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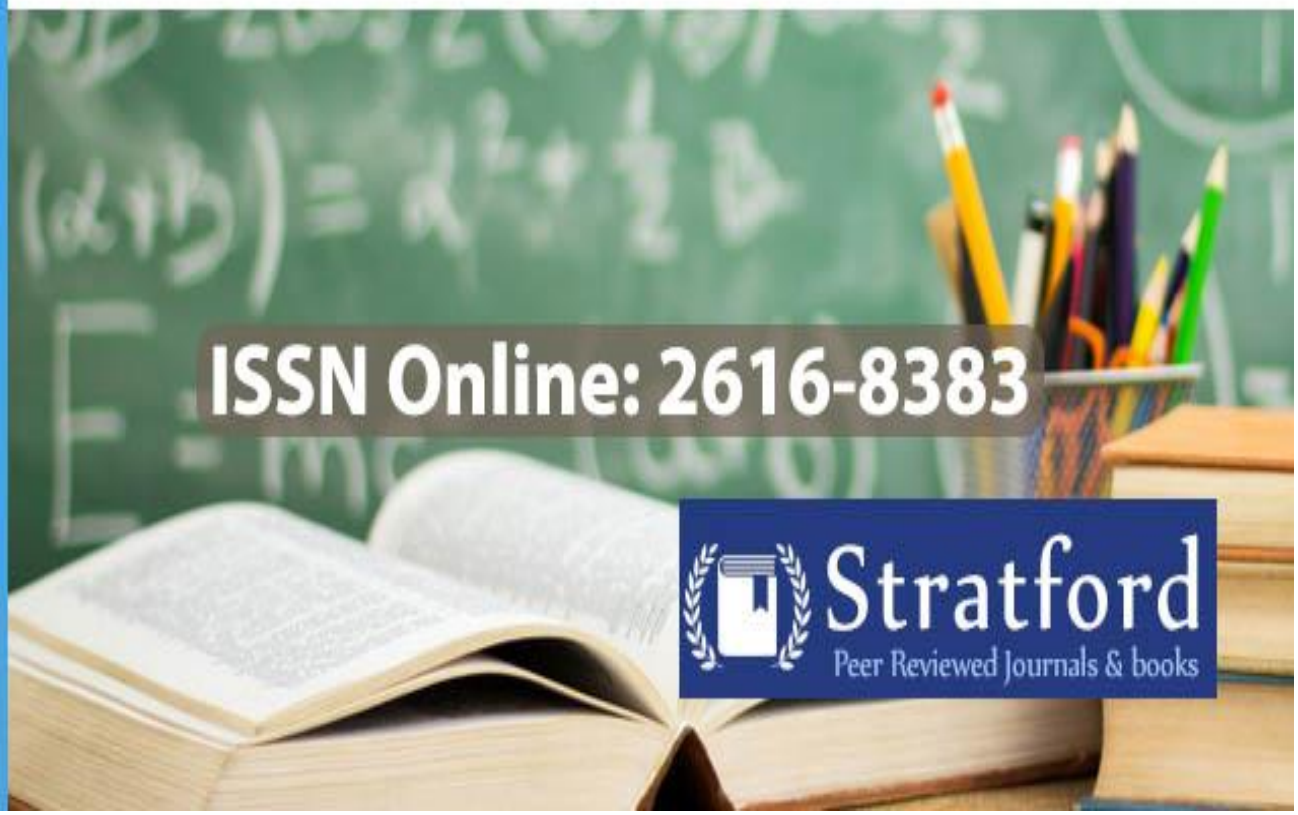

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Influence of TVET Accessibility on Pastoralist Gendered Differential Uptake of Vocational Training in Marsabit County

