	0.000	1.000	3.750
Dummy Covid19	0.088	0.288	326.289	0.000	1.000	2.903

Source: FAO, WDI, WB (2026)

Multicollinearity Test

The study conducted a multicollinearity test using the Variance Inflation Factor (VIF) to assess whether the explanatory variables were highly correlated, as such relationships can inflate standard errors and undermine the reliability of coefficient estimates. Detecting and addressing multicollinearity was therefore essential to ensure the stability, accuracy, and interpretability of the regression results. The decision rule is that multicollinearity is considered problematic if the VIF exceeds 10 (or tolerance falls below 0.1). Based on the test results from Table 2, lnGDPT, lnEX and lnPQ seem to be highly correlated to the extent that could mislead the final results and interpretation. The problem is evident since their VIFs are greater than 10 and their 1/VIF falls below 0.1. The study then dropped lnGDPT and lnEX as a measure to deal with the problem. Interestingly, after dropping the two, all other variables remained free from the scenario. The results are clearly shown in Table 2 below.

Table 2:
Multicollinearity Test Results

	Original		After Dropping	
Variable	**VIF**	**1/VIF**	**VIF**	**1/VIF**
lnGDPT	46.35	0.022		
lnXR	30.94	0.032		
lnPQ	42.85	0.023	4.56	0.219

lnFDI	4.21	0.237	3.81	0.262
lnTL	2.38	0.421	1.52	0.659
lnSWP	1.57	0.637	1.49	0.669
Dummy R-U WAR	1.53	0.655	1.27	0.789
Dummy COVID19	1.49	0.671	1.34	0.748
Mean VIF	16.41		2.33	

Source: STATA Output (2026)

Unit Root Test of the Study Variables

Testing for unit roots was again essential to ensure the robustness of the time series analysis, and the Phillips-Perron (PP) test was employed for this purpose. All variables in the model were tested for stationarity both at level and at first difference to determine their order of integration. Results in Table 3 indicate that, at level, only the logged FDI and world price were stationary, integrated of order zero [I(0)], with their p-values significant at the 5% level. The other variables were non-stationary at level and were therefore differenced. Interestingly, all four non-stationary variables became stationary at first difference, with their p-values significant at 5%, and thus were integrated of order one [I(1)]. In summary, the study variables exhibited mixed orders of integration, namely I(0) and I(1). The null hypothesis (H_0) of the PP test states that "the time series has a unit root (non-stationary)," while the alternative hypothesis (H_1) posits that "the time series does not have a unit root (stationary)." Accordingly, at level, the null hypothesis was rejected for logged FDI and world price, confirming their stationarity. Conversely, the null hypothesis could not be rejected for logged production quantity, logged trade liberalisation, and the dummies for COVID-19 and the Russia-Ukraine war, indicating their non-stationarity at level. However, at first difference, the null hypothesis was rejected for these variables, as their p-values were less than 0.05, confirming the absence of unit roots.

Table 3:
The unit root test results

Variable	**Level I(0) Test Statistic (P-Value)**		**1st Difference I(1) Test Statistic (P-Value)**		**Order Of Integration**
	Coeff.	**P-Value**	**Coeff.**	**P-Value**	
lnPQ	-1.162	0.6899	-5.787	0.0000	I(1)
lnFDI	-5.003	0.0000			I(0)
lnTL	-1.885	0.3390	-3.793	0.0030	I(1)
lnSWP	-3.453	0.0093			I(0)

Dummy Covid 19	-2.675	0.0785	-3.229	0.0184	I(1)
Dummy R-U war	-0.160	0.9431	-5.657	0.0000	I(1)

Source: Authors' Construction (2026)

Lag Selection

The lag selection was essential to ensure the model captures the dynamic relationships using sufficient past information without overfitting. Results in Table 4 show that different criteria suggest different lag lengths: the Likelihood Ratio (LR) test selects lag 2, the Final Prediction Error (FPE) criterion selects lag 3, while the Akaike Information Criterion (AIC), Hannan–Quinn Information Criterion (HQIC), and Schwarz Bayesian Information Criterion (SBIC) all select lag 4. Therefore, lag 4 is chosen as the optimal lag since it is supported by the majority of information criteria and provides a good balance between model fit and parsimony.

Table 4:
Lag selection results

LAG	LL	LR	DF	P	FPE	AIC	HQIC	SBIC
0	-82.3106				0.000012	8.50577	8.58133	8.85394
1	13.6394	191.9	49	0.000	1.80E-07	4.03434	4.63885	6.81974
2	805.921	1584.6*	49	0.000	8.50E-38	-67.4211	-66.3632	-62.5466
3			49		-3.2e-97*			
4	4712.97		49			-434.854*	-433.268*	-427.543*

Source: STATA Output (2026)

Bound- Cointegration Test

The null hypothesis (H_0) of the bounds test for cointegration states that there is no level relationship among the variables. The decision rule is as follows: accept H_0 if the computed F-statistic is less than the lower critical bound (I(0)), and reject H_0 if the F-statistic is greater than the upper critical bound (I(1)). According to the results presented in Table 5, the computed F-statistic is 5.02. This value is greater than the upper critical bounds of all significance levels, 1%, 5% and 10%. Therefore, the null hypothesis of no cointegration is rejected, and the conclusion is that the variables in the model are cointegrated, indicating the existence of a long-run equilibrium relationship among them.

Table 5:
Co-integration test results

F-Statistic	Significance Level	Lower Bound I(0)	Upper Bound I(1)	Remark
5.023	1%	3.41	4.68	Cointegrated
	5%	2.62	3.79	Cointegrated
	10%	2.26	3.35	Cointegrated

Source: Authors' Construction (2026)

ARDL – ECM Estimations

The unit root test showed a mix of variables integrated at level [I(0)] and first difference [I(1)], justifying the use of the ARDL model; subsequently, the bounds test confirmed a long-run relationship among the variables, supporting the ARDL–ECM framework. Although lag 4 was selected, lag 3 was preferred to avoid overparameterization and maintain a more parsimonious and stable model, given the limited sample size. Accordingly, the model was estimated; however, the dummy variable for the Russia–Ukraine war was dropped due to collinearity.

Results from Table 6 reveal that the error-correction term (ECT) is estimated at -1.097, confirming a statistically significant long-run relationship among the variables. The magnitude exceeding one in absolute value indicates overshooting adjustment, meaning that after a short-run deviation, sunflower exports temporarily move beyond the long-run equilibrium before gradually stabilising. This implies a relatively fast but potentially volatile adjustment process, highlighting that short-run shocks can lead to temporary over-corrections. Furthermore, results show that the dependent variable is well explained by the independent variables in the model, as confirmed by the R-square of 78.3%. Again, an adjusted R-

square of 56.7% tells us that even after accounting for model complexity, the explanatory variables explain most of the variation in the dependent variable.

Results further indicate that in the short run, first-differenced FDI (lnFDI-D1) has a statistically significant positive effect on sunflower export performance, with a coefficient of 4.800 ($p = 0.008$). This implies that a 1% increase in FDI growth leads to approximately a 4.8% rise in sunflower export performance. Similarly, lagged differenced FDI (lnFDI-LD) has a positive and significant effect, with a coefficient of 2.653 ($p = 0.028$), suggesting that a 1% increase in FDI in the previous period contributes to about a 2.7% increase in sunflower export performance. In the short run, the COVID-19 dummy, lagged export performance, and production quantity do not exhibit statistically significant effects on export performance, indicating that short-term changes in these variables do not meaningfully influence the outcome.

In the long run, world price (lnSWPrice) negatively affects sunflower export performance, with a coefficient of -1.045 ($p = 0.072$), implying that a 1% increase in world price leads to an approximate 1.05% decrease in exports, significant at the 10% level. Production quantity (lnPQ), on the other hand, is strongly significant, with a coefficient of 2.586 ($p = 0.012$), meaning that a 1% increase in production quantity raises sunflower exports by about 2.59%, highlighting production as a key long-run driver. Contrarily, FDI (lnFDI) has a negative long-run effect, with a coefficient of -3.330 ($p = 0.084$), suggesting that a 1% increase in FDI is associated with a 3.33% decrease in sunflower exports, significant at the 10% level. Like in the case of the short run, in the long run too, COVID-19 had no statistically significant influence on sunflower export performance, the same as trade liberalisation.

Table 6:
ARDL-ECM estimation results

D.lnEP		Coeff.	Std. Error	T-Statistic	P-Value
ADJ: lnEPL1		-1.097	0.289	-3.800	0.003
LR	lnTL	-2.102	2.230	-0.940	0.366
	lnSWP	-1.045	0.524	-1.990	0.072
	lnPQ	2.586	0.867	2.980	0.012
	lnFDI	-3.330	1.755	-1.900	0.084
	Dummy Covid19	-1.237	0.947	-1.310	0.218
SR	lnEP- LD	-0.365	0.258	-1.410	0.185
	lnPQ- D1	-2.405	1.567	-1.540	0.153
	ln FDI- D1	4.800	1.480	3.240	0.008
	lnFDI-LD	2.653	1.049	2.530	0.028
	Dummy Covid19-D1	0.929	0.910	1.020	0.329
	Cons	55.988	25.156	2.230	0.048
	R-squared		0.783		
	Adj. R-squared		0.567		
	Root MSE		1.086		

Source: FAO, WDI, WB (2026)

Model Diagnosis Tests

Autocorrelation Test

The presence of autocorrelation was tested using the Breusch–Godfrey LM test, which is appropriate because it can detect higher-order serial correlation and is applicable even when lagged dependent variables are included in the model. The test results show a chi-square value of 2.126 and a p-value of 0.0713. Since the p-value is greater than the conventional 5% significance level, the null hypothesis of no autocorrelation cannot be rejected. This implies that there is no evidence of serial correlation, thus the model is well specified as it satisfies the assumption of independent errors.

