

**CEFFECT OF MODULAR SYLLABUS IMPLEMENTATION STRATEGIES ON  
PERFORMANCE OF TECHNICAL COURSES IN TECHNICAL VOCATIONAL  
EDUCATION TRAINING IN NAIROBI COUNTY, KENYA**

**JOSEPH IRUNGU KIMEMIA**

**A THESIS SUBMITTED TO THE SCHOOL OF EDUCATION IN PARTIAL  
FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF DEGREE  
IN MASTER OF TECHNOLOGY EDUCATION, DEPARTMENT OF  
TECHNOLOGY EDUCATION, UNIVERSITY OF ELDORET, KENYA**

**2025**

## DECLARATION

### Declaration by the Candidate

This research thesis is my original work and has not been presented for award of degree in any other University. No part of this thesis may be reproduced without prior authority from the Author or University of Eldoret.



**JOSEPH IRUNGU KIMEMIA.**

**Date: 31<sup>st</sup> October 2025**

**SEDU/TED/M/S/001/16**

### Approval by the supervisors

This thesis has been submitted with our approval as the University supervisors.



**PROF. JOHN SIMIYU**

**Date 31<sup>st</sup> October 2025**

**EDUCATION TECHNOLOGY DEPARTMENT,  
SCHOOL OF EDUCATION  
UNIVERSITY OF ELDORET, KENYA**



**PROF. HERBERT DIMO**

**Date 31<sup>st</sup> October 2025**

**EDUCATION TECHNOLOGY EDUCATION  
SCHOOL OF EDUCATION  
UNIVERSITY OF ELDORET, KENYA**

## **DEDICATION**

I would like to dedicate this thesis to my family members.

## **ACKNOWLEDGEMENT**

I extend my heartfelt gratitude to my supervisors, Prof. John Simiyu and Dr. Dimo, for their dedicated and timely guidance throughout this journey. I also express deep appreciation to the lecturers in the Department of Technology Education at the University for their continued support during the writing of this thesis. I am grateful to my beloved dad and daughter, and especially to my mother, Anastacia Njeri, whose unwavering prayers have been instrumental in the success of this endeavor. Special thanks to my dear wife, Mary Kadogo Njagi, and my colleagues at Mukurwe-ini Technical Training Institute and National Youth Service Engineering Institute (NYSEI) for their invaluable support. I am also thankful to my family members, particularly Lydia Waitherero, for their enduring financial and moral encouragement. Finally, my deepest gratitude goes to God; without Him, none of this would have been possible

## ABSTRACT

Quality education and training are essential for national progress, with Technical Education and Vocational Training institutions focusing on continuous improvement aligned with Sustainable Development Goals. However, rising unemployment and inadequate skills among Kenyan Technical Education and Vocational Training graduates, due to poor modular strategy implementation, threaten youth livelihoods. In this regard, the main objective of this study was to investigate the effect of modular syllabus implementation strategies on the performance of technical courses in Technical Vocational Education Training in Nairobi County, Kenya. The specific objectives of the study were to: Determine the effect of modular partnership strategy on the performance of technical courses in Technical Vocational Education Training in Nairobi County, Kenya; assess the effect of modular digitalization strategy on the performance of technical courses in Technical Vocational Education Training in Nairobi County, Kenya; and establish the effect of modular assessment strategy on the performance of technical courses in Technical Vocational Education Training in Nairobi County, Kenya. Based on Constructivist Theory, this study employed a descriptive survey method targeting 5,633 participants, including 5,204 engineering students, 418 engineering tutors, and 11 principals from 11 Technical Education and Vocational Training institutions in Nairobi County that implemented modular syllabi. The sample size included 359 individuals: 11 principals, 26 tutors, and 322 students. Principals were selected through purposive sampling, while stratified random sampling was used for tutors and students. The instruments' reliability was confirmed through a pilot study, with Cronbach's alpha coefficients of 0.817, 0.752 and 0.814 for modular partnership, digitalization and assessment strategy, respectively, indicating their reliability. The data was analyzed using SPSS version 28.0, where quantitative data underwent descriptive and inferential statistical analysis, and results were presented in tables. Qualitative data was analyzed for themes and sub-themes, and findings were illustrated with quotations. The study found significant positive effects of modular partnership ( $B1 = 0.403$ ,  $p = 0.000$ ), digitalization ( $B2 = 0.432$ ,  $p = 0.000$ ), and assessment strategies ( $B3 = 0.216$ ,  $p = 0.000$ ) on the performance of technical courses in Technical Education and Vocational Training. Moreover, modular digitalization strategy ( $t = 12.263$ ) had the greatest impact on the performance of technical courses in Technical Education and Vocational Training, followed by modular partnership strategy ( $t = 11.915$ ), and lastly modular assessment strategy ( $t = 6.794$ ). The study concludes that modular partnership, digitalization and assessment strategies significantly affect the performance of technical courses in Technical Education and Vocational Training in Nairobi County, Kenya.

## TABLE OF CONTENTS

DECLARATION .....	ii
DEDICATION .....	iii
ACKNOWLEDGEMENT .....	iv
ABSTRACT .....	v
TABLE OF CONTENTS .....	vi
LIST OF TABLES .....	ix
LIST OF FIGURES .....	x
LIST OF ABBREVIATIONS AND ACRONYMS .....	xi
<b>CHAPTER ONE .....</b>	<b>1</b>
<b>INTRODUCTION.....</b>	<b>1</b>
1.0 Introduction .....	1
1.1 Background to the study.....	1
1.2 Statement of the Problem .....	6
1.3 Purpose of the study .....	7
1.4 The main objective of the study .....	7
1.4.1 The Specific Objectives .....	7
1.5. Research Hypotheses.....	8
1.6 Significance of the Study .....	8
1.7 Scope of the study .....	9
1.8 Assumptions of the study .....	9
1.9 Limitation of the study .....	9
1.10 Theoretical Perspective .....	10
1.11 Conceptual Framework .....	12
1.12 Operational Definition of Terms.....	13
1.13 Organization of the Study .....	14
<b>CHAPTER TWO .....</b>	<b>15</b>
<b>LITERATURE REVIEW .....</b>	<b>15</b>
2.0 Introduction .....	15
2.1 Empirical Review of Variables .....	15
2.1.1 Modular partnership strategy .....	15