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Abstract

Technical and Vocational Education and Training (TVET) has increasingly been recognized as a pathway for enhancing youth employability, skills development, and socioeconomic inclusion. However, despite the expansion of TVET institutions in Kenya, gender disparities in vocational training uptake remain prevalent, particularly among marginalized pastoralist communities. This study examined the influence of TVET accessibility on pastoralist gendered differential uptake of vocational training in Marsabit County, Kenya. The study was anchored on Capability Theory and adopted a descriptive survey research design. The target population comprised 535 students enrolled in vocational training centres managed by the County Government of Marsabit, from which a sample of 225 respondents was selected through stratified random sampling. Data were collected using a structured questionnaire, while descriptive and inferential statistics were analyzed using the Statistical Package for the Social Sciences (SPSS). Exploratory factor analysis identified two dimensions of TVET accessibility, namely physical access and institutional quality. Correlation analysis revealed that physical access had a positive and significant relationship with economic gains for enrolment ($r = 0.238$, $p < 0.05$), social gains for progression ($r = 0.495$, $p < 0.05$), and employability ($r = 0.182$, $p < 0.05$). Institutional quality also demonstrated a positive and significant relationship with social gains for progression ($r = 0.533$, $p < 0.05$) and employability ($r = 0.303$, $p < 0.05$). Regression analysis further established that physical access ($\beta = 0.208$, $p < 0.05$) and institutional quality ($\beta = 0.179$, $p < 0.05$) had positive and statistically significant effects on gendered differential uptake of vocational training, with the model explaining 22.9% of the variation in uptake ($R^2 = 0.229$). The study concludes that improving accessibility through equitable distribution of TVET institutions, adequate infrastructure, flexible learning pathways, and enhanced institutional quality can improve gender-equitable participation in vocational training among pastoralist youth. The study recommends expansion of TVET infrastructure and strengthening of institutional capacity in marginalized pastoralist regions to enhance inclusive vocational training uptake.

Keywords: *TVET accessibility, gendered differential uptake, vocational training, pastoralist youth, institutional quality, Marsabit County.*

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1. Introduction

Technical and vocational education and training (TVET) plays a critical role in equipping young people with practical skills and competencies that enhance employability and socioeconomic inclusion (Cai & Kosaka, 2024). Unlike conventional education systems, TVET emphasizes competency-based and work-oriented learning that responds directly to labor market demands. Globally, TVET has increasingly been recognized as a strategic response to youth unemployment and social inequality, particularly under Sustainable Development Goal (SDG) 4, which advocates equitable access to quality education and lifelong learning opportunities (Mujuri & Kathomi, 2024). Specifically, SDG targets 4.3 and 4.4 emphasize the importance of accessibility to vocational education and training in improving youth employability and economic participation. Nevertheless, despite the expanding recognition of TVET, Sub-Saharan Africa accounts for only about 1% of global TVET enrolment, with significant gender disparities persisting in access and participation (Mujuri & Kathomi, 2024).

Accessibility remains one of the most significant determinants of uptake of vocational training, particularly among marginalized and pastoralist communities. Accessibility in TVET extends beyond physical proximity to include adequacy of infrastructure, availability of training facilities, institutional quality, diversity of courses offered, affordability of transport, and inclusivity of learning environments. In China, Li and Seeberg (2022) observed that improved accessibility to vocational education enabled girls to acquire skills necessary for participation in a rapidly urbanizing economy. However, gender inequalities persisted, especially in Science, Technology, Engineering, and Mathematics (STEM) disciplines, where women remained underrepresented despite females accounting for 42.1% of secondary vocational students and 46.7% of higher vocational enrolment in 2022 (Chung et al., 2024). Similarly, in the Netherlands, female participation in STEM-related TVET programmes increased modestly from 12.7% in 2014 to 14.1% in 2018, although stereotypes and social perceptions continued to discourage girls from technical careers (UNESCO-UNEVOC, 2020).

Regional evidence from Sub-Saharan Africa further demonstrates persistent inequalities in TVET accessibility and participation. Wignall et al. (2023) noted that the region records some of the lowest rates of female participation in technical and STEM-oriented TVET programmes globally. In Ghana, Adams and Baddianaah (2023) identified a 51.6% gender gap in TVET enrolment between 2018 and 2022, attributing this disparity to high equipment and material costs, limited female role models, and negative societal perceptions regarding vocational education. In Nigeria, enrolment statistics showed males constituted 51% of trainees compared to 41% females, with women largely concentrated in non-technical disciplines such as fashion design, nutrition, and food technology, while male students dominated STEM courses (Nchekwubemchukwu et al., 2021). Conversely, Ethiopia demonstrated relatively balanced participation, with women constituting 50.8% of TVET enrolment in 2018, although female participation remained concentrated in traditionally gendered occupations due to cultural stereotypes and discrimination within technical fields (Assefa & Adamu, 2024). In Uganda, female enrolment remained considerably lower at 24.7% compared to 72.4% among males during 2007–2016 (Muhwezi, 2024).