Normality Test

Testing for normality in time series analysis is essential to ensure that model residuals meet the assumptions required for valid inference, reliable hypothesis testing, and accurate confidence intervals. The Jarque–Bera normality test was used to examine whether the data follow a normal distribution. The results show a Jarque–Bera statistic of 0.9099 with a Chi-square probability (p-value) of 0.6345. Since the p-value is greater than the 5% significance level, the null hypothesis of normality cannot be rejected. This indicates that the residuals are normally distributed, suggesting that the model satisfies the normality assumption and therefore it is well-fitted and reliable.

Heteroskedasticity Test

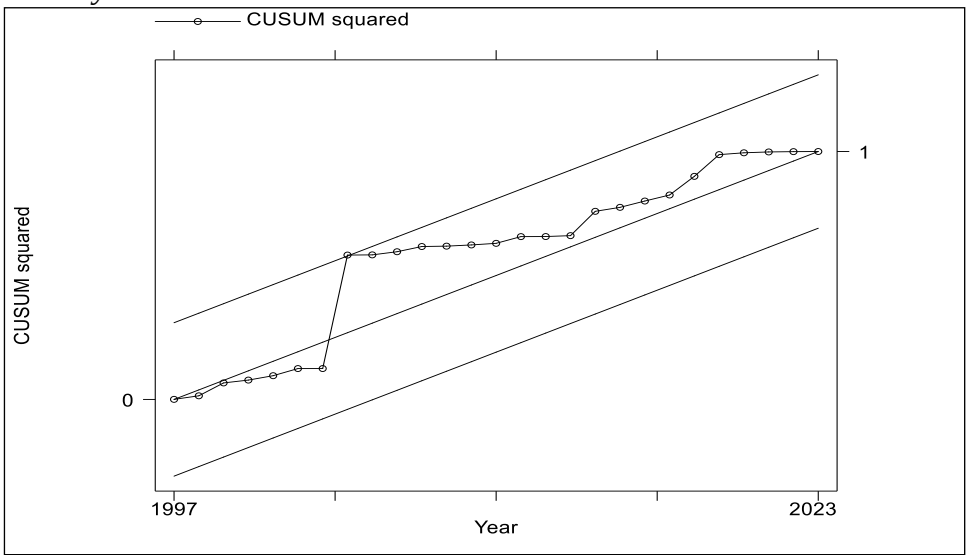
Heteroskedasticity was tested by the study to assess if the variance of the errors is constant, since unequal variances can produce inefficient estimates and compromise the validity of statistical inference. The Breusch–Pagan test (Cook–Weisberg test) was applied. The results report a chi-square value of 2.72 with a p-value of 0.099. Since the p-value exceeds the 5% significance level, the null hypothesis of homoskedasticity cannot be rejected. This implies that there is no evidence of heteroskedasticity, and therefore the model satisfies the assumption of constant variance of the residuals. This suggests that the model is well-specified, increasing confidence in the reliability of its estimates.

Stability Test

Figure 1 shows the CUSUM-squared test results for model stability over the study period. The decision criterion is that if the CUSUM-squared line stays within the upper and lower critical bounds, the null hypothesis of parameter stability cannot be rejected, indicating the model is stable. In this plot, the CUSUM-squared line remains entirely within the critical boundaries throughout the sample period, showing no structural breaks or instability. Therefore, the model is structurally stable over the period analysed.

Figure 1:

Stability test results



Source: STATA Output (2026)

DISCUSSION OF RESULTS

The study reveals distinct results on the factors for Tanzania's sunflower exports. However, they broadly mirror findings from existing empirical studies in one way and contradict in some instances. Additionally, the results remain consistent with the theoretical expectations of the OLI and H–O frameworks.

It is revealed that FDI exerts a positive effect in the short run, suggesting that new investment quickly alleviates supply bottlenecks, provides technology, and enhances market access. The positive effect of FDI on exports is consistent with the OLI paradigm, as foreign firms leverage ownership advantages, exploit Tanzania's location-specific benefits, and internalise production to enhance efficiency, competitiveness, and access to international markets. Again, the findings partially agree with Utouh & Ng'wana (2024), who found positive FDI effects on overall Tanzanian exports, but differ from Kabote & Tunguhole (2022), who reported negative FDI effects on cloves export. The possible reasons for the divergence can be crop-specificity, as sunflowers are largely consumed domestically and require targeted investment. By contrast, the variable has a negative long-run effect, suggesting that short-term benefits do not automatically translate into sustainable export growth. The long-run negative effect may be due to the dominance of foreign firms in the sunflower oil industry, prioritising domestic processing and value addition over raw export, thereby diverting output away from international markets.

The study has also pointed out production quantity as a good determinant of sunflower export performance, following its long-run positive impact. This is consistent with Luhwago (2023), Kabote & Tunguhole (2022), and Kibona et al. (2022), confirming that domestic production capacity is central to agricultural exports. This supports Heckscher–Ohlin (H-O) theory, which predicts that countries export goods intensive in abundant factors.

On the other hand, the negative influence of world prices contrasts with findings from other African studies. For instance, Bojang (2021) found that Gambia's groundnut exports responded positively to world prices, Achille et al. (2020) reported similar effects for Burkina Faso's sesame exports, and Tekalign and Goshu (2021) showed that world prices significantly enhance oilseed exports in Ethiopia. Tanzania's sunflower exports exhibiting an inverse long-run relationship with world prices suggest possible structural inefficiencies, weak market integration, or domestic supply constraints that limit the country's ability to benefit from favourable

international price movements. From the perspective of the OLI framework, this deviation implies that higher world prices may not effectively translate into strengthened location advantages.

On a different outlook, trade liberalisation and COVID-19 had no significant effect on Tanzania's sunflower export performance. Regarding trade liberalisation, findings align with Odebode & Aras (2020), who found that openness alone does not automatically increase exports without complementary supply-side improvements. By contrast, evidence from Nigeria (Etuk, 2021) and Ethiopia (Eshatu & Mahare, 2020) shows that liberalisation and tariff reductions can enhance exports, particularly when combined with better institutional policies, such as trade and agricultural policies and infrastructure support. On the other hand, the findings on that trade liberalisation align with the OLI framework, which suggests that policy changes alone do not automatically increase exports without the exporter having ownership and internalisation advantages to exploit location-specific opportunities.

CONCLUSION AND RECOMMENDATIONS

Conclusion

The study concludes that Tanzania's sunflower export performance is shaped by both short- and long-run factors, with production quantity and world prices emerging as the key long-term determinants, while foreign direct investment (FDI) provides immediate but short-lived benefits. Trade liberalisation and the COVID-19 pandemic are found to have no significant effect on export performance. By identifying these drivers, the study bridges the empirical and knowledge gaps on sunflower exports in Tanzania. To that end, the findings contribute to the body of knowledge by highlighting crop-specific determinants and offering a nuanced understanding of the interaction between short- and long-run dynamics, while also providing evidence to support targeted policy interventions.

Recommendations

Policy recommendations for enhancing Tanzania's sunflower exports address both immediate constraints and long-term growth drivers. Given that production quantity is identified as the main long-run determinant of exports, it is recommended that the government and all actors prioritise boosting domestic output through improved seeds, irrigation, and farmer support programs, while simultaneously investing in storage and processing infrastructure to ensure that increased production effectively

translates into exportable surplus by reducing post-harvest losses, among other things.

Similarly, since FDI has a positive effect in the short run but a negative effect in the long run, policies should focus on strategically guiding investment toward sustained export competitiveness. This can be achieved by promoting FDI that is explicitly linked to export-oriented activities, value addition, and technology transfer. In addition, the government should strengthen regulatory and incentive frameworks to encourage foreign firms to integrate into global value chains and maintain export commitments over time.

Furthermore, given that world price exerts a negative influence on sunflower export performance, policy should focus on addressing the constraints that limit the country's ability to respond effectively to favourable international market conditions. Specifically, the government should improve market information systems to ensure that producers and exporters are well informed about global price trends and can make timely decisions. In addition, policies aimed at strengthening export marketing, improving quality standards, and enhancing logistics efficiency are essential to reduce structural bottlenecks. Such measures would enable Tanzania to better align its export supply with global market signals, ensuring that increases in world prices translate into sustainable export gains rather than adverse outcomes.