2.1.2 Modular digitalization strategy .....	18
2.2.3 Modular assessment strategy.....	21
<b>CHAPTER THREE .....</b>	<b>24</b>
<b>RESEARCH METHODOLOGY .....</b>	<b>24</b>
3.0 Introduction .....	24
3.1 Research Design.....	24
3.2 Study Area.....	25
3.3 Target population .....	26
3.4 Sample Size and Sampling Procedures .....	26
3.5 Data collection Instruments.....	28
3.5.1 Questionnaire .....	29
3.5.1 Interview Guide.....	29
3.6 Pilot Study.....	30
3.6.1 Validity of Research Instruments.....	30
3.6.2 Reliability of Research Instruments .....	30
3.7 Data Collection Procedure .....	31
3.8 Data analysis and Presentation.....	31
3.9 Ethical considerations .....	33
3.11 Summary of the chapter .....	33
<b>CHAPTER FOUR.....</b>	<b>35</b>
<b>DATA ANALYSIS, RESULTS AND DISCUSSION.....</b>	<b>35</b>
4.0 Introduction .....	35
4.1 Response Rate .....	35
4.2 Reliability Test Results .....	35
4.3 Demographic Information on Students .....	36
4.3.1 Gender of the Respondents .....	36
4.3.2: Age of the respondents.....	38
4.3.3 Level of education of the tutors Respondents .....	38
4.3.4 Duration worked in the profession.....	39
4.4 Descriptive Statistics.....	40
4.4.1 Effect of Modular Partnership Strategy on performance of technical course .....	41

4.4.2 Effect of Modular digitalization strategy on performance of technical course....	48
4.4.5 Effect of Modular assessment strategy on performance of technical courses.....	56
4.6 Diagnostic Test Results.....	61
4.6.1 Linearity Results .....	61
4.6.2 Normality Test Results.....	63
4.6.3 Multicollinearity Test.....	65
4.7 Inferential Analysis .....	66
4.7.2 Multiple Regression Analysis .....	66
4.10 Hypotheses Testing of the Results .....	69
<b>CHAPTER FIVE .....</b>	<b>72</b>
<b>SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS .....</b>	<b>72</b>
5.0 Introduction .....	72
5.1 Summary .....	72
5.1.2 Effect of Modular digitalization Strategy on performance of technical course ...	72
5.1.2 Effect of Modular Partnership Strategy on performance of technical course .....	74
5.1.3 Effect of Modular Assessment Strategy on performance of technical course .....	75
5.2 Conclusion.....	76
5.3 Recommendations .....	78
5.3.1 Area for Further Research .....	79
<b>REFERENCES.....</b>	<b>80</b>
<b>APPENDICES .....</b>	<b>88</b>
APPENDIX I: QUESTIONNAIRE FOR TUTORS .....	88
APPENDIX II: QUESTIONNAIRE FOR STUDENTS.....	93
APPENDIX III: INTERVIEW GUIDES .....	98
APPENDIX IV: NAIROBI COUNTY MAP.....	99
APPENDIX V: SIMILARITY REPORT.....	100

## LIST OF TABLES

Table 3. 1: Target Population.....	26
Table 3. 2 Sample size .....	28
Table 4. 1: Reliability Test.....	36
Table 4. 2: Gender of students .....	37
Table 4. 3: Age of the tutors’ respondents .....	38
Table 4. 4: Highest level of education by tutors .....	39
Table 4. 5: Duration worked in the profession by tutors .....	40
Table 4. 6: Descriptive Statistics for modular partnership strategy as by the tutor’s response .....	41
Table 4. 7: Descriptive Statistics for modular partnership strategy as by the student’s response.....	45
Table 4. 8: Descriptive Statistics for modular digitalization strategy as by the tutor’s response.....	49
Table 4. 9: Descriptive Statistics for modular digitalization strategy as by the student’s response.....	53
Table 4. 10: Descriptive Statistics for modular assessment strategy as by the tutor’s response.....	56
Table 4. 11: Linearity results .....	63
Table 4. 12: Normality test results .....	64
Table 4. 13: Multicollinearity Results .....	65
Table 4. 14: Effect of modular partnership, digitalization and assessment strategy on performance of technical courses in Technical Vocational Education Training in Nairobi County, Kenya .....	66
Table 4. 15: Summary of Results for Hypotheses Testing .....	71

**LIST OF FIGURES**

Figure 4. 1: Gender of the tutor's respondents ..... 37

**LIST OF ABBREVIATIONS AND ACRONYMS**

<b>AFL</b>	Assessment for Learning
<b>CBE</b>	Competence Based Education
<b>ILO</b>	International Labour Organization
<b>KNBS</b>	Kenya National Bureau of Statistics
<b>NACOSTI</b>	National Commission for Science, Technology, and Innovation
<b>NBTE</b>	National Board for Technical Education
<b>SDG</b>	Sustainable Development Goals
<b>SPSS</b>	Statistical Package for Social Science
<b>TVET</b>	Technical Education and Vocational Training
<b>TVETA</b>	Technical and Vocational Education and Training Authority
<b>UNESCO</b>	United Nations Educational Scientific and Cultural Organization
<b>WIL</b>	Work-Integrated Learning
<b>WPL</b>	Work Placement Learning

## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.0 Introduction**

This chapter presents the background of the study, statement of the problem, purpose of the study, objectives, hypotheses and significance of the study, limitation and assumption, scope of the study, theoretical framework and operational definition of terms.

#### **1.1 Background to the study**

Quality education and training are fundamental to national progress, with Technical Education and Vocational Training (TVET) institutions prioritizing continuous quality improvement efforts that align with the Sustainable Development Goals (SDG) (Edralin & Pastrana, 2023). Consequently, there is a growing recognition of the need to bridge the gap between the skills provided by educational institutions and the expectations of employers (Chitema, 2021). Nevertheless, significant concerns persist over education quality in TVET, which are attributed to inadequate modular partnership, digitalization and assessment within the modular syllabus implementation strategy (Siena, 2024). While most high-income countries have achieved or are nearing effective performance of technical courses at TVET, Sub-Saharan Africa still faces substantial gaps (Gyimah, 2020). This suggests that despite efforts to align TVET institutions with SDGs and bridge the skills gap for employability, concerns remain about the quality of education, particularly in Sub-Saharan Africa, due to challenges in modular syllabus implementation and disparities compared to high-income countries.

The performance of technical courses in TVET refers to the effectiveness and outcomes of educational programs aimed at equipping individuals with practical skills and knowledge necessary for technical courses (Alexander, 2021). Effective performance of technical courses in TVET include good grades in examination, employment of the graduates, student's enrollment rate, trainee completion rate and the quality of skills training (Okelo, Matere, & Syonhi, 2021; Stander, Plooy, & Scheckle, 2022; Mlambo & Mkhwanazi, 2024). The significance of performance in technical courses within TVET lies in supplying skilled professionals crucial for technological advancement, industrial growth, and infrastructure development (Wahungu, Wawire, & Kirimi, 2023). Effective performance in technical courses within TVET require effective modular syllabus implementation strategies (Tshong & Yasin, 2023). This indicates that the effectiveness of technical courses in TVET is crucial, necessitating a focus on modular syllabus implementation to enhance graduation rates, job placements, employer satisfaction with technical skills, and student retention.