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In Kenya, TVET enrolment has expanded substantially over the last decade, with institutions increasing from 2,140 in 2019 to 2,577 in 2023 (KNBS, 2024). Total enrolment grew by 14.3% to 642,726 trainees in 2023, comprising 347,335 males and 295,391 females (KNBS, 2024). Despite this growth, gender disparities persist, particularly within technical and engineering-oriented programmes. Government statistics indicate that out of 547,806 trainees enrolled in TVET institutions nationally, 297,001 were male compared to 250,805 females (Government of Kenya, 2024). Female enrolment remains concentrated in beauty, garment making, hospitality, and fashion-related programmes, while male students dominate engineering and construction courses (Andiema & Manasi, 2021). Accessibility challenges such as inadequate infrastructure, limited institutional capacity, insufficient teaching staff, and high training costs continue to constrain equitable participation in TVET.

The accessibility challenge is more pronounced in marginalized pastoralist regions such as Marsabit County. Although enrolment in vocational training centres increased from 248 students in 2017 to 625 in 2022 following county investments in free vocational training, workshops, classrooms, hostels, and training equipment, infrastructural and institutional limitations remain evident (CGM, 2023). The county achieved construction of 14 workshops, seven classrooms, and five hostels across seven VTCs, yet these remained below targeted levels. Additionally, the trainer-to-trainee ratio deteriorated from 1:7 to 1:17 against a target of 1:13 (CGM, 2023). Existing evidence further indicates that gender disparities remain significant, with male enrolment consistently exceeding female enrolment in vocational training programmes (Najoli, 2019). These disparities underscore the need to examine how TVET accessibility influences pastoralist gendered differential uptake of vocational training in Marsabit County.

Problem Statement

Despite the substantial expansion of Technical and Vocational Education and Training (TVET) in Kenya, increased enrolment has not translated into equitable gender participation, particularly among marginalized populations (National Gender and Equality Commission [NGEC], 2023). Existing evidence indicates persistent social inequalities in access to TVET, reflected in the comparatively low participation of female trainees. Out of the 547,806 students enrolled in TVET institutions nationally, 297,001 (54.2%) were male, while 250,805 (45.8%) were female (Government of Kenya, 2024). This disparity suggests that structural, socioeconomic, and cultural barriers continue to influence access and participation in vocational training.

In Kenya, societal norms and gendered perceptions continue to shape participation in vocational training programmes. Chola, Kiplangat, and Mubichakani (2023) established that societal expectations and gender stereotypes significantly influenced course selection among TVET trainees in Taita Taveta County. In Kakamega County, Mulondanoma (2017) found that parental income levels significantly affected female enrolment, retention, and completion in TVET institutions, concluding that economic constraints contributed to the underrepresentation of women. Similarly, Machado and Muller (2025), in Côte d'Ivoire, reported that financial barriers, including tuition fees, transport costs, and training materials, constrained female enrolment and completion of vocational training programmes.

Although these studies provide important insights into determinants of gender disparities in TVET participation, limited empirical evidence exists on how accessibility factors influence gendered differential uptake of vocational training among pastoralist communities in arid and semi-arid lands (ASALs). Existing studies have largely focused on urban and agriculturally productive regions, with minimal attention given to marginalized pastoralist settings such as Marsabit County. This knowledge gap necessitated the current study, which examined the influence of TVET accessibility on pastoralist gendered differential uptake of vocational training in Marsabit County.

Research Aim

The study aimed to determine the influence of TVET accessibility on pastoralist gendered differential uptake of vocational training in Marsabit County

Significance

The study contributes to policy and empirical understanding of how TVET accessibility influences gendered vocational training uptake among pastoralist youth in marginalized regions. The findings may guide government agencies, TVET institutions, and development partners in improving equitable access, infrastructure, and inclusive training opportunities for female and male youth in ASAL communities.

2. Literature Review

Theoretical Review

The most suitable theory underpinning this study is the capability theory. Sen's (1992) capability theory is founded on the premise of giving people opportunities to enjoy the life that allows them to be in control of their destinies (Deneulin & Shahani, 2009). The theory emphasizes the need to put the needs of individuals first rather than the needs of the economy. This way, the capability theory recognises the significance of human rights, social justice, and poverty alleviation as addressed by VET. The capability theory makes a division that highlights the significance of human freedom by distinguishing between individual functioning (what they actually do) and capabilities (what they can do) as a person might attain the same functioning, such as a VET qualification but have significantly different opportunities to choose (Powell & McGrath, 2014).