Finally, since trade liberalisation has no impact on sunflower export performance, policy should focus on complementary measures that effectively connect domestic production to international markets. This includes negotiating favourable bilateral and regional trade agreements, investing in transport and logistics infrastructure, and enhancing export facilitation mechanisms, so that Tanzanian sunflower producers can reliably access and compete in global markets. All complementary measures are highly needed because it is clear that without such measures, trade liberalisation alone cannot significantly influence export performance.

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The Impact of Dairy Cooperatives on the Incomes of Smallholder Dairy Farmers in Muheza District, Tanzania

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Abstract
Th study assessed the impact of dairy cooperative membership on the income of smallholder dairy farmers in Muheza District, Tanzania. A cross-sectional research design was employed; the primary data were collected through structured questionnaires. Stratified and systematic random sampling techniques were used to select sample size of 99 respondents. Propensity Score Matching (PSM) was applied to estimate the causal effect of cooperative membership on farmers' income while controlling for observable characteristics. Matching quality was assessed using balance diagnostics to ensure comparability between members and non-members. The results indicate that members of the dairy cooperative (CHAWAMU) earned significantly higher average incomes (TZS 235,000) compared to non-members (TZS 118,000), suggesting a positive income effect of cooperative participation. The main limitation was the small sample size and single-district focus, which may not generalize to other dairy farming regions. Future research could extend coverage to more regions and increase samples to improve generalizability. While several studies focus on cooperative performance and market access, few have assessed the direct income effects on smallholder farmers in Tanzania. This study contributes to the literature on agricultural cooperatives in Tanzania by focusing on the income effect of dairy cooperative membership among smallholder farmers in Muheza District. While previous studies have discussed cooperative performance, access to inputs, and market participation, fewer have empirically estimated the direct contribution of dairy cooperative membership to smallholder income at the local level. The findings therefore provide context-specific evidence on the role of dairy cooperatives in improving rural livelihoods.

Keywords: *Dairy Cooperative, Smallholder Farmers, Participation, Income*

INTRODUCTION

Dairy cooperatives play a notable contribution in the development of smallholder dairy farming systems by facilitating access to markets, training, credit, and production inputs (Chenyambuga et al., 2021). Through these institutional arrangements, farmers are able to reduce transaction costs and improve their participation in formal markets, which contributes to better economic outcomes (Mutua et al., 2022). Empirical evidence further indicates that cooperative membership is associated with improvements in milk productivity due to enhanced management practices and access to support services (FAO, 2023). Despite these potential benefits, productivity among smallholder dairy farmers in Tanzania remains low, with average milk yields of about 4 litres per cow per day, reflecting persistent structural and technical constraints in the sector (Mbwile, 2022).

Globally, milk production is increasing at an annual rate of 2.3 percent due to rising demand for animal protein and population growth (FAO, 2023). However, productivity growth remains uneven across regions due to differences in infrastructure and institutional support (Lewis, 2024). Developing countries continue to face lower productivity compared to developed regions due to limited access to modern technologies and services (Lewis, 2024).

In Africa, dairy production contributes approximately 4 percent of global milk output despite increasing demand (FAO, 2023). Low productivity persists due to feed shortages, which account for 60 percent of production constraints in smallholder systems (Mugisha, 2020). Climate variability further reduces dairy productivity by affecting feed availability and livestock health (Geglitz, 2024). As a result, dairy production growth in Africa remains at about 1.8 percent per year, which is insufficient to meet domestic demand (FAO, 2023).

In Tanzania, annual milk production is estimated at 3.4 billion litres (Ministry of Livestock and Fisheries, 2023). This level of production meets about 62 percent of national demand, leaving a supply deficit (Ministry of Livestock and Fisheries, 2023). Smallholder farmers produce an average of 4 litres of milk per cow per day due to limited access to improved breeds and quality feed (Mbwile, 2022). Government interventions such as improved breeding programs, veterinary services, and farmer training have been implemented to improve productivity (Maganga, 2024).

Dairy cooperatives play a key role in improving milk marketing and reducing inefficiencies in the dairy value chain (Hangi, 2021). Cooperative participation reduces post-harvest milk losses by 18 percent through improved handling and storage practices (Mchau, 2023). Cooperative marketing also increases farm-gate milk prices by 17 percent due to collective bargaining and quality improvement (Chenyambuga et al., 2021). These benefits are important for smallholder farmers who face high transaction costs and limited access to reliable markets (Lewis, 2024).

Despite these benefits, there is limited empirical evidence on the direct impact of dairy cooperatives on smallholder farmers' income in Tanzania (Mwita, 2021). Most studies focus on access to services rather than estimating income effects using rigorous quantitative methods (Chenyambuga et al., 2021). There is also limited district-level evidence in Muheza District on whether cooperative membership leads to measurable income differences (Geglitz, 2024).

This study therefore examines the relationship between dairy cooperative membership and income among smallholder dairy farmers in Muheza District, Tanzania (Dickson, 2022). The study applies logistic regression, Propensity Score Matching, and Difference-in-Differences to estimate the income effects of cooperative membership while controlling for observable differences among farmers

Theoretical Literature review

This study is guided by the Expected Utility Theory, originally associated with Bernoulli and later formalized by Von Neumann and Morgenstern, which explains decision-making under conditions of uncertainty by assuming that individuals choose the alternative that offers them the highest expected utility (McFadden, 1974). In agricultural household decision-making, the theory is useful for explaining why farmers choose to participate in one institutional arrangement rather than another when they expect differences in welfare outcomes.

In the context of this study, a smallholder dairy farmer decides whether to join a dairy cooperative after comparing the expected benefits of cooperative membership with those of remaining outside the cooperative. These expected benefits may include better milk prices, improved market access, access to training, credit, extension services, veterinary support, and collective bargaining power, all of which can influence farm productivity and household income (Abdulai & Huffman, 2020; Chenyambuga et al.,

2021). If the farmer expects that the utility derived from cooperative membership is greater than the utility from non-membership, participation becomes the preferred option.

The theory further assumes that these decisions are shaped by farmer-specific and context-specific characteristics. Such characteristics include education, awareness, herd size, household resources, distance to the cooperative, and access to services, all of which may affect how individual farmers perceive the costs and benefits of joining a cooperative (Maddala et al., 2001; McFadden, 1974). Farmers with better access to information and productive resources may perceive cooperative membership as more rewarding, while those facing high transaction costs or limited awareness may be less likely to participate.

Therefore, Expected Utility Theory provides an appropriate framework for this study because it helps explain both the determinants of participation in dairy cooperatives and the expectation that farmers join cooperatives in order to improve their welfare, especially through higher and more stable income. In this way, the theory directly links cooperative participation decisions with the central outcome of interest in this study, namely farmers' income.

Empirical Literature review

Several studies have analyzed how dairy cooperatives impact the incomes of smallholder dairy farmers in various countries. Ma and Abdulai (2021) analyzed the smallholder farmers' dairy cooperative participation determinants in China through the application of a probit model. The theoretical perspective applied was that of social capital theory and simple random sampling was adopted to collect data from a sample size of 200 respondents. It is also found that social capital and network greatly influence the dairy cooperatives' adoption, because it increases the trust between the members and leaders, as well as the trust to the service (including the fairness of price and the convenience of milk collection). In addition, distance from the cooperative centre is a facilitating factor for participation, which makes perfect sense as it diminishes the logistical burden on the farmers, but on the other hand the farthest distances and the smallest infrastructure are argued to be impediments for the dairy farmer to join the cooperative.

Tefera (2022) studied on the determinants of smallholder farmers' participation in dairy cooperatives in Ethiopia employing logistic

regression models. The theoretical perspective employed was resource-based view (RBV) theory, and stratified random sampling technique was used to select 99 respondents. The study revealed that education, resources of household and information access are positively significant on the decision to join the cooperative. Literate farmers are more knowledgeable about how cooperatives reduce risk and increase income. Also, affluent households, particularly dairying households are presumably such households contribute the most to the household income and have requisite resources to fulfil conditions of cooperatives.
Bekele (2021) analyzed the effect of gender on participation of the smallholder farmers in dairy cooperatives in Ethiopia by employing the regression model. The theory adopted was resource-based view theory, and the study purposively sampled 150 respondents. The meta-analysis also revealed that gender relations are an important factor in male-headed households, which had more attendance.

Njiru (2022) analyzed the determinants of participation in dairy cooperatives in Kenya by employing descriptive statistics, and multinomial logistic regression models. The theory applied was transaction cost theory and the sampling technique simple random sampling was used to choose 200 respondents. Gender, age, distance to market were determinants of smallholder farmers' participation in milk producer's cooperative. Male-headed households tend to have more access to resources and thus are more deserving candidates for cooperatives. Positive significant impact of cultural variables on cooperative membership, expressing community cultural mindsets toward collective action was also discovered. Cooperatives may minimize the transaction costs, however, challenges like late payments and competition from the informal milk markets still prevail.

Lewis (2024) studied the contribution of dairy cooperatives to income stability among smallholder farmers through linear and logit regression models in investigating the determinants of income stability. The theory relevant in this study was the transaction costs theory and the sampling technique used was stratified random sampling with a sample size of 150 respondents. The cooperative improves income stability through collective bargaining and the provision of inputs such as veterinary services and quality feed.

