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Original Article

Technical training quality and perceived student satisfaction at Nakawa Vocational Training College. A cross-sectional study.

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ABSTRACT

Background

The study aimed to examine the relationship between technical training quality and student satisfaction at Nakawa Vocational Training College.

Methodology

This study employed a quantitative cross-sectional design to examine relationships among technical training quality, brand image, and student satisfaction at NVTC. From a population of 411 final-year students, 197 were randomly selected using Krejcie and Morgan's table. Primary data were collected through a structured, self-administered Likert-scale questionnaire. Validity was ensured using a Content Validity Index above 0.70, while reliability was confirmed by Cronbach's alpha ≥0.70. Data were analyzed in SPSS using descriptive statistics, Pearson correlations, and multiple regressions, under strict ethical standards and oversight measures

Results

The study analyzed data from 197 NVTC students, of whom 102 (51.8%) were male and 95 (48.2%) female. Most respondents were aged 26-30 years (37.1%), followed by 19-25 years (27.9%), 30 years and above (21.8%), and 15-18 years (13.2%). Descriptive statistics indicated moderately positive perceptions of technical training quality. Teaching methods recorded mean scores between 2.83 ± 1.07 and 3.19 ± 1.18, curriculum relevance ranged from 3.24 ± 1.18 to 3.38 ± 1.16, while adequacy of academic resources ranged from 3.07 ± 1.19 to 3.46 ± 1.14. Correlation analysis revealed a significant positive relationship between technical training quality and student satisfaction ($r = 0.343$, $p \leq 0.01$), with a strong association between overall training quality and academic resources ($r = 0.866$, $p \leq 0.01$). Regression analysis showed that technical training quality significantly predicted student satisfaction ($\beta = 0.437$, $t = 6.523$, $p < 0.01$), explaining 39.9% of the variance ($R^2 = 0.399$; $F = 15.529$).

Conclusion

There is a significant positive relationship between technical training quality and perceived student satisfaction.

Recommendation

Prioritize investing in tangible resources and the implementation of continuous professional development.

Keywords: *Training quality, perceived student satisfaction, Nakawa Vocational Training College*
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BACKGROUND OF THE STUDY

Student satisfaction is a key indicator of educational quality in technical and vocational education and training institutions. It reflects students' overall evaluation of their learning experiences and is strongly influenced by instructional quality, curriculum relevance, and adequacy of institutional resources. Within TVET, technical training quality encompassing curriculum design, teaching methods, practical orientation, and alignment with labour market needs is widely recognized as a major determinant of student satisfaction. In Uganda, NVTC was established to provide hands-on, skills-based training aimed at enhancing employability. However, despite its long-standing role and infrastructural support, limited empirical evidence exists on how the quality of technical training at NVTC specifically shapes student satisfaction. Technical Training Quality (TTQ), delivered through Technical and Vocational Education and Training (TVET), is fundamental to sustainable development (Igberaharha, 2021). TVET emphasizes the acquisition of practical skills, knowledge, and attitudes tailored to specific occupational fields (Setiawan et al., 2023). Once considered a secondary educational pathway, TVET is increasingly recognized as a key driver of economic growth and innovation, particularly in developing countries (Avis, 2020; Barbosa et al., 2020).

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A critical aspect of TTQ is curricular relevance. The content and pedagogy of TVET programs influence student enrolment, learning experiences, and perceptions of employability. However, graduates often face uncertainty regarding the applicability of their skills in the labor market (Okolie et al., 2020; Eiseb, 2024). Ensuring the credibility and recognition of TVET qualifications is therefore essential to build societal trust and parity with other academic pathways (Odondi, 2024; Kapolo, 2024).

Teaching methodology also plays a central role in shaping student outcomes. Diverse instructional strategies, including problem-based learning, demonstrations, and fieldwork, cater to multiple learning styles and foster a more engaging and effective practical learning environment (Hashim & Hamidon, 2022; Jayalath & Esichaikul, 2022). The study aimed to examine the relationship between technical training quality and student satisfaction at Nakawa Vocational Training College.