This difference highlights the choices that a person has to make in a specific area and the mix of opportunities that they can select from. The variance is among what one does and what one chooses to do, that is, between selecting to have a specific achievement (functioning) and having a specific functioning (Sen, 1992). Two, the division allows VET evaluations to classify differences in people's ability to convert the features of ability into functioning, such as employment or qualification. These interpersonal differences in conversion can be attributed to social or individual factors (Robeyns, 2000).

The theory has been adopted previously in other studies, including Matenda (2019), Klasen (2020), and Miller (2020). In this study, the theory is applied in the following ways. First, VET should promote the availability of resources, including programmes, courses, facilities, information,

scholarships, and policies that promote the inclusion of female pastoralist youth. Second, the capabilities of female youth to participate in VET should be supported by real opportunities, including having affordable, available, and accessible VET. Third, the functioning of TVET can be assessed by the number of enrolments, completions, and transitions to employment of both male and female youth trainees.

Empirical Review

In Russia, Voronina and Rezer (2020) did an analysis on access to VET for individuals at their retirement age in Russia following a systems theory. The study adopted a comparative legal approach that allows for assessment of the strategies and legislation on which the firm of adult education is based. The findings revealed that access to VET for this group was promoted by the government and took into consideration the costs of training completely on itself or compensates some of these costs to employers.

In Nigeria, Adebisi and Oni (2012) examined accessibility of vocational training facilities for the NDE by adopting survey research where 120 ex-trainers, 420 trainers, and 1200 trainees from six states in the southwest region where mult-stage and stratified random sampling. The descriptive statistics analysis of data showing that there was an imbalanced access to training equipment among the NDE vocational training programs.

In Elgeyo Marakwet, Kiplangat (2020) assessed the determinants of enrolment in VTCs following a descriptive research design guided by price theory. The target population consiste of principals, tutors, VTCs students and primary school leavers from which 394 respondents were sampled. Most tutors revealed classroom facilities were inadequate to cope with increasing students and workshops were not adequate to provide practical sessions. This meant students had to conduct practicals in shifts.

In Trans Nzoia County, Nawaji, Barasa, and Manasi (2022) assessed influence of infrastructural facilities on TVET access guided by Production Function Theory in a sample of 28 County VTCs with trainers and trainees. Stratified random sampling was used to select 464 respondents including VTC director, head of VTCs, trainers and trainees. The study found out that the accessibility of infrastructure in VTCs was inadequate.

Conceptual Framework

The conceptual framework in Figure 1 depicts a relationship between TVET accessibility and gendered differential uptake of vocational training.

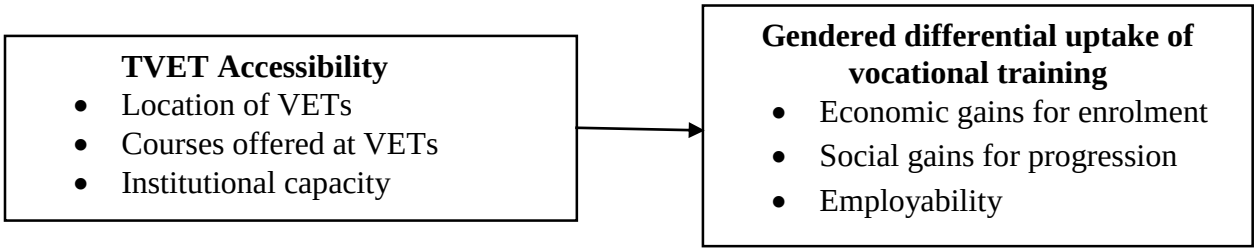

Figure 1: Conceptual framework

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3. Methodology

Research Design

A descriptive survey design was adopted. This design aims to provide an accurate portrayal of a selected group of units to identify their current situation of the problem or issue under investigation. The suitability of the design was that it allowed gathering of respondents' perceptions on gendered differential uptake of VET. Thus, a descriptive research design was suitable as it allowed for making the decision to employ quantitative or qualitative methods or integrate both. In this case, a quantitative approach was employed, and this involved the collection of data from VET students in Marsabit County to generate numerical data that can be analysed statistically.

Population and Sampling

The population of the study was 535 students enrolled in VTCs managed by the County Government of Marsabit (CGM, 2024).