Priscilla and Chauhan (2023) investigated the determinants of farmers' participation in dairy cooperatives in India employing descriptive statistics

and multinomial logistic regression model. The theory was social dependence theory and simple random sampling was employed to draw a sample size of 120 respondents. They found that members of dairy cooperatives receive better price for milk and they had more stable income because of collective bargaining and provision of inputs such as crossbred dairy cows and extension services by the cooperative. Dairy cooperatives also contribute to enhancing the livelihoods of smallholder farmers especially in such places where being a member of a cooperative enables them to avail better market, bargaining power and resources.

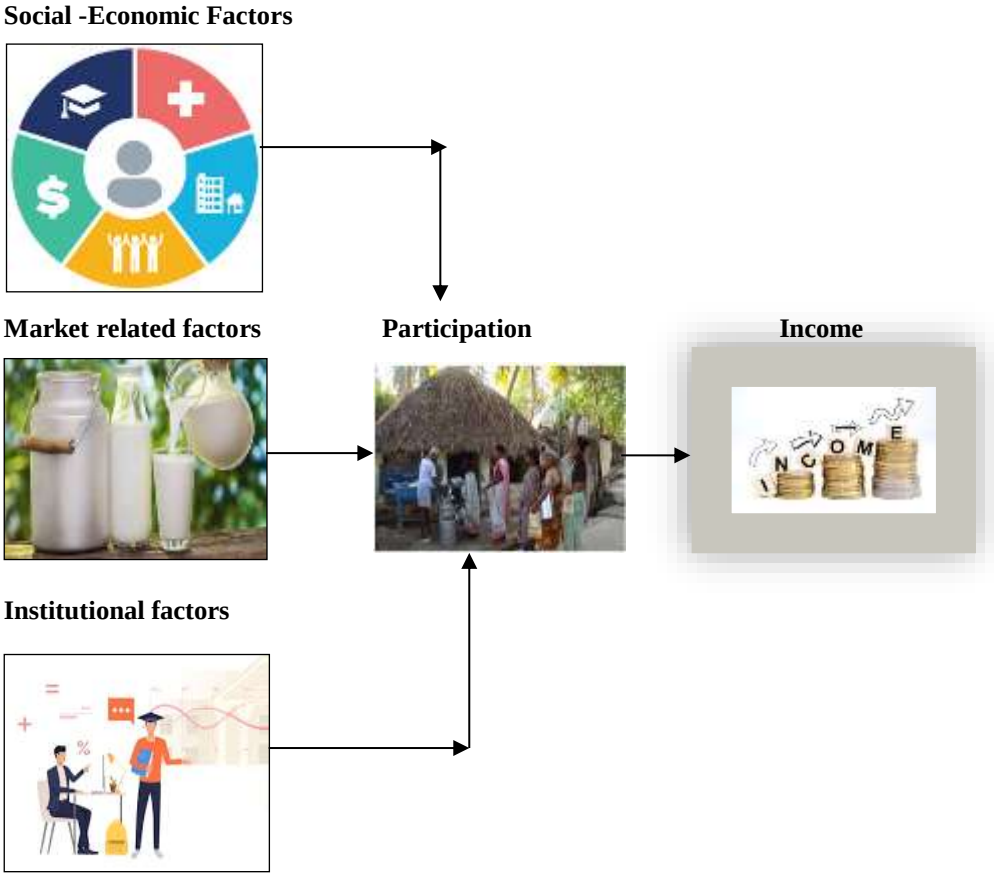
Mutua et al. (2022) analyzed the economic effects of dairy cooperatives on smallholder farmers in Kenya using regression analysis. The theory was supplying chain management theory and the sample size was 180 respondents elected through stratified random sampling. The review revealed that the dairy cooperatives enhance the income of small-scale farmers through access to veterinary activities, quality feed and good management of the farm. It reveals that collective efforts organize more coherent and efficient supply chains, which are good for farmers and the local economy, for instance providing means to enhance production efficiency and income stability.

Rahman and Ahmed (2023) explored rural women empowerment in Bangladesh through cooperatives by a series of descriptive statistics followed by multinomial regression analysis. The theory that was employed was microfinance theory and the study adopted the purposive sampling technique to draw a sample size of 130 respondents. The findings also revealed that cooperatives are a means of economic empowerment for women as they can access micro credit and training programmes. Membership contributes to household welfare by promoting better resource use.

Overall, existing studies show that cooperative participation is influenced by farmer characteristics, resource access, and institutional factors, while cooperative membership is often associated with improved livelihood outcomes (Tefera, 2022; Njiru, 2022; Lewis, 2024). However, much of the literature focuses on determinants of participation or general welfare outcomes rather than directly estimating the income effect of dairy cooperative membership using member and non-member comparison at district level (Chenyambuga et al., 2021; Mwita, 2021). Furthermore, studies highlight the need for localized empirical evidence in East Africa to better understand cooperative impacts on rural livelihoods (Geglitz,

2024). This study therefore addresses this gap by examining the impact of dairy cooperative on incomes of smallholder dairy farmers in Muheza District, Tanzania.

Figure:1
Conceptual framework



Source: Author's construction, (2026)

METHODOLOGY

The study was guided by the positivism paradigm, which emphasizes objectivity, empirical observation, and quantifiable evidence. The use of positivism ensured that the research maintained a structured and scientific approach, focusing on measurable variables such as cooperative participation, income levels, and services accessed by farmers (Chauhan, 2023).

A quantitative approach was employed in this study because of its systematic way of collecting and analyzing numerical or non-verbal data from respondents. Employing a quantitative method is essential for effectively addressing the specific objectives of the research, as it allows for precise measurement and statistical analysis to uncover patterns and relationships (Bryman, 2019).

This study primarily employed a cross-sectional research design based on survey data collected from cooperative members and non-members at a single point in time. The design was appropriate because it allowed comparison of socioeconomic characteristics and income outcomes between the two groups using structured quantitative data (Bryman, 2019). The study also incorporated retrospective information on income before and after cooperative participation to support comparative analysis. However, because the data were not collected through repeated survey rounds tracking the same households over time, the study recognized as as cross-sectional with retrospective comparison rather than a full longitudinal panel design. Also, the study employed stratified and systematic random sampling to ensure the sample is representative of the target population. This approach facilitated drawing inferences and conclusions about the population from the sample (Creswell, 2019).

A survey questionnaire was used to collect information from smallholder dairy farmers in the study area. The questionnaire consisted of closed-ended questions, enabling respondents to select answers that align with the study's objectives, and open-ended questions, allowing them to provide additional insights based on their experiences and perspectives. To ensure inclusivity and accuracy, the questionnaire was designed in English but was later translated into the Swahili language to capture accurate understanding from the respondents during the data collection.

Ethical considerations were carefully addressed throughout the study. Participants were fully informed about the study's objectives, including its purpose, benefits, and their voluntary role in the research, ensuring that participants understand and agree to their involvement in data collection. Confidentiality and privacy were strictly maintained, with data used inclusively for academic purposes.

Analytical Model

The study employed Propensity Score Matching (PSM), Difference-in-Differences (DiD), and Binary Logistic Regression models to assess the

impact of dairy cooperatives on the income of smallholder dairy farmers in Muheza District. PSM was used to construct a comparison group of non-member farmers with similar observable characteristics, reducing selection bias and enabling estimation of the average treatment effect on the treated (ATT). DiD was applied to capture changes in outcomes over time between treatment and control groups, controlling for time-invariant unobserved heterogeneity and strengthening causal inference. Binary logistic regression was used to identify factors influencing cooperative membership by modeling the likelihood of being a member or not. These methods provided a comprehensive framework for understanding the impact and determinants of cooperative participation.

To analyze the factors determining participation in dairy co-operatives, a binary logistic regression model was used. The logistic regression model assumes that the dependent variable is binary, where the outcome variable indicates participation in a dairy cooperative (1 for participants and 0 for non-participants).

$$Pr(Pi = 1|Zi) = ffori = 0,1 \quad \text{..... (1)}$$

$$Logit\ Y_t = \ln\left(\frac{P_i}{1-P_i}\right) = \beta o + \sum_{i=1}^{m} \beta_i D_i i + \sum_{j=1}^{n} \beta_j j X_j + \varepsilon \quad \text{.....(2)}$$

Whereby

m = number of dummy variables (D_1 to D_{10})

n = number of continuous variables (X_{11} to X_{18})

ε = Error term

Y_t = (1 if a farmer participates,0 otherwise)

B_0 = Intercept term

D_1 = Gender (1 if Female, 0 if Male)

D_2 = Marital Status (1 if Single, 2 if married, 3 if Widow, 4 if divorced)

D_3 = Farmer's Education Level (1 if Primary, 2 if Secondary, 3 if Tertiary, 4 if University, 5 if No Formal Education)

D_4 = Access to Training (1 if yes, 0 if no)

D_5 = Access to Credits (1 if yes, 0 if no)

D_6 = occupation (1 if Formal Employment, 2 if Informal Employment, 3 if Self-Employment)

D_7 = Access to Extension Services (1 if yes, 0 if no)

D_8 = awareness (1 if yes, 0 if no)

D_9 = Membership in Dairy Cooperatives (1 if yes, 0 if no)

X_{10} = Farming Experience (Number of years in dairy farming)

X_{11} = Land Size (Number of acres on the farm).