A modular syllabus has been deemed as an option to traditional teaching to improve the quality of education in higher learning institutions by increasing students' participation, motivation, responsibility and autonomy (Rahman, 2022). However, it faces challenges that necessitate strategies for effective implementation (Ndikumana, Mugabo, & Nsabimana, 2024). Accordingly, modular syllabus implementation strategies involve organizing curriculum content into distinct, self-contained units that allow for flexible learning paths and focused assessment (Zhang, 2020). Effective modular syllabus implementation strategies in TVET involve measures such as modular partnership, digitalization and modular assessment strategy (Olabiyi & Uzoka, 2020; Ministry of

Labour and Human Resources, 2022). Partnership strategy comprises communication-based, advisory-based, cooperation-based and collaboration-based partnership (TIKA, Gowon, & Saidu, 2021). Additionally, modular digitalization strategy involves ensuring modular digital adaptation, fostering innovation, building competence, and accelerating progress (Ndikumana, Mugabo, & Nsabimana, 2024). Lastly, modular assessment strategy involves assessment competition, moderation, feedback and scheduling/timing (Dejene & Chen, 2019). This suggests that implementing a modular syllabus in TVET can enhance the quality of education, but it requires strategies such as modular partnership, digitalization, and assessment to address inherent challenges.

Vietnam's vocational education strategy (2021-2030, vision 2045) aligns with global SDG targets, emphasizing regional equity, lifelong learning, and education quality (Le, Phung, Nguyen, & Nguyen, 2022). Despite a decade of government efforts, industry remains critical of Vietnam's TVET performance (Nummela & Holm, 2023). In response the VET Renewal Program, with the German International Cooperation Agency, piloted modular training curriculums in vocational colleges (Nguyen, Pham, Tran, DO, & Pham, 2024). Similarly, China adopted modular syllabus based on German vocational training standards to enhance TVET performance (Wu & Liu, 2022). This indicates that despite aligning with global SDGs targets and piloting modular training curriculums with international collaboration, Vietnam's vocational education strategy faces industry criticism, similar to China's adoption of German standards to improve TVET performance.

Sub-Saharan Africa has significantly increased access to education, but VET still holds a lower status and faces challenges hindering modular syllabus implementation (Gewe, 2021). Particularly, the Ethiopian Ministry of Education (MoE) advocates modularization

for syllabus implementation, but education quality remains low due to ongoing challenges, necessitating an evaluation of the strategies used (Dejene & Chen, 2019). Similarly, in Nigeria, despite government efforts, effective adoption of a modular syllabus in TVET remains unachieved, highlighting the need for strategies to overcome these challenges (TIKA, Gowon, & Saidu, 2021). In Uganda, the TVET policy aims to address constraints and reform the system (The Republic of Uganda, 2020), but challenges persist (Agole, Kerre, Okaka, & Ochieng, 2022). The MoE is implementing syllabus modularization from the 2016 National Curriculum Development Centre to improve TVET performance (The Republic of Uganda, 2022). This infers that challenges in Sub-Saharan Africa, Ethiopia, Nigeria, and Uganda highlight the urgent need for strategic reforms to improve the status and quality of TVET regionally.

Kenya Vision 2030 emphasizes training in Science, Engineering, and Technology (SET) skills, prompting significant changes in the TVET strategy, which replaced the 1999 edition (Riechi, 2021). The introduction of modular programs aims to align TVET with labor market needs, fostering a skilled and adaptable workforce crucial for economic growth. The establishment of the TVET Authority in 2013 by Parliament coordinates and oversees all aspects of TVET, ensuring accredited courses and updating the national skills inventory (Technical and Vocational Education and Training Authority (TVETA), 2020). Nevertheless, renewed interest in technical courses in TVET faces persistent obstacles such as graduate employability, curriculum quality, low enrollment rates, and inefficient resource utilization, often linked to challenges in implementing modular syllabi (Kirogo, Wawire, & Kirimi, 2023; Maina & Muathe, 2023; Osumbah & Wekesa, 2023; Ododa & Kariuki, 2023). Specifically, enrollment in practical courses like mechanical, automotive,

and building construction trades is significantly lower in TVET institutions (Onyango, Sika, & Gogo, 2022). This implies that Kenya's focus on SET skills under Vision 2030, with modular TVET programs and the establishment of TVETA, aims to align TVET with labor market demands, yet challenges in graduate employability and enrollment rates indicate ongoing need for reforms and improvements.

In Nairobi County, Kenya, skill training for TVET graduates is crucial for workforce readiness, necessitating government support to enhance trainers' skills (Okemwa, Ferej, & Wanami, 2022). Additionally, aligning skills exposure during attachments with TVET program content is essential (Mwaura, Mugwe, Edabu, & Thinguri, 2022). Consequently, the TVET institution in Nairobi has seen improvements in completion rates, admissions, revenue, student management, service delivery, and institutional reputation (Mutungi, Kibaara, & Mwirichia, 2023). Despite these advancements, there is a lack of regular strategy reviews to improve TVET graduate employability, prompting further research in this area (Moustafa, Riungu, & Rintari, 2023). This suggests that skill training for TVET graduates in Nairobi County is crucial, necessitating government support for trainers' skills and aligning skills exposure during attachments with TVET program content. Ongoing lack of regular strategy reviews to enhance graduate employability underscores the need for further research.

Numerous studies, have highlighted the modular syllabus implementation strategy and course performance, Ndikumana, Mugabo and Nsabimana (2024) conducted a study exploring the challenges and strategies in a modularized context. However, the study based on data from a single institution with non-random samples, indicates a necessity for broader sampling to validate findings, with proposed strategies for teaching and learning

improvement lacking empirical testing. Moreover, Omariba, Simiyu and Dimo (2023) examined influence of the Mode of Training particularly, modularization on the level of satisfaction of Marine Engineering TVET Graduates. Nevertheless, the study lacked triangulation as it solely relied on quantitative analysis using questionnaire. In this study, a mixed-method approach was employed to gather primary data from a larger sample size, aiming to comprehensively investigate the impact of modular syllabus implementation strategies on the performance of technical courses in TVET within Nairobi County, Kenya. This investigation encompassed syllabus implementation strategies like modular partnership, digitalization and assessment on the performance of technical courses in Technical Vocational Education Training in Nairobi County, Kenya.

## **1.2 Statement of the Problem**

The significance of performance in engineering courses within TVET lies in supplying skilled professionals essential for employment, thereby enhancing the livelihoods of youths and their families (Wahungu, Wawire, & Kirimi, 2023). Effective performance in engineering courses within TVET require implementation of modular syllabus (Tshong & Yasin, 2023). Rising unemployment and inadequate skills among TVET graduates in Kenya threaten youth livelihoods, attributed to poor implementation of modular strategies. In Nairobi County, regular strategy reviews to improve graduate employability are lacking, and further research is needed to enhance TVET graduates' employability in Kenya (Moustafa, Riungu, & Rintari, 2023).

Despite government efforts to improve TVET performance, challenges persist, including studies based on data from a single institution with non-random samples and lacked triangulation. To bridge these gaps, the current study utilized a mixed-method approach,

employed random sampling techniques, and gathered primary data from a larger sample size. It investigated the effect of modular syllabus implementation strategies like modular partnership, digitalization and assessment on the performance of technical courses in Technical Vocational Education Training in Nairobi County, Kenya.

### **1.3 Purpose of the study**

The purpose of the study was to investigate modular syllabus delivery, by determining modular partnership, digitalization and assessment strategy and their effect on the performance of technical courses in Technical Vocational Education Training in Nairobi County, Kenya.