The sampling frame was 535 students in 7 organizations as shown in Table 3.1.

Table 1: Sampling Frame

Institution	Male	Female	Total
Merille VTC	49	61	110
Saku VTC	101	80	181
Umuro VTC	46	40	86
Obbu VTC	47	42	89
Moyale VTC	51	50	101
Loiyangalani VTC	13	13	26
Hon. Abdikadir VTC	21	22	43
Total	**328**	**308**	**535**

Source: CGM (2024)

The researcher used the Yamane (1967) formula to determine the sample size for the study, which was 225 respondents, as follows.

$$n = \frac{N}{1 + N\,(e)^2}$$

Where;
n = sample size
N = study population
e = tolerance at the preferred level of confidence
α = 0.05 at 95% confidence level.

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$$n = 535/ 1 + 535(0.05)^2$$
$$n = 535/ 1 + 535*0.0025$$
$$n = 535 / 2.3775$$
$$n = 225$$

Table 2 shows distribution of the population and sample size in different departments. Therefore, stratified random sampling where a representative number of respondents was selected from each stratum (department) to arrive at the final sample size.

Table 2: Sample Size Distribution

Department		Male	Female	Total
1.	Business department	10	13	23
2.	Hospitality	20	20	40
3.	Agriculture	16	10	26
4.	Information & Communication Technology	16	20	36
5.	Electrical engineering	19	8	27
6.	Building and civil engineering	13	8	21
7.	Automative engineering	20	4	24
8.	Applied sciences	5	9	14
9.	Health sciences	6	8	14
Total		**138**	**87**	**225**

Source: CGM (2024)

Data Collection and Analysis

Data were collected using a structured questionnaire consisting of closed- and open-ended items. The instrument captured respondents' demographic characteristics, including gender, age, and course department, while TVET accessibility was measured using 12 items rated on a five-point Likert scale. The items assessed aspects such as institutional accessibility, infrastructure, and training opportunities. Prior to the main study, a pilot study was conducted among 10 vocational training students to assess the suitability of the research instrument. The variable 'TVET accessibility' scale achieved a Cronbach's alpha coefficient of 0.956, indicating excellent internal consistency and reliability. Validity of the instrument was enhanced through adoption of previously validated constructs, theoretical grounding of items, and the use of exploratory factor analysis (EFA) to assess construct validity. Data were analyzed using the Statistical Package for the Social Sciences (SPSS). Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize respondents' demographic characteristics and Likert scale responses on TVET accessibility. Inferential statistics comprising chi-square tests, Pearson correlation analysis, and multiple linear regression were conducted at the 95% confidence level to examine the relationship between TVET accessibility and gendered differential uptake of vocational training.

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Research Ethics

Ethical approval was obtained from the JKUAT Institutional Ethics Review Committee (IERC) and permission granted by the Marsabit County Department of Education, Skill Development, Youth, and Sports. Participation was voluntary, and respondents were assured of anonymity, confidentiality, and the right to withdraw from the study at any stage.

4. Findings

Response rate

Table 4.1 shows that there was a response rate of 56.0% out of the 225 questionnaires administered that 126 were returned for analysis, as shown in Table 3. Mugenda and Mugenda (2019) recommend that researchers reach more than half of their sample sizes as an adequate response rate. Based on this recommendation, the study response rate was adequate to proceed with the analysis.

Table 3: Study Response Rate

Category	Number	Percent
Questionnaires distributed	225	100.0%
Questionnaires returned	126	56.0%
Questionnaires not returned	99	44.0%

Demographic Characteristics

The demographic characteristics that were analysed in this study were gender, age, and department that a respondent is registered, as detailed in Table 4.

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Table 4: Demographic characteristics

Variable	Category	Frequency	Percent
Gender	Male	75	59.5
	Female	51	40.5
	Total	126	100.0
Age Group	18–22 years	42	33.3
	22–26 years	31	24.6
	27–31 years	22	17.5
	32–35 years	31	24.6
	Total	126	100.0
Department	Business department	30	23.8
	Hospitality	14	11.1
	Agriculture	5	4.0
	Information & Communication Technology	15	11.9
	Electrical engineering	11	8.7
	Building and civil engineering	8	6.3
	Automotive engineering	8	6.3
	Applied sciences	17	13.5
	Health sciences	18	14.3
	Total	126	100.0

Source: Survey data (2025)

The findings show that male respondents constituted 59.5% of the sample compared to 40.5% female respondents, indicating the existence of gender disparities in TVET enrolment in Marsabit County. This finding is consistent with national statistics where male trainees represented 54.6% and female trainees 45.4% of TVET enrolment in Kenya (Wanyeki, 2024). Female participation was particularly low in engineering-related programmes such as mechanical, electrical, and building engineering.