X_{12} = (Farmer's Age in years)

X_{13} = Herd Size (Number of dairy cattle owned by the farmer)

X_{14} = Transaction Costs (Measured by storage costs)
X_{15} = Distance to the Co-operative (measured in km)
X_{16} = Household Size (Number of members in the household)
X_{17}= Land Size (Number of acres on the farm).

Propensity Score Matching (PSM)

Propensity Score Matching (PSM) was employed in this study to reduce observable selection bias arising from systematic differences between cooperative members and non-members. In non-experimental studies such as this one, farmers are not randomly assigned to cooperative membership, and therefore members may differ from non-members in characteristics that also influence income outcomes, such as education, herd size, access to training, and access to credit (Edward, 2021). As a result, direct comparison of income between the two groups may produce biased estimates if these differences are not adequately controlled (Duvendack, 2010).

The propensity score is defined as the probability that a farmer participates in a dairy cooperative given a set of observed covariates (Edward, 2021). In this study, a binary logistic regression model was used to estimate the propensity score for each farmer based on relevant socioeconomic, institutional, and farm-level characteristics. These variables included education, training, herd size, access to credit, awareness, and distance to the cooperative, which have been shown in previous studies to influence cooperative participation (Tefera, 2022; Njiru, 2022).

After estimating the propensity scores, cooperative members (treated group) were matched with non-members (control group) who had similar propensity scores using the Nearest Neighbour Matching (NNM) technique. This matching approach ensures that comparisons are made between farmers with comparable observable characteristics, thereby improving the reliability of the estimated income differences (Edward, 2021). The main parameter of interest is the Average Treatment Effect on the Treated (ATT), which measures the average difference in income between cooperative members and matched non-members.

The validity of the PSM approach depends on two key assumptions. The first is the Conditional Independence Assumption (CIA), which states that, conditional on observed characteristics, cooperative membership is independent of potential income outcomes (Duvendack, 2010). This implies that once relevant observable factors are controlled for, differences

in income between members and non-members can be associated with cooperative participation. The second is the Common Support Condition, which requires sufficient overlap in propensity scores between treated and control groups so that meaningful matching can be achieved (Edward, 2021). Observations that fall outside the region of common support are excluded to ensure reliable estimation.

while PSM improves comparability between cooperative members and non-members, it only controls for observable characteristics and cannot eliminate bias arising from unobserved factors (Duvendack, 2010). Therefore, the estimated ATT should be interpreted as the income difference associated with cooperative membership after controlling for observable characteristics rather than as definitive proof of causality.

$Y^0, Y^1 \coprod M|\ X\ (Unconfoundedness), \forall\ X$ .....(3)

Where $\coprod$ is representing independence, if this holds, then it follows

$(Y^0|X, M\ =\ 1)\ =\ (Y^0|X, M\ =\ 0)\ =\ (Y^0|X)$ .....(4)

and $(Y^1|X, M\ =\ 1)\ =\ (Y^1|X, M\ =\ 0)\ =\ (Y^1|X)$ .....(5)

Implying that, given a set of observable covariates X that are not affected by treatment (membership), the potential outcome of dairy co-operative non-members and members would have the same distribution, independent of membership.

Also, common support or overlap condition to ensurer that both treated and controls have a common range of propensity scores given X

$0\ <\ Pr\ (M\ =\ 1|X)\ <\ 1\ (Overlap)$ ..... (6)

This implies that, given a set of observable covariates X that are not influenced by treatment (membership), the potential outcomes for dairy cooperative non-members and members would have the same distribution, regardless of their membership status.

Difference in difference Model (DiD)

In addition to Propensity Score Matching, study employed a Difference-in-Differences (DID) framework to examine changes in income between cooperative members and non-members over time. The DID approach compares the difference in income before and after the intervention for the treatment group with the corresponding difference for the control group, thereby controlling for common trends that affect both groups (Wooldridge, 2010).

In this study, the treatment group consists of farmers who are members of the dairy cooperative, while the control group consists of non-members. The DID estimator captures whether the change in income for cooperative members differs from the change observed among non-members during the same period. This approach is useful for strengthening inference by accounting for time-invariant unobserved factors that may influence both groups (Wooldridge, 2010). In this study, the DID results complement the PSM findings by providing additional insight into income changes associated with cooperative participation.

The DiD model is specified as

$$Y_{it} = \beta_{0+}\beta_1 Treat_{i+}\beta_2 Post_{t+}\beta_3(Treat_i \times Post_t)_{+\gamma'} xi_{t+} \epsilon_{it} \quad (7)$$

where;

Y_{it} = household income for farmer$_i$ at time$_t$

$Treat_i$ = If a farmer$_i$is a cooperative member (treatment), 0 otherwise

$Post_t$ = 1 if time is after joining the cooperative, 0 for before

$(Treat_i \times Post_t)$= interaction term (DiD effect)

ϵ_{it} =Error term

xi_t = vector of control variables

γ= coefficients for these controls

Table 1:
Conditional mean estimates from the DID regression model

Status	Post-treatment	Pre-treatment	Difference
Treatment	$\beta_0+\beta_1+\beta_2+\beta_3$	$\beta_0+\beta_2$	$\beta_1+\beta_3$
Control	$\beta_0+\beta_3$	β_2	β_3
Difference	$\beta_1+\beta_2$	β_2	β_3

Table 1 Above presents the average results for the treatment and control group pre- and post-intervention employing the DID model. The treatment group's time-differencing away from the intervention represents the general time effect and an additional intervention effect, and the control group's time change reflects only the common time effect. The DID estimate is calculated as the difference between these two changes, enabling the study to "difference out" baseline discrepancies and common trends and to identify the true intervention effect.

Limitations of the Methodology

Despite the strengths of the analytical approach, some limitations should be acknowledged. First, the study is based on a relatively small sample drawn from a single district, which may limit the generalizability of the findings beyond the study area. To address this, the sampling procedure was carefully designed using stratified and systematic random techniques to ensure that the selected respondents adequately represent the different categories of smallholder dairy farmers within Muheza District. In addition, the study focuses on providing reliable evidence within the specific context of the district, and the findings are interpreted accordingly while offering useful insights that may be relevant to similar settings. Second, the use of observational data introduces potential selection bias between cooperative members and non-members; to mitigate this, Propensity Score Matching (PSM) was applied to control for observable differences and improve comparability, although unobserved factors may still remain. Third, the Difference-in-Differences (DID) analysis relies on retrospective income data rather than a true panel dataset, which may introduce recall bias; this was addressed by using DID as supportive evidence alongside PSM rather than as a standalone causal estimator (Creswell, 2019). Overall, these strategies help strengthen the credibility of the findings, although results are interpreted cautiously as associations rather than definitive causal effects.

FINDINGS

Table 2:

Summary of the descriptive statistics for Individual demographic characteristics

	Dairy Co-operative membership					
	Members		**Non-members**		**Total**	
	n	**%**	**n**	**%**	**n**	**%**
Sex						
Male	29	69.05	13	30.95	42	42.42
Female	37	64.91	20	35.09	57	57.58
Marital status						
Single	16	66.67	8	33.33	24	24.24
Married	16	80.00	4	20.00	20	20.20
Divorced	22	62.86	13	37.14	35	35.35
widowed/Widower	12	60.00	8	40.00	20	20.21
Education level						
No formal education	14	73.68	5	26.32	19	19.19
Primary education	12	66.67	6	33.33	18	18.18
Secondary education	10	66.67	5	33.33	15	15.15
Tertiary education	15	60.00	10	40.00	25	25.25
University education	15	68.18	7	31.82	22	22.23
Employment status						

	Dairy Co-operative membership					
	Members		Non-members		Total	
	n	%	n	%	n	%
Not employed	34	68.00	16	32.00	50	43.44
Employed	32	65.31	17	34.69	49	56.56
Occupation						
Crop farming only	8	53.33	7	46.67	15	15.15
Crop farming & Dairy	23	65.71	12	34.29	35	35.35
Business/entrepreneur	17	62.96	10	37.04	27	27.27
Mining	18	81.82	4	18.18	22	22.23
Total	**66**	**66.67**	**33**	**33.33**	**99**	**100**

Source: Research Findings, (2026**)**

Table 2 above shows that out of 99 respondents, 66.67% were members of dairy cooperatives and 33.33% were non-members. Among members, 69.05% were male and 64.91% were female. Most respondents were married or divorced, with cooperative membership highest among married individuals (80%). Education-wise, membership was common across all levels, with tertiary and university-educated respondents showing moderate participation (60% and 68.18%, respectively). Employment status was nearly balanced, with 68% of the unemployed and 65.31% of the employed participating in cooperatives. In terms of occupation, those involved in mining (81.82%) and mixed crop-dairy farming (65.71%) had higher membership rates compared to those in crop farming alone or business.