### **1.4 The main objective of the study**

The main objective of the study was to investigate the effect of modular syllabus implementation strategies on the performance of technical courses in Technical Vocational Education Training in Nairobi County, Kenya.

#### **1.4.1 The Specific Objectives**

The specific objectives of the study were:

1. To determine the effect of modular partnership strategy on the performance of technical courses in Technical Vocational Education Training in Nairobi County, Kenya.
2. To assess the effect of modular digitalization strategy on the performance of technical courses in Technical Vocational Education Training in Nairobi County, Kenya.

3. To establish the effect of modular assessment strategy on the performance of technical courses in Technical Vocational Education Training in Nairobi County, Kenya.

### **1.5. Research Hypotheses**

The study was guided by the following research hypotheses

**H<sub>01</sub>:** There is no statistically significant effect of modular partnership strategy on the performance of technical courses in Technical Vocational Education Training in Nairobi County, Kenya.

**H<sub>02</sub>:** There is no statistically significant effect of modular digitalization strategy on the performance of technical courses in Technical Vocational Education Training in Nairobi County, Kenya.

**H<sub>03</sub>:** There is no statistically significant effect of modular assessment strategy on the performance of technical courses in Technical Vocational Education Training in Nairobi County, Kenya.

### **1.6 Significance of the Study**

The study is significant as it explores strategies for implementing a modular syllabus, addressing a notable gap in existing literature and serving stakeholders such as educators, curriculum designers, technical program institutions, students, and industries relying on skilled technical workforce. By providing context-specific insights and practical strategies, the research empowers educators and curriculum designers to enhance curricula, improving education quality and relevance. Moreover, the study contributes to the broader discourse on pedagogical innovation in TVET, emphasizing modularization's potential to elevate educational standards and meet evolving student and industry needs. This benefits not only

immediate stakeholders but also the wider educational community embracing innovative teaching methodologies.

### **1.7 Scope of the study**

This study covered the assessment of the effect of modular syllabus implementation strategy on the performance of technical courses, particularly, engineering in TVET in Nairobi County, Kenya. This was delimited to modular syllabus implementation strategies involving modular partnership, digitalization and assessment strategy. This study targeted a total population of TVET principals, tutors and students in the department of engineering in TVET in Nairobi County.

### **1.8 Assumptions of the study**

The following assumptions were drawn for the present research:

1. Modular syllabus implementation faces a number of challenges in addressing the academic problems in TVET.
2. The views expressed by the sampled respondents were a true reflection of modular syllabus implementation in their respective TVET.
3. The modular syllabus was being implemented in the engineering department at the TVET.

### **1.9 Limitation of the study**

The following limitations were experienced during the course of the study:

TVET that had several cases of low performance of their engineering courses were not willing to give information regarding the modular syllabus implementation strategy in such cases; the researcher assured them confidentiality.

The study was carried out in Nairobi County; therefore, generalizations of the findings were appropriately applied to TVET in Nairobi County only.

The study was limited to a number of sampled TVET.

### **1.10 Theoretical Perspective**

The present study, grounded in Constructivist Theory, aims to identify obstacles to and effective strategies for enhancing the teaching and learning of technical courses. According to constructivist, knowledge is constructed based on prior knowledge rather than being discovered or inherited outright (Acuña, et al., 1995). Constructivist theory posits that learning is an active process where learners construct new knowledge and understanding based on their prior experiences and interactions with the world (Saleem, Kausar, & Deeba, 2021).

Constructivist Theory posits that learners actively build their understanding through experiences and reflection, integrating new information with existing knowledge. It emphasizes personal relevance and meaningfulness in learning, driven by connecting new concepts to prior experiences. Social interaction and collaboration are key, fostering shared understanding through dialogue and debate. The theory asserts that learning is a dynamic process of mental construction, where learners actively make sense of information rather than passively receiving it (Fosnot, 2013).

Constructivist Theory is criticized for its emphasis on subjective interpretation and individual knowledge construction, potentially leading to relativism and neglect of objective truth. Critics argue that learner-centered approaches may overlook the role of authoritative instruction and fail to provide adequate structure for all students, leaving gaps

in foundational knowledge. Additionally, the theory's reliance on social interaction in learning may not sufficiently accommodate diverse learning styles, and its qualitative focus can pose challenges in assessing learning outcomes quantitatively (Riegler, 2011).

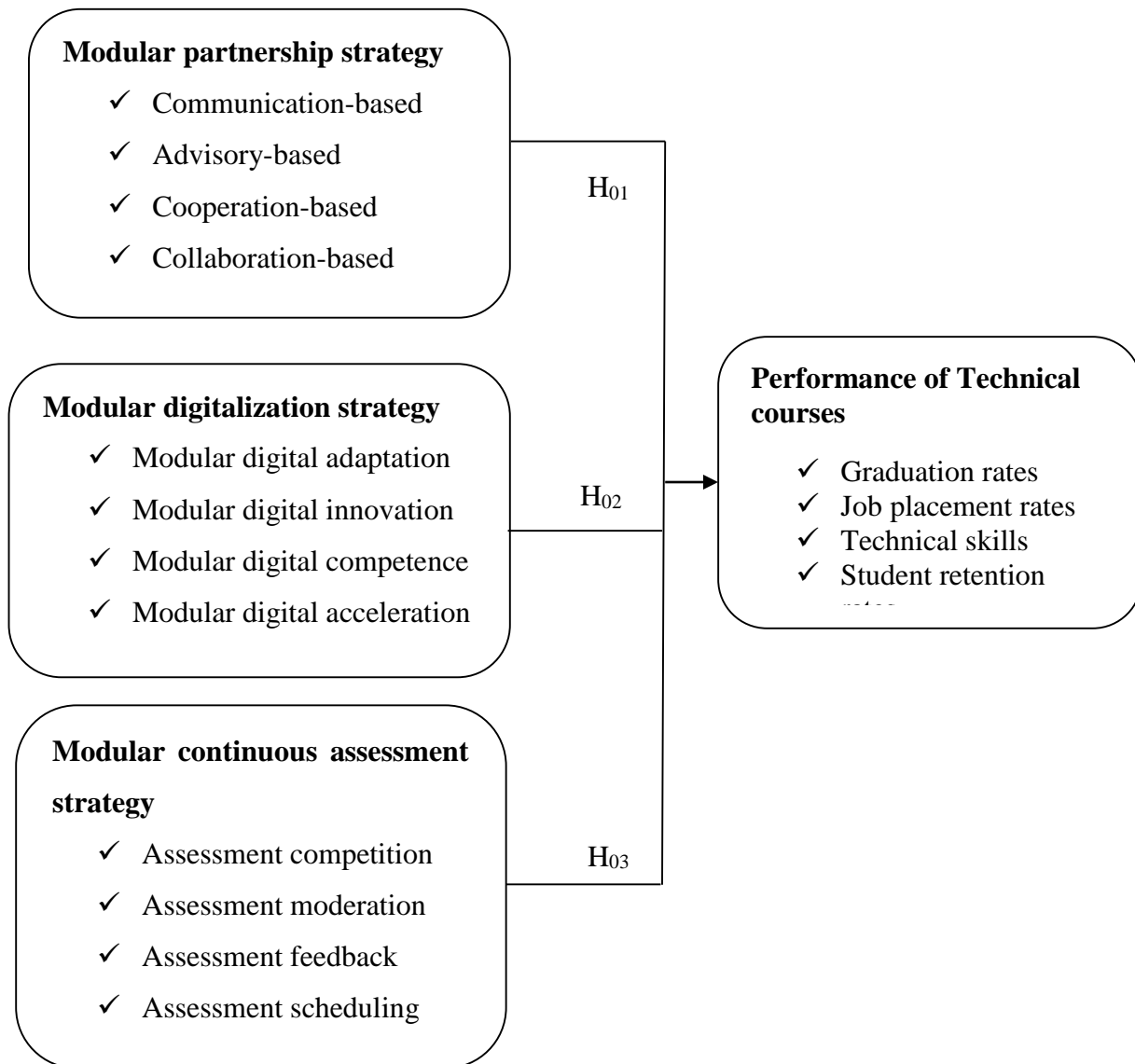
Constructivist Theory is relevant to studying modular implementation in TVET, emphasizing that learners actively construct knowledge through interaction and experiences (Madimabe, Bunmi, & Cias, 2020). It suggests that modular education enhances engagement and understanding by allowing learners to explore at their own pace. This personalized approach supports the acquisition of technical skills and enables educators to optimize curriculum design and teaching methods for improved performance in TVET courses.