The age distribution indicates that most respondents were aged between 18–22 years (33.3%), followed by 22–26 years and 32–35 years at 24.6% each. The findings suggest that both recent secondary school graduates and older youth increasingly perceive TVET as an avenue for employability and skills development. Similar trends were reported by Mujuri and Kathomi (2025), who found that the majority of TVET trainees were within the youthful age brackets.

Regarding departmental distribution, the highest proportion of respondents were from the business department (23.8%), followed by health sciences (14.3%), applied sciences (13.5%), and ICT (11.9%). Conversely, low representation was observed in automotive engineering and building and civil engineering programmes. The dominance of business-related courses may be attributed to increasing entrepreneurial interests and demand for business-oriented skills among youth.

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Descriptive summary

The descriptive summary presents the analysis of gender in terms of mean and standard deviation.

Table 5: Descriptive Summary for TVET Accessibility

TVET accessibility	Gender	N	Mean	STD
I would be more likely to attend a TVET program if one were available closer to my home	Male	75	3.43	1.141
	Female	51	3.49	1.065
The lack of nearby TVET centers discourages many potential students from enrolling	Male	75	3.84	0.839
	Female	51	3.69	1.049
Youth in my community face greater challenges in accessing TVET opportunities due to distance	Male	75	3.52	1.143
	Female	51	3.65	0.844
I would be more likely to enrol in a TVET program if my preferred course was available	Male	75	3.68	1.199
	Female	51	3.94	1.190
Most TVET institutions do not offer courses that align with current job market demands	Male	75	3.80	1.000
	Female	51	4.16	0.758
TVET institutions in my area offer a wide enough range of courses to meet student needs	Male	75	3.99	0.830
	Female	51	4.02	0.836
The number of available slots in TVET centers meets the demand for TVET training	Male	75	3.89	1.060
	Female	51	4.18	1.108
The trainer-trainee ratio is adequate especially for practical subjects	Male	75	4.17	0.950
	Female	51	4.37	0.824
There are flexible learning pathways available for trainees including evening and part-time programs	Male	75	3.69	1.375
	Female	51	3.73	1.218

Source: Survey data (2025)

Table 5 shows male respondent moderate agreement (M=3.80, SD=1.000) and female respondent agreement (M=4.06, SD=0.712) that 'most TVET institutions do not offer courses that align with current job market demands.' There was agreement among female respondents (M=4.02, SD=0.836) that 'TVET institutions in my area offer a wide enough range of courses to meet student needs' while male respondents showed moderate agreement (M=3.99, SD=0.830). In terms of 'number of available slots in TVET centres meets the demand for TVET training', female respondents agreed (M=4.18, SD=1.108) while male respondents revealed moderate agreement (M=3.89, SD=1.060).

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Factor Analysis

Exploratory Factor Analysis (EFA) was conducted to identify the underlying dimensions among the measured variables and to explore the factor structure without imposing any prior constraints. Table 6 shows the factor analysis of the TVET accessibility variable from which two components were extracted. The first component consisted of six factors and this was labelled as physical access to TVET. The second component consisted of three factors and this were labelled institutional quality.

Table 6: Exploratory Factors Analysis for TVET Accessibility

	Component	
TVET accessibility	**1**	**2**
I would be more likely to attend a TVET program if one were available closer to my home	0.764	
The lack of nearby TVET centers discourages many potential students from enrolling	0.759	
Youth in my community face greater challenges in accessing TVET opportunities due to distance	0.804	
I would be more likely to enroll in a TVET program if my preferred course was available	0.692	
Most TVET institutions do not offer courses that align with current job market demands	0.481	
There are available flexible learning pathways for trainees including evening and part-time programs	0.749	
TVET institutions in my area offer a wide enough range of courses to meet student needs		0.857
The number of available slots in TVET centers meets the demand for TVET training		0.802
The trainer-trainee ratio is adequate especially for practical subjects		0.640

Source: Survey data (2025)

Group statistics

The findings in Table 7 show no difference in the means of male (M=3.66, SD=0.824) and female (M=3.77, SD=0.678) respondents on the physical access component as both were in moderate agreement. In terms of institution quality, both male (M=4.02, SD=0.753) and female (M=4.19, SD=0.678) respondents agreed with this component of TVET accessibility.