METHODOLOGY

Research Design

This study adopted a quantitative approach to enable the systematic measurement of variables and the statistical testing of hypotheses. A cross-sectional research design was employed, which is optimal for collecting data from a sample of a population at a single point in time. This design was deemed appropriate for capturing a snapshot of student perceptions and examining the relationships between the key variables within a practical timeframe.

Study Population

The target population for this study consisted of all 411 final-year students enrolled at NVTC in 2023. This group was selected because, having nearly completed their programs, they possess a comprehensive and informed perspective on the college's training quality and brand image.

Sampling Size

The sample size was determined using Krejcie and Morgan's (1970) sample size table. For a population of 411, a representative sample of 197 students was selected. To ensure diversity and representation across various technical programs, course leaders assisted in the random selection of participants from their respective class lists.

Unit of Analysis and Unit of Inquiry

The unit of analysis was the individual student at NVTC, as the research aimed to understand individual perceptions and experiences. The unit of inquiry was the final-year student cohort, from whom the data were directly collected.

Sampling Design and Procedure

A simple random sampling technique was utilized to select participants. This method was chosen because it gives every member of the population an equal probability of being selected, thereby minimizing selection bias and enhancing the generalizability of the findings. The specific method of implementation was the lottery method, using the official enrolment list as the sampling frame.

Sources of Data

Primary data was solely used for this study. It was collected directly from respondents using a self-administered questionnaire designed to measure the constructs of technical training quality, brand image, and student satisfaction.

Data Collection Methods

The primary instrument for data collection was a structured questionnaire. This tool was selected for its efficiency in gathering standardized data from a large sample size, facilitating quantitative analysis. The questionnaire was divided into sections corresponding to the study's key variables, with items measured on a five-point Likert scale (from 1 = Strongly Disagree to 5 = Strongly Agree).

Measurement of Variables

The study variables were operationalized using scales adapted from established literature to ensure their validity and reliability:

Technical Training Quality was measured using items for assessing teaching methods, curriculum relevance, and resource adequacy. Brand Image was measured through dimensions of brand trust and recognition, based on scales, and perceived student satisfaction was operationalized using constructs like intention to refer and perceived value.

Validity and Reliability of Instruments

Validity refers to the degree to which an instrument measures the construct it is intended to measure. To ensure content validity, the questionnaire was reviewed by research experts and supervisors. The Content Validity Index (CVI) was calculated for each variable's set of items using the formula:

$$CVI=\frac{nunber\ of\ items\ deemed\ valid}{Total\ number\ of\ items}$$

A CVI score above 0.70 for each variable was considered evidence of satisfactory content validity.

Reliability denotes the consistency and stability of a measurement instrument. In this study, internal consistency reliability was assessed using Cronbach's Alpha. A pilot test was conducted, and a coefficient of 0.70 or higher for each construct was deemed acceptable. The results, presented in Table 3.1, confirm that all scales were reliable.

Table 1: Reliability Scores for Study Variables

Variable	Cronbach's Alpha	Number of Items
Technical Training Quality	0.815	10
Brand Image	0.781	8
Perceived Student Satisfaction	0.760	9

Data Processing and Analysis

Collected data was edited, coded, and entered into SPSS Version 23.0 for analysis. The analysis proceeded in two stages:

Descriptive Statistics-Frequencies, means, and standard deviations were used to summarize the demographic profiles of respondents and their responses to the scale items. Inferential Statistics: Pearson correlation analysis was used to examine the relationships between the variables. Multiple regression analysis was conducted to test the hypothesis and determine the predictive power of technical training quality and brand image on student satisfaction.

Presentation of Results

The results are presented in tables and figures, accompanied by clear interpretations. The presentation follows the sequence of the research objectives, first showing descriptive findings, then correlation results, followed by regression outputs, and finally the mediation analysis.

Ethical considerations

This study adhered to strict ethical standards throughout its execution. Formal approval was obtained from the Makerere University Business School (MUBS), and administrative permission was secured from NVTC. Key ethical protocols implemented included:

Informed Consent, where all participants received a detailed information sheet and provided written consent before participating.