Table 3:
Description for continuous variables

Variable	Group	Observations	Mean	t-statistic	p-value
Age (Yrs)	Control	66	38.47		
	Treatment	33	50.66	2.88	2.58
Household Size	Control	66	4.89		
	Treatment	33	6.19	2.42	1.97
Income (Tzs)	Control	66	151,264		
	Treatment	33	275,964	4.95	0.000***
Herd Size	Control	66	19.53		
	Treatment	33	26.44	3.04	0.85
Land Size (Acres)	Control	66	6.00		
	Treatment	33	8.09	2.52	2.04
Experience (yrs)	Control	66	7.76		
	Treatment	33	11.69	3.92	0.98

**** p<.01, ** p<.05, * p<.1*
Source: Research Findings, (2026)

The results in Table 3 show that cooperative members had higher average values for age, household size, income, herd size, land size, and farming experience compared to non-members. Among these variables, only the difference in income was statistically significant at the 1 percent level. This suggests that cooperative members and non-members differed in their baseline characteristics, particularly in income, before any matching was performed. Therefore, the observed income difference cannot be interpreted as the effect of cooperative membership alone, as it may reflect pre-existing differences between the two groups (Duvendack, 2010). This justifies the application of Propensity Score Matching to improve comparability between members and non-members (Edward, 2021).

Table 4:
Binary logistic estimations of demographic and social-economic factors influencing smallholder Dairy farmer's engagement in Dairy co-operative

	Binary logistic Estimates			Marginal Effect			
Variable	**Coefficient**	**Std.error**	**Pr(>|z|)**	**Coefficient**	**Std. Error**	**Pr(>|z|)**	**Significance**
Intercept	1.151	3.563	0.747				
Education level							
Primary education	1.246	1.603	0.031	0.187	0.104	0.031	**
Secondary education	-.81	1.183	0.494	-0.103	0.129	0.423	
Tertiary education	-3.617	1.572	0.221	-0.065	0.093	0.487	
University	-2.163	1.307	0.198	-0.319	0.104	0.212	
Sex							
Male	0.272	0.777	0.727	0.026	0.075	0.725	
Age	-.002	0.027	0.941	-0.000	0.003	0.941	
Marital status							
Married	0.228	1.208	0.85	0.020	0.105	0.021	**
Widow/widower	-2.093	1.276	0.101	-0.200	0.110	0.741	
Divorced	-1.945	1.084	0.073	-0.186	0.091	0.041	**
Training	1.013	0.773	0.05	0.099	0.072	0.013	**
Herd Size	0.059	.034	0.086	0.006	0.003	0.066	*
Transaction cost	0.005	.004	0.226	0.000	0.000	0.206	
Access to Credit	2.575	1.011	0.011	0.251	0.085	0.003	***
Distance	-0.046	.032	0.019	-0.212	0.003	0.001	***
Occupation							
Fishing	0.266	0.092	0.342	0.006	0.086	0.445	
Mining	0.004	0.003	0.152	0.122	0.002	0.251	
Access to Extension	0.708	0.96	0.271	0.069	0.093	0.456	
Household size	-.181	0.133	0.175	-0.018	0.012	0.157	

	Binary logistic Estimates			Marginal Effect			
Variable	**Coefficient**	**Std.error**	**Pr(>|z|)**	**Coefficient**	**Std. Error**	**Pr(>|z|)**	**Significance**
Awareness	-1.432	0.824	0.082	0.140	0.075	0.063	*
Membership	0.048	0.875	0.2	0.005	0.085	0.957	
Farming Experience	0.005	0.039	0.894	0.001	0.004	0.894	
Land Size	0.106	0.077	0.168	0.010	0.007	0.151	
Production	0	0.001	0.532	0.000	0.000	0.529	
Income	0.003	0.211	0.173	0.211	0.003	0.521	

Mean dependent var	0.667	SD dependent var	0.474
Pseudo r-squared	0.520	Number of obs	99
Chi-square	65.583	Prob > chi2	0.000

**** p<.01, ** p<.05, * p<.1*

Source: Research findings, (2026)

The findings from Table 4 above suggest that socio-economic and institutional factors significantly influence smallholder dairy farmers' engagement in dairy cooperatives in Muheza District. The results from Table 4 were interpreted based on marginal effects, which indicate the change in the probability of cooperative membership associated with each explanatory variable. The coefficient of the marginal effect for the explanatory variable primary education ($\beta = 0.187$) was found to be positively and significantly different from zero at the 5% level as p value < 0.05 ($p = 0.031$). This indicates that farmers with primary education are more likely to be dairy cooperative members. The marginal effect of 0.187 indicates that, on average, farmers with primary education have an 18.7% higher likelihood of being cooperative members compared to those with higher levels of education, while controlling for other variables. This finding is consistent with Tefera (2022), who reported that education enhances farmers' ability to access information and participate in cooperatives. This finding is also aligned with Njiru (2022), who reported that education level positively influences farmers' participation in farmer organizations. This finding is consistent with Muriithi (2021), who reported that educated farmers are more likely to engage in collective action in agricultural systems. The coefficient of the marginal effect for the explanatory variable marital status (married) ($\beta = 0.020$) was found to be positively and significantly different from zero at the 5% level as p value < 0.05 ($p = 0.021$). This indicates that married farmers are more likely to be dairy cooperative members. The marginal effect of 0.020 indicates that, on average, married farmers have a 2.0% higher likelihood of being cooperative members compared to unmarried farmers, while controlling for other variables. This finding is consistent with Njiru (2022), who reported that household characteristics such as marital status influence participation in cooperatives. This finding is also aligned with Abate (2020), who reported that married farmers are more likely to participate in collective organizations due to increased household responsibilities. This finding is consistent with Fischer and Qaim (2012), who reported that household structure plays an important role in farmer group participation decisions. Similarly, the coefficient of the marginal effect for the explanatory variable marital status (divorced) ($\beta = -0.186$) was found to be negatively and significantly different from zero at the 5% level as p value < 0.05 ($p = 0.041$). This indicates that divorced farmers are less likely to be dairy cooperative members. The marginal effect of -0.186 indicates that, on average, divorced farmers have an 18.6% lower likelihood of being cooperative members compared to single farmers, while controlling for other variables. This finding is consistent with Abate (2020), who reported

that weaker household structures reduce participation in cooperatives. This finding is also aligned with Fischer and Qaim (2012), who reported that social and family stability influences cooperative membership. This finding is consistent with Bernard and Spielman (2009), who reported that social capital and household composition affect participation in farmer organizations. The coefficient of the marginal effect for the explanatory variable training ($\beta = 0.099$) was found to be positively and significantly different from zero at the 5% level as p value < 0.05 ($p = 0.013$). This indicates that farmers who have been trained are more likely to be dairy cooperative members. The marginal effect of 0.099 indicates that, on average, farmers who received training have a 9.9% higher likelihood of being cooperative members compared to those who have not received training, while controlling for other variables. This finding is consistent with Molla (2024), who reported that extension and training enhance cooperative membership in Ethiopia. This finding is also aligned with Jason (2023), who reported that training has a direct influence on the uptake of joining dairy cooperatives in Uganda. This finding is consistent with Bwire (2022), who reported that farmers who receive training have enhanced agricultural and management skills of finance that boost their chance to join cooperatives in Tanzania. The coefficient of the marginal effect for the explanatory variable herd size ($\beta = 0.006$) was found to be positively and significant at the 10% level as p value < 0.1 ($p = 0.066$). This indicates that farmers with larger herd sizes are more likely to be cooperative members. The marginal effect of 0.006 indicates that, on average, an increase in herd size increases the likelihood of cooperative membership by 0.6%, while controlling for other variables. This finding is consistent with Bernard and Spielman (2009), who reported that asset ownership increases the likelihood of participation in cooperatives. This finding is also aligned with Abate (2020), who reported that farmers with larger farm sizes are more likely to engage in collective action. This finding is consistent with Verhofstadt and Maertens (2015), who reported that production scale influences participation in farmer organizations. The coefficient of the marginal effect for the explanatory variable access to credit ($\beta = 0.251$) was found to be positively and highly significant at the 1% level as p value < 0.01 ($p = 0.003$). This indicates that farmers who have access to credit are more likely to be dairy cooperative members. The marginal effect of 0.251 indicates that, on average, farmers with access to credit have a 25.1% higher likelihood of being cooperative members compared to those without access to credit, while controlling for other variables. This finding is consistent with Abate (2020), who reported that access to financial services increases participation in cooperatives. This

finding is also aligned with Bernard and Spielman (2009), who reported that institutional support such as credit enhances farmers' engagement in collective action. This finding is consistent with Fischer and Qaim (2012), who reported that access to credit improves farmers' ability to participate in market-oriented groups. The coefficient of the marginal effect for the explanatory variable distance (β = -0.212) was found to be negatively and highly significant at the 1% level as p value < 0.01 (p = 0.001). This indicates that farmers located farther from cooperative centers are less likely to be dairy cooperative members. The marginal effect of -0.212 indicates that, on average, an increase in distance reduces the likelihood of cooperative membership by 21.2%, while controlling for other variables. This finding is consistent with Verhofstadt and Maertens (2015), who reported that distance to market negatively affects participation in farmer organizations. This finding is also aligned with Abate (2020), who reported that proximity to services enhances cooperative membership. This finding is consistent with Bernard and Spielman (2009), who reported that transaction costs such as distance reduce farmers' participation in cooperatives. The coefficient of the marginal effect for the explanatory variable awareness (β = 0.140) was found to be positively and significant at the 10% level as p value < 0.1 (p = 0.063). This indicates that farmers with higher awareness are more likely to be dairy cooperative members. The marginal effect of 0.140 indicates that, on average, farmers who are aware have a 14.0% higher likelihood of being cooperative members compared to those who are not aware, while controlling for other variables. This finding is consistent with Bwire (2022), who reported that awareness plays a key role in influencing farmers' participation in cooperatives. This finding is also aligned with Molla (2024), who reported that information access enhances cooperative membership decisions. This finding is consistent with Jason (2023), who reported that farmers with better awareness of cooperative benefits are more likely to join and participate in dairy cooperatives.