Table 7: Group statistics for TVET accessibility

	Gender	N	Mean	Std. Deviation	Cronbach's Alpha
Physical access	Male	75	3.66	0.824	0.673
	Female	51	3.77	0.678	
Institution quality	Male	75	4.02	0.753	
	Female	51	4.19	0.716	

Source: Survey data (2025)

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Independent Samples T-tests

Table 8 shows the samples T-test results generated using the collected data from the field.

Table 8: T-test for Equality of Means for TVET Accessibility

Variables	Gender	N	Mean	t	df	Sig. (2-tailed)
Physical access	Male	75	3.66	-3.134	124	0.002
	Female	51	3.77			
Institution's quality	Male	75	4.02	0.566	124	0.572
	Female	51	4.19			

Source: Survey data (2025)

There was a significant difference in physical access, with females (M = 3.66) reporting higher access than males (M = 3.77), t(124) = -3.13, p = .002. In contrast, no significant gender difference was found in perceptions of institutional quality (M_male = 4.02, M_female = 4.19), t(124) = 0.57, p = .572. These findings suggest that while both genders view the quality of institutions similarly, females experience better physical access to training facilities than males. These findings contradict Aneke (2025) results that found no significant gender differences in quality of TVET institutions. This means that the location of TVET institutions in Marsabit County were not a major factor for gendered differential uptake of VET suggesting that these institutions were accessible to both male and female youth. Further, the results suggest that both male and female youth found the quality of TVET in Marsabit to be offering equitable training opportunities.

Correlation Analysis

Table 9 shows a positive correlation coefficient between physical access and economic gains for enrolment ($r=0.238$, $p < 0.05$), social gains for progression ($r=0.373$, $p < 0.05$), and employability ($r=0.182$, $p < 0.05$). On the other hand, institution quality had a positive and significant association with social gains for progression ($r=0.533$, $p < 0.05$) and employability aspects of gendered differential uptake of VET ($r=0.303$, $p < 0.05$).

Table 9: Correlation Coefficient

	Economic gains for enrolment	Social gains for progression	Employability

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Economic gains for enrolment	Pearson Correlation	1		
	Sig. (2-tailed)			
	N	126		
Social gains for progression	Pearson Correlation	.326**	1	
	Sig. (2-tailed)	0.000		
	N	126	126	
Employability	Pearson Correlation	.289**	.278**	1
	Sig. (2-tailed)	0.001	0.002	
	N	126	126	126
Physical access	Pearson Correlation	.238**	.495**	.182*
	Sig. (2-tailed)	0.007	0.000	0.042
	N	126	126	126
Institution quality	Pearson Correlation	0.022	.533**	.303**
	Sig. (2-tailed)	0.809	0.000	0.001
	N	126	126	126

Source: Survey data (2025)

Regression

Table 10 shows the model explained 22.9% of the variation in gendered differential uptake of VET, and this was statistically significant (F = 18.237, df=2, p < 0.05).

Table 10: Model Summary, ANOVA, Coefficients

Model Summary					
R	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**		
.478a	0.229	0.216	0.45323		
ANOVA[a]					
	Sum of Squares	**df**	**Mean Square**	**F**	**Sig.**
Regression	7.492	2	3.746	18.237	.000[b]
Residual	25.266	123	0.205		
Total	32.758	125			
Coefficients[a]					
	B	**Std. Error**	**Beta**	**t**	**Sig.**
(Constant)	2.440	0.255		9.564	0.000
Physical access	0.208	0.058	0.312	3.607	0.000
Institution's quality	0.179	0.060	0.258	2.988	0.003

Dependent variable: Gendered differential uptake of VET
Source: Survey data (2025)

According to the results, Institution quality and physical access had 0.179 and 0.208 positive effects on gendered differential uptake of VET, respectively, and this was statistically significant.