## 1.11 Conceptual Framework

### Independent variable

### Dependent variable

#### Modular syllabus implementation strategy



**Figure 1. 1: Conceptual framework**

**Source: Researcher (2023)**

As shown in Figure 1.1, the implementation of the modular syllabus was expected to affect the performance of technical courses. This implementation strategy was evaluated through

three key dimensions: the modular partnership strategy, the modular digitalization strategy, and the modular continuous assessment strategy. The modular partnership strategy was assessed in terms of communication-based, advisory-based, cooperation-based, and collaboration-based approaches, all anticipated to affect the performance of technical courses. The modular digitalization strategy was examined through modular digital adaptation, digital innovation, digital competence, and digital acceleration, each expected to enhance technical course performance. Finally, the modular continuous assessment strategy was evaluated using assessment competition, moderation, feedback, and scheduling, all projected to contribute to improved performance in technical courses.

### **1.12 Operational Definition of Terms**

**Modular continuous assessment strategy** refers to the process encompassing assessment competition, assessment moderation, assessment feedback, and assessment scheduling.

**Modular digitalization strategy** refers to the integration of modular digital adaptation, digital innovation, digital competence, and digital acceleration.

**Modular partnership strategy** refers to the use of communication-based, advisory-based, cooperation-based, and collaboration-based approaches.

**Modular syllabus implementation Strategy** refers to the approach comprising the modular partnership strategy, modular digitalization strategy, and modular continuous assessment strategy.

**Performance of technical courses** refers to the outcomes measured through graduation rates, job placement rates, technical skills, and student retention rates.

### **1.13 Organization of the Study**

This thesis is organized into preliminary pages followed by five chapters: Chapter One presents the introduction, Chapter Two reviews relevant literature, Chapter Three outlines the research methodology, Chapter Four covers data analysis, results, and discussion, and Chapter Five provides the summary of findings, conclusions, and recommendations.

## CHAPTER TWO

### LITERATURE REVIEW

#### 2.0 Introduction

This chapter provides insight into the research problem by reviewing previous literature. The chapter presents a review of variables, literature review on the objectives of the study and research gap.

#### 2.1 Empirical Review of Variables

##### 2.1.1 Modular partnership strategy

Partnership is defined as an active association among multiple parties who, while maintaining autonomy, collaborate to pool their efforts toward achieving a common objective related to a clearly identified problem or need that aligns with their respective roles, interests, responsibilities, motivations, or obligations. In vocational education and training (VET), partnerships entail shared responsibilities and ownership between governments and the private sector, supported by long-term agreements (Yaro & Shafak, 2024). The four types of partnership have been identified: communication-based, advisory-based, cooperation-based and collaboration-based (United Nations Educational Scientific and Cultural Organization (UNESCO), 2019).

A communication-based partnership approach involves exchanging information with other stakeholders through various channels, as well as exploring opportunities for collaboration without necessarily committing to specific actions (Aghlimoghadam, 2023). Lee, Kim and Woo (2021) examined a case study on professional development training in technical and vocational education and training during the untact era, with a focus on an official

development assistance project in Botswana. The study found that ensuring effective education involves synchronized communication across various platforms. For successful project outcomes, close communication between donor and beneficiary countries throughout the ADDIE phases was emphasized, despite encountering communication challenges during design and implementation.

Medina (2022) explored the practice of development communication through extension activities at Batangas State University, the Philippines' National Engineering University in CALABARZON. Using a descriptive-narrative research design within a qualitative approach, various documents were reviewed to address the research objectives. Interviews were also conducted with university extension officials and development communication faculty. The study revealed that to prepare students for real-life professions and instill a commitment to development through communication, they are actively engaged in various community projects oriented towards development, with extension activities serving as a key method for achieving this goal.

An advisory-based partnership approach involves seeking reasoned and expert opinions or recommendations from individuals or entities. It typically includes meetings or other methods to gather information initiated by the requester to gather input from those consulted (Tekle, Areaya, & Habtamu, 2024). Engel-Hills, Winberg, Nomgauza and Nduna (2023) suggested a pathway forward by addressing challenges, leveraging lessons learned, and enhancing the establishment and maintenance of college-industry partnerships through strategic data considerations. The advisory committee typically includes academic staff, senior administrative and management personnel overseeing Work-Integrated Learning (WIL) and Work Placement Learning (WPL), industry representatives from key

partnerships, advocating broader industry perspectives, and student representatives. As needed, ad hoc committees are formed to tackle specific project requirements like curriculum renewal or securing funding.

Cooperation-based partnership strategy involves discussions among multiple stakeholders aimed at reaching agreements and making decisions collectively for joint actions (Zhang, et al., 2023). Gebremariam, Kidane and Gillies (2023) examined the state of applications of cooperative learning and student diversity in polytechnic colleges in southwest Ethiopia. A qualitative research methodology, specifically grounded theory design was employed to achieve the research purpose. The empirical data was gathered from 20 educational officials through in-depth interviews at sample polytechnic colleges. Student diversity found to have a significant influence on how cooperative learning is implemented. It has also been found that the perception of department heads towards diversity has a significant influence on the application of cooperative learning. The study's findings also showed that managing diversity among students and interacting with peers within groups and from other groups has a positive influence on cooperative learning.