Voluntary Participation and Anonymity: Here, respondents were informed that their participation was entirely voluntary and that they could withdraw at any time. The questionnaires were anonymous, with no identifying information collected to ensure confidentiality.

With Confidentiality**,** all data was treated with the strictest confidence and used solely for this academic research.

Mitigation of Researcher Bias- as an employee of NVTC, specific steps were taken to mitigate potential bias:

The use of a standardized, anonymous questionnaire minimized interviewer influence.

Participation was entirely voluntary, with no incentive or coercion.

The entire research process was supervised by academic advisors from MUBS, providing an external check on objectivity.

RESULTS

Demographic Characteristics of Respondents

The study targeted a sample size of 197, and their responses were received. The research was conducted at NVTC, chosen for its relevance and accessibility.

Table 2 Gender of Respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
	Male	102	51.8	51.8	51.8
	Female	95	48.2	48.2	100.0
	Total	197	100.0	100.0	

Source: Primary Source

The study sought to explore the relationship between technical education quality, brand equity, and student satisfaction in technical institutions in Uganda. Analysing data from 197 respondents (51.8% male and 48.2% female), the research aimed to understand how technical training quality influences student satisfaction, the impact of brand image on student satisfaction, and the connection between technical training quality and brand image. Additionally, it examined whether brand image mediates the relationship between technical training quality and student satisfaction.

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The findings are intended to provide valuable insights into how these factors interact and affect student experiences, ultimately offering recommendations for improving technical education and institutional branding to enhance overall student satisfaction.

Table 3: Age of Respondents

	Age range	Frequency	Percent	Valid Percent	Cumulative Percent
	15-18 yrs	26	13.2	13.2	13.2
	19-25yrs	55	27.9	27.9	41.1
	26-30 yrs	73	37.1	37.1	78.2
	30yrs and Above	43	21.8	21.8	100.0
	Total	197	100.0	100.0	

Source: Primary Source

The study's respondents span a diverse age range: 13.2% are aged 15-18 years, 27.9% are between 19-25 years, 37.1% are 26-30 years, and 21.8% are 30 years and older. This broad age distribution ensures that the findings reflect various stages of the educational and professional journey, providing a comprehensive perspective on the factors influencing student satisfaction in NVTC.

Technical Training Quality

Table 4: Descriptive Statistics of Teaching Methods

Code Label		N	Minimum	Maximum	Mean	Std. Deviation
TM1	The teaching methods used at NVTC are effective	197	1.00	5.00	3.1827	1.16807
TM2	NVTC teaching methods accommodate different learning styles	197	1.00	5.00	2.8274	1.06936
TM3	NVTC Instructors use innovative teaching methods to enhance learning	197	1.00	5.00	3.1574	1.15644
TM4	The teaching methods used in our courses are engaging	197	1.00	5.00	3.1878	1.13401
TM5	The teaching methods at NVTC have helped learners to understand the course material.	197	1.00	5.00	3.1726	1.18264
	Valid N (listwise)	197				

Source: Primary Source

The descriptive statistics offer a comprehensive view of student perceptions regarding the teaching methods at NVTC. The effectiveness of these methods is generally seen positively, with a mean score of 3.1827 and a standard deviation of 1.16807, indicating that while many students find the methods effective, there is some variability in opinions. However, when it comes to accommodating different learning styles, the mean score drops to 2.8274, suggesting that students perceive these methods as less effective in catering to diverse learning preferences, with a standard deviation of 1.06936 reflecting some variation in responses. In terms of innovation, the mean score of 3.1574, with a standard deviation of 1.15644, suggests that students generally agree that instructors use innovative methods to enhance learning, though this sentiment is not uniformly shared across the board. The engagement factor of the

teaching methods is reflected in a slightly higher mean score of 3.1878 and a standard deviation of 1.13401, showing that, on average, students find the methods engaging, though opinions vary. Lastly, the perception that these methods have helped learners understand the course material is also moderately positive, with a mean of 3.1726 and a standard deviation of 1.18264, indicating that while the methods are generally seen as helpful, there is some disagreement among students about their effectiveness in aiding understanding. Overall, while the teaching methods at NVTC are perceived positively in terms of effectiveness, innovation, and engagement, there is a noticeable gap in their ability to accommodate different learning styles, suggesting a potential area for improvement.