Impact of cooperative membership on smallholder Dairy farmers' income

Propensity Score Matching (PSM) was used to address selection bias by matching cooperative members and non-members, ensuring that any observed income differences are attributable to cooperative participation rather than other factors.

Table 5:
Summary of Treatment Status

Dairy co-operative membership Frequency	Percent	Cum. percent
Non-members	66 66.67	66.67
Members	33 33.33	100.00
Total	99 100	

Source: Research findings, (2026)

The table 5 above presents the distribution of dairy cooperative membership among respondents. Out of the total sample of 99 farmers, 66 were non-members, making up 66.67%, while 33 were members, accounting for 33.33%. This indicates that the majority of the sampled smallholder dairy farmers had not joined dairy cooperatives.

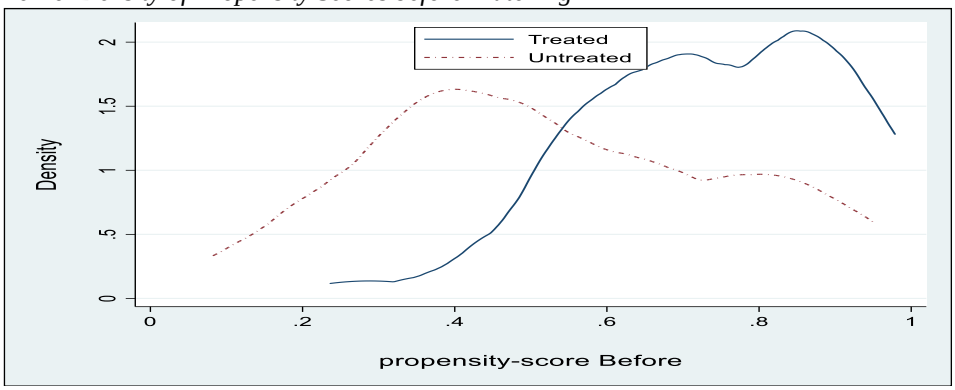
Table 6:
Common support for propensity score matching

Treatment assignment	Off support	On support	Total
Untreated	0	66	66
Treated	4	29	33
Total	4	95	99

Source: Research findings, (2026)

The table 6 above shows the distribution of treatment and control groups under the common support condition used for propensity score matching. Out of the 99 observations, 95 fell within the region of common support [.2366244, .97863127], with 66 untreated (non-members) and 29 treated (members). 4 treated observations fell outside the common support and were excluded from further analysis, ensuring reliable estimation of the treatment effect.

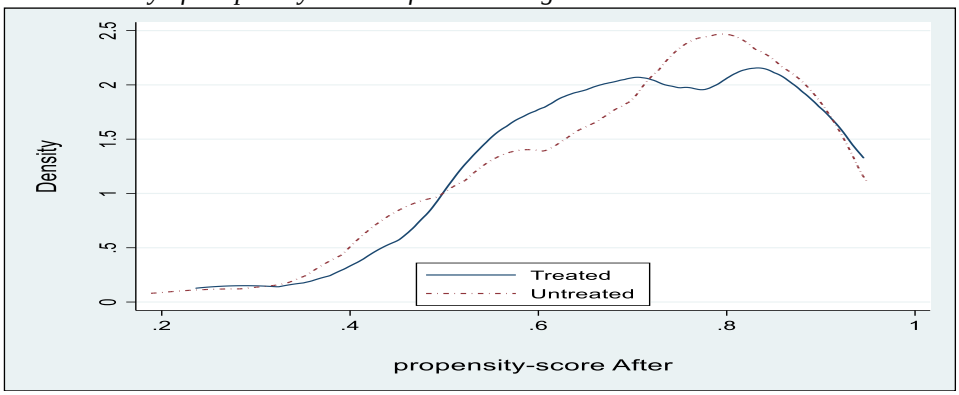
Figure 2:
Kernel Density of Propensity Scores before Matching



Source: Research findings, (2026)

Figure 2 above presents propensity scores for Dairy Co-operative Members and Non-members before matching. The treated group has a higher density of propensity scores concentrated in the upper range (above 0.6), while the untreated group has a wider spread across lower scores, peaking around 0.4. This suggests that before matching, there were significant differences in observed characteristics between the two groups.

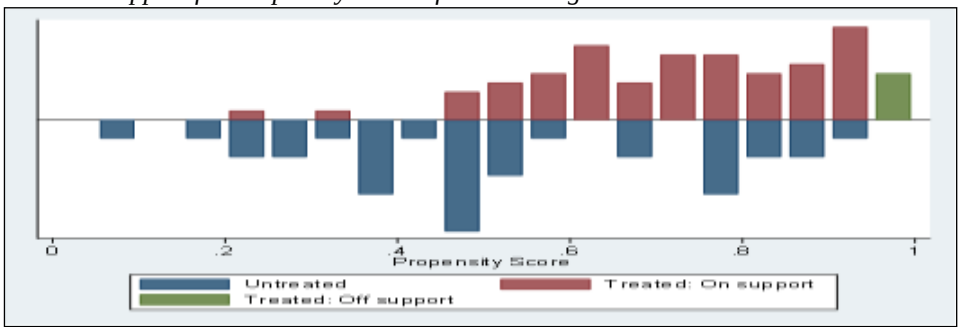
Figure 2:
Kernel Density of Propensity Scores after Matching



Source: Research findings, (2026)

Figure 2 above shows the kernel density of propensity scores for both groups after matching has improved, where the treated and untreated groups now nearly overlap, indicating that the matching process successfully balanced the groups based on their covariates. The alignment of the distribution indicates that the matched control group now resembles the treated group, removing selection bias and enabling causal inference to be more reliable.

Figure 3:
Common Support for Propensity Score after Matching



Source: Research findings, (2026)

Figure 3 above show the common support region, where the density of the

treated and untreated observations is displayed across the range of the propensity score. Red bars indicate treated observations within the common support region, while blue bars represent untreated observations within the common support region. The presence of both treated and untreated observations over most of the distribution of the propensity score shows that common support is meaningful. The green bars represent treated observations that fall outside the area of common support and are thus excluded from matching. This suggests that a well-defined common support area ensures the comparisons between treated and control units are matched, strengthening the credibility of the estimated treatment effects.

Nearest Neighborhood Matching (NNM) estimations

The NNM method chooses the closest score from the covariate of the control group. This method is appropriate for treatment and control groups that are most likely to be similar (Farida et al., 2019). In the PSM matching, 95 observations were matched from covariates that had pairs or common support (Table 1.5); 66 were from the control group and 29 from the treatment group. Only 4 treated observations lacked common support and were excluded from matching.

Since the common support hypothesis is achieved with virtually all units eligible for matching except 4 from the treatment group, the NNM technique was viable and gives values consistent with the kernel at 0.05 bandwidth. Table 7 below shows the impact estimates.

Table 7:
PSM impact estimator using Nearest Neighbor Matching

Variable	Sample	Treated	Controls	Difference	S.E.	T-stat
Income(000Tzs)	Unmatched	280.80	112.60	168.20	469.60	2.58
	ATT	235.00	118.00	117.00	384.36	3.32***
Chi-square	65.583		Prob > chi2	0.000		

Source: Research findings, (2026)

Table 7 above indicated that before matching, cooperative members had an average income of TZS 280,800, while non-members earned TZS 112,600, resulting in an income difference of TZS 168,200. After matching and controlling for observable characteristics, the Average Treatment effect on the Treated (ATT) shows that cooperative members earned TZS 235,000 compared to TZS 118,000 for matched non-members, which is statistically significant at the 1% level with a t-statistic of 3.32 ($p < 0.01$), suggesting that the dairy cooperative has a significant impact on farmers' income after controlling for unobservable factors. This finding is consistent with

empirical evidence showing that dairy cooperatives improve income through enhanced market access, service provision, and collective bargaining (Mutua et al., 2022; Lewis, 2024).