A collaborative partnership approach entails pooling resources, sharing responsibilities, and making joint decisions to achieve common goals or implement training programs. Partners work together to define project objectives and share financial and/or management responsibilities accordingly (Zhang, et al., 2023). Ramamurthy, Alias and DeWitt (2021) explored the need for technical communication for 21st century learning in TVET institutions: Perceptions of industry experts. An interpretive qualitative approach was used to conduct interviews with five experts from diverse backgrounds in the automotive industry, selected based on specific criteria related to their supervision of graduate interns.

Thematic analysis was applied to analyze the interview transcripts, revealing that collaboration between industry and training institutions is crucial for developing pedagogical modules on technical communication for the automotive sector.

Jembere, Hybano and Jonsson (2023) investigated knowledge transfer in Technical and Vocational Education and Training (TVET), specifically focusing on stakeholders' experiences in Public-Private Development Partnerships (PPDP) in Ethiopia and Zambia. Data were gathered through semi-structured interviews using a narrative perspective, with key informants purposively selected from stakeholders directly involved in these initiatives. Thematic analysis was employed to analyze the data. The findings highlight the importance of aligning PPDP initiatives with national ministries and expanding partnerships with the private sector to effectively transfer knowledge into national TVET systems.

### **2.1.2 Modular digitalization strategy**

Digitalization is frequently associated with transformation, from the micro-transformation of processes to the transformation of nation-states' agendas. It is increasingly associated with progressive societies and modernization. A modular digitalization strategy includes digital innovation, digital adaptation, digital acceleration, and digital integration to enhance operational efficiency and flexibility (International Labour Organization (ILO), 2020). Digitalization has significantly transformed the skills required for work and life. To stay relevant and appealing, TVET institutions must identify and integrate digital skills and competencies that align with the evolving job market, while also leveraging opportunities like distance learning. The success of these institutions in embracing digitalization's

benefits and overcoming its challenges heavily relies on the digital capabilities of TVET teachers and trainers.

Modular digital innovation in TVET involves integrating digital technologies into distinct, self-contained units or modules within the curriculum. It includes incorporating digital tools, platforms, and resources to improve the delivery and accessibility of vocational training, ensuring that students acquire relevant digital skills and competencies for the evolving job market (Zeng, Chieng, & Liu, 2024). Razak and Khanan (2022) assessed digital Learning in Technical and Vocational Education and Training (TVET) in Public University, Malaysia. The instrument used in this study was an online questionnaire (Google Form) that was emailed to lecturers. The data was analysed using the Statistical Package for Social Science (SPSS) version 26.0. Descriptive statistical analysis was performed in the form of mean and percentage scores. A total of 51 lecturers answered this questionnaire. The findings revealed that lectures were proficient in using online tools when delivering lectures.

Modular digital adaptation in TVET involves the gradual and systematic integration of digital technologies into distinct, self-contained units or modules within the curriculum. This process includes adapting existing teaching methods, learning materials, and administrative processes to leverage digital tools and platforms (Diao & Qu, 2024). Chen and Chan (2024) investigated implementation of digital pedagogy in TVET: A Connectivist perspective. The findings indicated that, under Connectivism, digital pedagogies significantly enhance TVET's flexibility and effectiveness, offering richer and more personalized learning experiences. The study proposes potential strategies and recommendations to address these issues, providing valuable insights for future

educational practices and research. Additionally, students need good self-management skills, and some struggle to adapt to online learning.

Zhong and Juwaheer (2024) underscored the importance of advancing digital competence in TVET strategies by focusing on enhancing the digital skills of leaders and educators as TVET practitioners, and fostering the digital capabilities of students as TVET learners. Employing qualitative research methods, the study explores expected digital competencies among these groups by analyzing existing frameworks. Ultimately, it synthesizes the digital competency domains of TVET leaders, educators, and learners, highlighting their significance and advocating for a holistic, competency-based approach to digital competence development in TVET.

Modular digital acceleration in TVET refers to the strategic approach of rapidly advancing the adoption of digital technologies within specific modules or units of the curriculum (International Telecommunication Union, 2021). Yang and Yang (2024) assessed the Digital Transformation in Global TVET: Methodology and Practices. The study revealed that the adoption of digital platforms and technologies has accelerated, through escalation of existing policies. Moreover, the emergence of a digital economy and society further accelerates this digital transformation.

Okelo, Matere and Syonhi (2021) assessed the influence of technological change on students' academic achievement and to assess the influence of curriculum realignment in relation to students' academic achievement. The study was guided by the social theory of transition and adopted a descriptive survey research design. The study established that TVET financial resources had a high influence on students' academic achievement in

Uasin Gishu County Kenya. The study recommends that TVET institutions need to embrace modern technology that will increase productivity.

### **2.2.3 Modular assessment strategy**

Assessment for Learning (AFL) is important in education and it is one aspect of the process in competency assessment. The assessment is based on the results of the final module examinations for modules 1 to 6, as well as on the assessment of the project work including its presentation for module 7 by the respective lecturers (Alvarez, Samary, & Wise, 2024). Rahman (2022) explored the transition from traditional curriculum to modular curriculum possible challenges. The study found that the modular approach should prioritize assessment tasks designed to facilitate learning and provide ongoing feedback to support students throughout their learning journey, rather than solely focusing on grading upon task completion. It also highlighted the importance of engaging students in organizing and monitoring their own learning processes.

Nguyen, Pham, Tran, DO and Pham (2024) conducted a study on perceived impacts and challenges to the Modular Approach to Curriculum Development in Viet Nam: Vocational Education and Training. Using a descriptive study design, data were collected from 40 technical vocational education colleges in Vietnam through a survey comprising 20 questions rated on a 5-level Likert scale. In-depth interviews were conducted to gather insights into the modular curriculum development approach. The research findings illuminate the current status of modular training curriculum implementation in surveyed vocational colleges and evaluate their perceptions regarding the effectiveness of GIZ Germany's modular training approach. The study also proposes policy recommendations for government management agencies and training institutions to encourage departments

to transition to designing modular curricula for all curriculums within the institution, integrating this approach into evaluation criteria, competition assessments, and commendations.

Atukunda and Maja (2022) examined the Computer Practice Module Lecturers' Experiences of Internal Continuous Assessment at TVET Colleges. The study employed a qualitative multiple case study approach, selecting six lecturers purposively from three KwaZulu-Natal TVET colleges. Data collection utilized semi-structured interviews and document analysis. Findings indicated that lecturers often extended assessment schedules to accommodate students who missed or performed below average. Feedback was not considered as a critical aspect in assessment of learning. Pre-moderation and post-moderation of the ICASS was not considered as important by the lecturers as evidenced by document analysis which revealed that three lecturers did not have moderation reports in their files. Moreover, time allocated for assessment should ensure that the assessment process attained curriculum coverage. The study concludes that implementing diverse assessment methods is essential for enhancing students' outcomes.

Usoro and Ezekiel (2024) examined the guidelines for a competency-based curriculum model for Technical Vocational Education and Training (TVET) in Nigeria. The paper considered need for the adoption of competency-based curriculum in Nigeria, the issue of assessment in competency-based training and evaluation. It concluded that Competence Based Education (CBE) is a systematic yet flexible approach. It focused on defining in measurable terms what students are to learn and then evaluating how well they can perform designated tasks after instruction. It further revealed that the teacher must employ the best methods in the assessment of taught materials, to ensure that the learners must have

acquired skills. It recommended among others that Curriculum planners in TVET such as the National Board for Technical Education (NBTE) should adopt the competency-based curriculum approach for Nigerian schools.