Table 5: Descriptive Statistics of Curriculum Relevance.

Code Label		N	Minimum	Maximum	Mean	Std. Deviation
CR1	The curriculum at NVTC is relevant to our career goals	197	1.00	5.00	3.2386	1.17757
CR2	NVTC follows a curriculum that covers essential industry skills	197	1.00	5.00	3.3756	1.15662
CR3	The curriculum followed at NVTC incorporates the latest advancements in the field	197	1.00	5.00	3.3401	1.15222
CR4	NVTC curriculum is practical and applicable to real-world situations	197	1.00	5.00	3.2741	1.23139
CR5	The NVTC curriculum prepares you well for your professional career	197	1.00	5.00	3.2792	1.22817
	Valid N (listwise)	197				

Source: Primary Source

The descriptive statistics for curriculum relevance at Nakawa Vocational Training Centre (NVTC) indicate that the curriculum is perceived as moderately relevant to students' career goals, with a mean of 3.24 and a standard deviation of 1.18. It covers essential industry skills reasonably well (mean = 3.38, SD = 1.16) and somewhat incorporates the latest advancements in the field (mean = 3.34, SD = 1.15). The curriculum is viewed as moderately practical and applicable to real-world situations (mean = 3.27, SD = 1.23) and provides moderate preparation for professional careers (mean = 3.28, SD = 1.23). These findings suggest that while the NVTC curriculum is generally aligned with industry needs, there is potential for enhancing its real-world applicability and effectiveness in preparing students for their careers. The data was sourced from primary research.

Table 6: Descriptive Statistics of Adequate Resources

Code Label		N	Minimum	Maximum	Mean	Std. Deviation
AR1	The training facilities at NVTC are adequate for learning needs	197	1.00	5.00	3.0660	1.18697
AR2	The technical resources (e.g., labs, equipment) at NVTC are sufficient and up-to-date	197	1.00	5.00	3.4569	1.14483
AR3	Learners at NVTC access various educational resources (e.g., libraries, online materials) during their courses	197	1.00	5.00	3.2458	1.13567
AR4	Learners at NVTC have adequate access to the software and tools required for studies	197	1.00	5.00	3.3401	1.17849
AR5	NVTC provides sufficient support services for learning	197	1.00	5.00	3.2183	1.18583

	Valid N (listwise)	197				

Source: Primary Source

The descriptive statistics for adequate resources at NVTC, based on a sample of 197 respondents, indicate varying levels of satisfaction. The training facilities received a mean score of 3.07 with a standard deviation of 1.19, suggesting moderate adequacy for learning needs. The technical resources, such as labs and equipment, were rated slightly higher with a mean of 3.46 and a standard deviation of 1.14, indicating they are generally sufficient and up-to-date. Learners' access to necessary software and tools had a mean score of 3.34 with a standard deviation of 1.18, showing some level of adequacy. Lastly, the support services provided by NVTC were rated with a mean of 3.22 and a standard deviation of 1.19, reflecting that while sufficient, there is room for improvement. The overall findings suggest that while NVTC's resources are generally adequate, there are areas that could benefit from further enhancement.

Correlation Analysis

The study undertook a correlation analysis in order to establish the relationship between the variables in order to answer the objective of the study. The correlation analysis was also done to rule out the possibility of multicollinearity between the independent variables before running a multiple regression analysis.