Difference in difference Model (DID) estimations

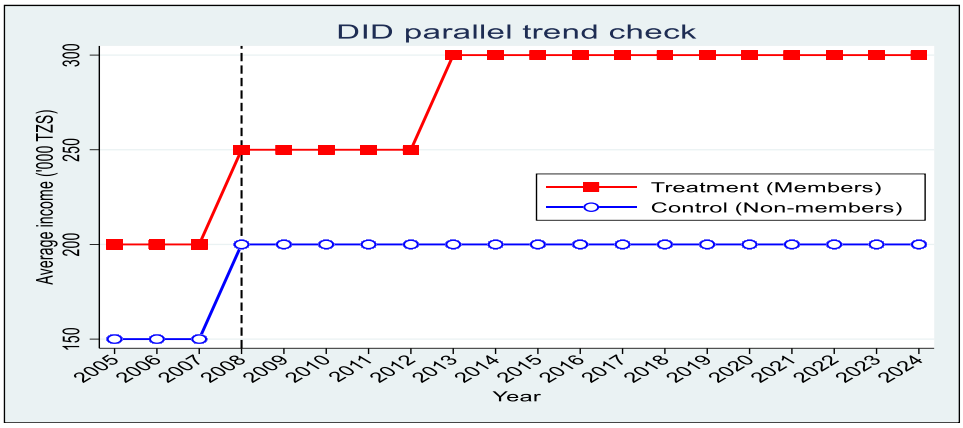
The results in Table 8 indicate that before the program, the treatment group had a higher average income (200,000 TZS) compared to the control group (150,000 TZS), with a statistically significant difference of 50,000 TZS ($p < 0.001$). After the program, the treatment group's average income increased to 275,000 TZS, while the control group's income rose to 200,000 TZS, resulting in a significant post-treatment difference of 75,000 TZS ($p < 0.001$). The Difference-in-Differences (DID) estimate, which estimates the causal effect of the program, was 25,000 TZS, and it was statistically significant at 1% ($p < 0.001$). This suggests that participation in the dairy cooperative had a positive and significant impact on income for the treatment group, over and above any changes observed in the control group. This finding is consistent with the PSM results and supports the argument that cooperative membership is linked to improved income outcomes (Wooldridge, 2010). However, because the analysis is based on retrospective data rather than a true panel dataset, the results should be interpreted as supportive evidence rather than conclusive proof of causality (Bryman, 2019).

Table 8:
Difference in Difference (DID) regression

Comparison		Average Income ('000 TZS)	SE	t	P>|t|
Before					
	Control	150.000			
	Treatment	200.000			
	Difference (T − C)	50.000	1.509	33.13	0.000***
After					
	Control	200.000			
	Treatment	275.000			
	Difference (T − C)	75.00	0.726	103.30	0.000***
	Program effect	25.00	1.089	22.96	0.000***

**** p<.01, ** p<.05, * p<.1*
Source: Research findings, (2026)

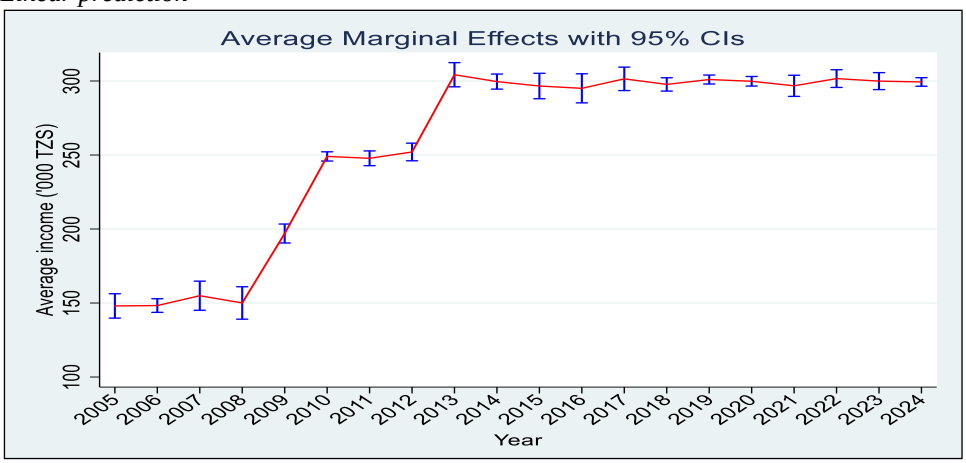
Figure 4:
Parallel Trend



Source: Research findings, (2026)

Figure 4 above illustrates the parallel trends plot, revealing that before 2008, both the treatment and control groups exhibited parallel income trajectories, averaging around 150,000 TZS to 200,000 TZS, respectively, supporting the validity of the parallel trend's assumption for the difference-in-differences analysis. In 2008 the intervention started, and the treatment group's income increased steadily from 250,000 TZS to 300,000 TZS in 2013, while the control group's income remained stable at 200,000 TZS over the years on average, indicating a significant and positive effect of the program on the CHAWAMU dairy cooperative's income.

Figure 5:
Linear prediction



Source: Research findings, (2026)

The event-study analysis shows that the average extra income from being

a cooperative member was almost the same before 2009. After 2010, the program resulted in income increases of about 50,000 TZS, which is expected to rise to around 100,000 TZS by 2024, indicating that members earned significantly higher average incomes, as confirmed by 95% confidence intervals.

DISCUSSION

The findings of this study suggest that participation in dairy cooperatives is shaped by a combination of socioeconomic, institutional, and farm-level factors. The binary logistic regression results show that access to training, access to credit, herd size, marital status, and awareness were positively associated with cooperative membership, while distance to the cooperative reduced the likelihood of participation. These findings support earlier studies which found that farmers are more likely to participate in cooperatives when they possess better access to information, productive assets, and institutional support, and when the transaction costs of participation are relatively low (Tefera, 2022; Njiru, 2022; Kumar et al., 2020). They also align with arguments from Expected Utility Theory, which suggests that farmers choose institutional arrangements from which they expect greater welfare benefits.

The matching results further indicate that cooperative membership is associated with higher income among smallholder dairy farmers in Muheza District. After members were matched with non-members possessing similar observed characteristics, cooperative members still recorded higher average income than their matched counterparts. This suggests that dairy cooperatives may contribute to improved income through mechanisms such as better market coordination, collective bargaining, easier access to extension services, and improved access to productive inputs and support services (Chenyambuga et al., 2021; Mwita, 2021; Mutua et al., 2022). In this sense, the findings support broader evidence from East Africa and other developing-country settings that agricultural cooperatives can enhance rural livelihoods when supported by adequate institutions and farmer participation. Since the study relies on observational data, it cannot fully rule out the possibility that some unobserved characteristics also influence both cooperative membership and income outcomes. Although Propensity Score Matching reduces observable selection bias, it does not eliminate bias from unmeasured factors (Duvendack, 2010; Edward, 2021). Accordingly, the results are better interpreted as evidence of a strong positive association between cooperative membership and income rather than absolute proof of causality.

The DID estimates point in the same direction by showing that cooperative members experienced a larger increase in income over the comparison period than non-members. This consistency between PSM and DID strengthens the overall interpretation that cooperative participation is linked to better income outcomes. However, because the DID analysis was based on retrospective income information rather than a true panel dataset, it should be viewed as complementary evidence rather than a standalone causal test (Wooldridge, 2010).

The study also reveals that cooperative participation alone is not sufficient to guarantee maximum welfare gains. Important constraints remain, including inadequate capital, high transaction costs, distance to service points, limited access to extension support, and broader market-related barriers. Similar challenges have been reported in other studies on African agricultural cooperatives, where the effectiveness of collective action is often reduced by weak infrastructure, high input costs, and uneven institutional support (Juma et al., 2020; Moyo et al., 2020; Mwangi & Wambugu, 2021). This implies that the positive role of dairy cooperatives should be understood within a wider rural development framework that includes infrastructure, service delivery, affordable credit, and market integration.

CONCLUSION

This study examined the relationship between dairy cooperative membership and the incomes of smallholder dairy farmers in Muheza District, Tanzania. The findings show that cooperative members generally reported higher incomes than non-members, and the matching results suggest that this difference remains even after accounting for observable household, farm, and institutional characteristics. The study therefore provides empirical evidence that dairy cooperative membership is positively associated with improved income outcomes among smallholder dairy farmers in the study area. The results further show that participation in dairy cooperatives is influenced by important enabling conditions, including access to training, credit, awareness, herd size, and proximity to cooperative services. This means that the benefits of cooperative membership are not automatic; rather, they depend on the wider institutional and socioeconomic environment within which farmers operate. Persistent challenges such as high transaction costs, inadequate capital, weak infrastructure, and limited extension services may reduce the extent to which farmers benefit from collective action. Since the study was

based on a relatively small sample drawn from one district and relied mainly on observational and retrospective data, the findings may be interpreted taking consideration of that factor. Future studies could strengthen the evidence by using larger multi-district samples and panel data that allow more robust estimation of causal effects over time. Even with these limitations, the study contributes useful district-level evidence showing that dairy cooperatives can serve as an important mechanism for supporting rural incomes and inclusive agricultural development in Tanzania (Chenyambuga et al., 2021; Mwita, 2021).

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