## CHAPTER THREE

### RESEARCH METHODOLOGY

#### 3.0 Introduction

This section presents the methodology and modalities in data collection and analysis. The chapter includes research design, study area, target population, determination and identification of population sample size, sampling design as well as procedure, tools of data collection, validity and reliability of research tools, sources of data and strategies of analyzing data and ethical consideration.

#### 3.1 Research Design

Research design represents a plan and structure for a study intended to provide solutions to research questions, serving as a blueprint for data collection, measurement, and analysis (Akhtar, 2016). It also describes the procedures used to integrate different components of a research project, ensuring a coherent and logical approach to solving the research problem. Research designs provide both the layout of the study problems and the outline of the study, as well as the methods for obtaining practical solutions to the relationships between variables (Ghauri, Gronhaug, & Strange, 2020). The study utilized a descriptive survey research method, which was chosen to comprehensively understand the impact of modular syllabus implementation strategies on the performance of engineering courses within TVET in Nairobi County. This approach was selected for its ability to gather detailed information from various sources and provide a clear overview of the reliability and intricacies of the problem under investigation (Blumberg, Cooper & Schindler, 2014). Descriptive survey design was deemed suitable as it allows systematic exploration and

description of phenomena, addressing key questions related to what, where, when, and how (Kumar, 2018).

### **3.2 Study Area**

The study was conducted in Nairobi County, one of the 47 counties in the Republic of Kenya. It borders Kiambu County to the north and west, Kajiado County to the south, and Machakos County to the east. Among its neighboring counties, Kiambu shares the longest boundary with Nairobi. Covering a total area of 696.1 km<sup>2</sup>, Nairobi is situated between longitudes 36° 45' East and latitudes 1° 18' South, and lies at an altitude of 1,798 meters above sea level. Nairobi is located in south-central Kenya, approximately 140 kilometers (87 miles) south of the Equator. It is positioned adjacent to the eastern edge of the Rift Valley, with the Ngong Hills lying to its west. Mount Kenya is situated to the north of Nairobi, while Mount Kilimanjaro is found to the southeast.

The population of Nairobi is highly diverse, encompassing almost all tribes, nationalities, and races. Due to its national and regional importance, the county experiences significant positive net migration, with 230,027 individuals. Nairobi City aims to become a competent, globally recognized, and well-developed city where residents enjoy a high quality of life. As of the 2019 Kenya Population and Housing Census, Nairobi County's population was 4,397,073, with 2,192,452 (49.9%) males, 2,204,376 (50.1%) females, and 245 (0.006%) intersex individuals. The county had 1,506,888 households, with an average household size of 2.9 (Kenya National Bureau of Statistics (KNBS), 2019; Nairobi City County, 2023).

### 3.3 Target population

Target population is the collective of the entire cases that follow a specified set of the specification which the research will take a broad view of the results (Kasomo, 2006). The study targeted 5633 participants, consisting of 5204 students from engineering department, 418 engineering tutors and 11 principals from eleven TVET institutions in Nairobi County that implemented modular syllabi.

**Table 3. 1: Target Population**

Category	Target population
Principals	11
Engineering Tutors	418
Students from engineering department	5204
<b>Total</b>	<b>5633</b>

**Source: Ministry of Education, Nairobi Office (2022)**

### 3.4 Sample Size and Sampling Procedures

The sample size is defined as the element of a study that represents the actual population, or that elements to be examined within a study, from which, the inference was made to the entire population (Babbie, 2011). The sample size was determined through the use a formula by Fisher (1963, as cited by Kothari, 2004) as follows:

$$n = z^2pq/d^2$$

$$n = \frac{(1.96^2) (0.5) (0.5)}{(0.05)^2}$$

$$(0.05)^2$$

$$n = 384$$

Where:

$n$  = the desired sample size

$z$  = the standard normal deviation at the required C.I = 1.96

$p$  = proportion in the target population is estimated to have characteristics of interest = 0.5

$q=1-p=0.5$ ,  $d$ =the level of statistical significance set = 0.05.

Since the target population was less than 10,000, the following formula was used to determine the actual sample size:

$$n = \frac{n}{1+n/N}$$

$$n = \frac{384}{1+384/5633}$$

$$= 359$$

Sampling is the process of selecting a specific number of subjects from a clearly defined population to represent that population (Kothari, 2010). A sampling procedure, is the method used to select the number of subjects for an investigation (Kothari, 2010). A sampling technique is defined as the method that a researcher employs to pick a sample size from the entire population. Random sampling frequently minimizes the sampling error in the population, as it ensures that each item or element of the population has an equal chance of being chosen at each draw (Cooper and Schindler, 2010).

The study utilized a stratified random sampling technique to further divide the population into three distinct strata (Principal, Tutors and students). Stratified random sampling is a method of sampling where the population is divided into distinct subgroups (or strata)

based on certain characteristics, and then random samples are taken from each subgroup in proportion to their size to ensure representation of all subgroups in the final sample (Yates, *et al* 2008). Within the two strata (Tutors and student), simple random sampling was used to select the tutors and students to participate in the study. The selection of the 11 principals from eleven TVET institutions in Nairobi County that implemented modular syllabi for participation in the study was purposive, while the allocation of the remaining sample size of 348 engineering tutors and students from the engineering department was proportionate, as detailed in Table 3.2.

**Table 3. 2 Sample size**

<b>Sampling Technique</b>	<b>Category</b>	<b>Target population</b>	<b>Proportional Allocation <math>n_i = (N_i/N) * n</math></b>	<b>Sample size (n)</b>
Purposive	Principals	11	NA	11
	<b>Sub Total</b>	<b>11</b>		<b>11</b>
Stratified	Tutors	418	$(418/5622) * 348$	26
	Students	5204	$(5204/5622) * 348$	322
	<b>Sub Total</b>	<b>5622</b>	<b><math>(5622/5622) * 348</math></b>	<b>348</b>
<b>Grand Total</b>		<b>5633</b>		<b>359</b>

**Source: Author, 2023**

### **3.5 Data collection Instruments**

Research instruments facilitate the collection of primary data, ensuring comprehensive data acquisition (Collis and Hussey, 2009). These instruments supplemented each other and to

give a deeper and wider exploration to research perspective. The study employed quantitative methods through questionnaire administration and literature review (Easterby-Smith, Thorpe, & Jackson, 2008). Furthermore, observation was utilized to present information in a natural context, integrating the observer into the study process for deeper insights (Kombo & Tromp, 2006).