Table 7: Correlation Matrix for Technical Training Quality, Brand Image, and Perceived Student Satisfaction

Variables	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Technical Training Quality (1)	1								
Teaching Methods (2)	.687**	1							
Curriculum Relevance (3)	.625**	.309**	1						
Academic Resources (4)	.866**	.381**	.281**	1					

*****. Correlation is significant at the 0.01 level (2-tailed).***
Source: Primary data

Correlation between technical training quality and perceived student satisfaction

The correlation results in the above table show a significant positive association between technical training quality and student satisfaction ($r = 0.343$, $p \leq 0.01$). This suggests that improvements in technical training quality are positively related to increased levels of student satisfaction. This result implies that enhancing the quality of technical training could be an effective way to boost overall student satisfaction.

Regression Analysis

The regression analysis was employed to determine if technical training quality has a significant effect on students' satisfaction. With regression analysis, the relationships between student satisfaction and multiple independent variables, in this case, technical training quality and brand image, were examined to quantify the strength and direction of the relationships and understand how factors like teaching methods and curriculum relevance influence student experiences.

Table 8: Regression Analysis

Model	**Unstandardized Coefficients** B	**Standardized Coefficients** Std. Error	**T** Beta	**Sig.**
Dependent Variable: Student Satisfaction (Model 1)				
(Constant)	0.133	0.048		2.804
Technical Quality	0.454	0.07	0.437	6.523
(Model 2)				
(Constant)	0.535	0.274		1.953
Teaching Methods	0.095	0.069	0.098	1.369
Curriculum Relevance	0.029	0.076	0.029	0.377
Academic Resources	0.125	0.073	0.126	1.717
Belief and Trust	0.155	0.072	0.155	2.167

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Model Summary (Model 2):	
R:	0.632
R Squared:	0.399
Adjusted R Squared:	0.373
F Statistic:	15.529
Model Significance:	0.61501

The regression model reveals that both Technical Training Quality and Brand Image are statistically significant predictors of Student Satisfaction.

Discussion

The analysis confirms a significant positive correlation between technical training quality and student satisfaction ($r = 0.343$, $p \leq 0.01$). This suggests that enhancing the quality of technical training is closely linked to higher levels of student satisfaction.

This finding supports existing literature. It supports Kanwar and Sanjeeva's (2022) emphasis on the importance of training quality and offers quantitative backing for Makinde and Bamiro's (2023) framework, which argues that both tangible (equipment, facilities) and intangible (instructor competence, empathy) factors drive student contentment.

The moderate correlation indicates that although training quality is a key determinant of student satisfaction, other factors also contribute to overall satisfaction. Nonetheless, it offers a clear strategic lever for institutions. Investing in modern equipment and continuous instructor development can effectively enhance the student experience and boost overall satisfaction.

Conclusion

It is concluded that there is a significant positive relationship between technical training quality and perceived student satisfaction. Improvements in both tangible (facilities, equipment) and intangible (instructor competence) aspects of training quality are directly associated with increased student satisfaction. Therefore, technical training quality is a confirmed key determinant of student contentment.

Recommendation

Prioritize Investment in Tangible Resources: Allocate strategic budgets for the continuous modernization of workshops, laboratories, and equipment to ensure they meet current industry standards. This directly addresses the tangible factors that influence student satisfaction.

Implement Continuous Professional Development: Establish mandatory and ongoing training programs for instructors to enhance their technical expertise, pedagogical skills, and student engagement strategies (e.g., empathy, reliability). This investment in intangible factors is crucial for improving training quality.

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List of abbreviations

NVTC	Nakawa Vocational Training College
TTQ	Technical Training Quality
TVET	Technical Vocational Education and Training
TVI	Technical Vocational Institution
UNESCO	United Nations Educational, Scientific, and Cultural Organisation
UNEVOC	UNESCO and Vocational Education
UPE	Uganda Primary Education
UPOLET	Uganda Post Ordinary Level Education and Training
USE	Uganda Secondary Education
VE	Vocational Education

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Conflict of interest

The authors declare no conflict of interest

Data availability

Data is available upon request from the author

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Author contributions

NJ, PI of the study.
GKM supervised the study.
CM, Supervised the study.
OK, Supervised the study.

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