Joseph and Leyaro (2019) confirmed that providing quality training at different exit points from general education improved female economic gains for enrolment in TVET institutions. Additionally, Aneke (2025) found that both genders had similar opportunities to leverage high-quality VET in South-East Nigeria. Mutungi, Kibaara, and Mwirichia (2023) found that adequacy and availability of physical training resources/facilities significantly influenced students' choice of TVET institution. Kiplangat (2020) concluded that the distribution of VET centres relative to the population was a critical variable for gendered differential uptake.

Discussions

The results revealed that TVET accessibility had a 22.9% effect on gendered differential uptake of VET. Physical access and insitution quality had a positive and statistically significant effect on gendered differential uptake of VET. Physical access to Vocational Education and Training (VET) refers to how easily learners can reach and use VET institutions, facilities, and resources in a practical, geographic, and infrastructural sense. The findings suggest that increasing this access would lead to gender equity in TVET uptake in Marsabit County.

Several studies highlight that VET physical access remains a challenge for VET uptake. Kiplangat's (2020) study revealed that most tutors expressed there were inadequate classroom facilities to handle the high number of students, and there was not enough workshop space for practical sessions, showing limited accessibility of TVET in Elgeyo Marakwet. This was also reported in Trans Nzoia County (Nawaji et al., 2022). In West Pokot County, Andiema and Manasi (2021) found female enrolment remained low, with distribution of institutions as barriers, but further noted that limited institutional access (and distribution) correlates with low female uptake. Ngugi and Muthima (2017) identified "access" issues that included both institutional presence and gender-segregated uptake as key challenges.

Institution quality refers to the overall standard and effectiveness of a VET institution in delivering relevant, high-quality, and equitable training that leads to employable skills and positive outcomes for learners. Thus, enhancing quality in VETs is an important part of improving gendered differential uptake of VET. There is evidence to support this. In Tanzania, Joseph and Leyaro (2019) confirmed that giving quality training at various exit points from general education improved female economic gains for enrolment in TVET. Andiema and Manasi (2021) note that progress in improving quality in training and education in TVET still faces low female enrolment in STEM-based courses. Ochieng, Ngala, and Kiplangat (2020) showed how institutional context factors including aspects of quality such as the environment, facilities, and support influence of female students' choices in TVET in Siaya County.

5. Conclusions

The study examined how TVET accessibility affects pastoralist gendered differential uptake of vocational training in Marsabit County, and the descriptive analysis revealed male respondents were in moderate agreement that the trainer-trainee ratio was adequate, especially for practical subjects, while female respondents showed strong agreement. This suggests female trainees in TVETs in Marsabit County were satisfied with the practical subjects training they received. Further, a statistically significant difference between genders in physical access to TVET was found to be an important factor for gendered differential uptake of VET. Physical access had a positive association with the three components of gendered differential uptake of VET, while

institution quality had a positive association with social gains for progression and employability. Overall, both physical access and institution quality components of TVET accessibility had a positive and statistically significant effect on gendered differential uptake of VET.

The results showed that physical access and institution quality had a significant effect on gendered differential uptake of VET. It is the study's conclusion that increasing facility distribution geographically would result in improved gendered differential uptake in Marsabit County. Additionally, the study concludes that improving the quality of facilities, infrastructure, and training in TVET would improve equal gender enrolment of pastoralist youth in TVET in Marsabit County.

6. Recommendations

It is recommended that the national government, county government, TVETA, and Kenya School of TVET (KSTVET) ensure that the infrastructure, training staff, and practical resources are adequate to provide training for pastoralist youth. TVET quality in Marsabit County can also be improved by fast-tracking the implementation of the CBET curriculum to accommodate the skills gap and training needs of pastoralist youth in Marsabit County.

The study recommends a more equitable spatial distribution of TVET institutions across Marsabit County, particularly targeting underserved and remote pastoralist zones. This includes establishing satellite training centers, mobile vocational training units, and community-based outreach programmes to reduce distance barriers. Additionally, clustering TVET institutions in marginalized wards should be guided by population density, gender enrolment disparities, and accessibility challenges to ensure inclusive participation, especially among female youth.

7. Suggestions for Future Research

The study examined determinants of gendered differential uptake of vocational training among pastoralist youth in Marsabit County. There is a need for similar research to be conducted in low female-enrolled TVET, including West Pokot County and Elgeyo Marakwet County. The findings showed parent support had the largest explanation of gendered differential uptake of VET among pastoralist youth. Therefore, it is recommended for future studies to examine the role of parent support on gendered differential uptake in counties that report low female enrolment and completion rates in TVET.

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