### **3.5.1 Questionnaire**

A questionnaire is a research tool consisting of a set of structured questions used to collect information from respondents about their opinions, behaviors, or characteristic (Collis and Hussey, 2009). It had closed-ended questions that gathered quantitative data to analyze opinions, behaviors, or characteristics for research purposes. A five-point attitudinal scaling (1 - Strongly disagree, 2-Disagree, 3-Neutral, 4-Agree and 5-Strongly agree) was used to measure levels of attitude towards questions involving closed ended questions. The questionnaires were answered by the engineering tutors and students in the engineering department,

### **3.5.1 Interview Guide**

An interview guide is a structured set of questions and topics used by a researcher to conduct interviews, ensuring consistency while allowing in-depth exploration of respondents' views and experiences (Kombo & Tromp, 2006). The interview guide comprised an introduction, demographic/background questions, main questions or topics as per the study objectives, and a closing section. Interview guide was used to collect data from the principals.

### **3.6 Pilot Study**

A pilot study involves testing a smaller sample of questionnaires compared to the intended sample size to identify weaknesses in instrumentation and design and to gather preliminary data for selecting a probability sample (Sincero, 2012; Blumberg, Cooper & Schindler, 2008). The pre-testing method used for the questionnaire mirrored the approach used in the actual data collection, treating the pilot survey as a rehearsal of the main study. The researcher conducted piloting to ensure the validity and reliability of the research instruments, specifically the questionnaire, which was tested in Mombasa County due to its similarity to the study area. In this study, the pilot sample size comprised 35 respondents, representing 10% of the intended total sample size of 359 participants. Corrections to wording, layout, sequencing, and question validity were made based on pilot feedback before the final questionnaire was distributed to all respondents.

#### **3.6.1 Validity of Research Instruments**

Validity refers to how accurately research findings reflect the studied phenomena (Collis & Hussey, 2009). Internal validity in this study assesses the extent to which data collection, analysis, and interpretation align with the research variables. Content validity was ensured by confirming the relevance of research outcomes to theoretical frameworks and literature review (DuPlooy, 2002). To enhance content validity, the researcher reviewed relevant literature, presented to the supervisors to validate, pretested questionnaire constructs, trained research assistants, carefully sampled items for representativeness.

#### **3.6.2 Reliability of Research Instruments**

Reliability in this study was defined as the credibility, accuracy, and consistency of the collected data and the presented results (Collis & Hussey, 2009). Internal consistency was

evaluated using Cronbach's coefficient alpha to ensure that all items in the measurement tool effectively measured the same constructs and showed positive correlations. The reliability test was conducted using SPSS (Statistical Package for Social Science), with a generally accepted alpha level of 0.70 or higher considered reliable (Husna & Retneswari, 2009).

### **3.7 Data Collection Procedure**

Data collection is a process of gathering distinct pieces of information which focuses on finding out all that exist about particular subject matter or phenomenon (Kothari & Garg, 2014). The researcher initiated the process by requesting an introduction letter from the University of Eldoret to the National Commission for Science, Technology, and Innovation (NACOSTI) to secure permission for conducting the research. Upon obtaining the NACOSTI permit, authorization was sought from the respective county education office to access institutions within their jurisdictions. These permits were then presented to the management of selected TVET in Nairobi County. Additionally, the researcher identified and trained four research assistants who facilitated the distribution of questionnaires to the research participants. After distributing the questionnaire instruments to engineering tutors and students in the engineering department, and collecting them on agreed-upon dates within a period of two weeks, appointments were scheduled with the principals for in-depth discussions later in the week.

### **3.8 Data analysis and Presentation**

The questionnaire underwent editing and coding to enhance data quality, ensuring respondents could answer all questions and minimizing blank responses. Tabulation involved categorizing responses for analysis. Data analysis utilized descriptive statistics

(mean, standard deviation, frequencies, skewness, and kurtosis) and inferential statistical techniques. In inferential statistics, multiple regression was employed to assess the impact of independent variables (modular syllabus implementation strategy) on the dependent variable (performance of technical courses), and correlation coefficients were calculated using the Statistical Package for Social Sciences (SPSS) version 25.0.

The regression model was used as follows:

### 3.1. Unstandardized Coefficients:

$$y = B_0 + B_1X_1 + B_2X_2 + B_3X_3 + \epsilon \dots \dots \dots \text{Equation 3.1}$$

### 3.2. Standardized Coefficients:

$$y = \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \epsilon \dots \dots \dots \text{Equation 3.2}$$

In the context where  $y$  denoted the performance of engineering courses as the dependent variable,  $x$  represented the modular syllabus implementation strategies, and  $\beta$  stood for the standardized regression coefficient and represented the strength and direction of the relationship between each independent variable and the dependent variable

$X_1$  represent Modular partnership strategy

$X_2$  represent Modular digitalization strategy

$X_3$  represent Modular assessment strategy

Quantitative data was extracted from the questionnaires and presented by use of tables and figures as shown in chapter four. Meanwhile, qualitative data from interviews were analyzed thematically and presented in the form of quotations.

### **3.9 Ethical considerations**

Ethical considerations must be thoroughly addressed, ensuring respondents' safety, security, dignity, and voluntary participation, while maintaining strict confidentiality and anonymity to prevent deception, conflicts, and the dissemination of misleading information (Bryman & Bell, 2007). It is crucial for researchers to uphold social responsibility, respect human integrity and values, and prioritize the well-being of all participants, aligning with international laws and safety standards (Akaranga & Makau, 2016). Regarding research authorization, the researcher first obtained clearance from NACOSTI. After receiving approval from NACOSTI to proceed with fieldwork, the researcher then sought guidance from the Ministry of Education (particularly, the County Director of Education) and obtain clearance from the Nairobi County Commissioner, who oversee education and security matters respectively. Before distributing the questionnaire, the researcher provided an introductory letter outlining the research objectives and ensuring respondents about security, privacy, and anonymity, consistent with guidelines (Creswell, 2012). Additionally, a consent form was provided, allowing participants the freedom to withdraw at any time, reinforcing their rights during data collection.

### **3.11 Summary of the chapter**

The descriptive survey research method was useful when dealing with inferential statistics in providing comprehensive insights into the impact of modular syllabus implementation strategies on the performance of engineering courses within TVET institutions in Nairobi

County. Respondents, comprising principals, students and tutors, were selected using a stratified random sampling technique from various TVET colleges in the county. Data collection methods included questionnaires and review of existing literature, supplemented by interviews to validate questionnaire responses. Analysis was conducted using SPSS version 25.0, employing both descriptive (mean, standard deviation, frequencies) and inferential statistics (multiple regressions) to interpret the data, which was then presented in tables and discussed comprehensively.

## CHAPTER FOUR

### DATA ANALYSIS, RESULTS AND DISCUSSION

#### 4.0 Introduction

This chapter presents the response rate, reliability tests, and background information of respondents, followed by the results of descriptive and inferential statistical analyses. The results align with the study variables and objectives.

#### 4.1 Response Rate

Out of a total population of 5633 individuals, which included 11 principals, 418 engineering tutors, and 5204 students in the engineering department, a sample size of 359 respondents was selected. This sample comprised 11 principals, 26 engineering tutors, and 322 students from the engineering department. Subsequently, interviews were conducted with the 11 principals, while questionnaires were distributed to the 26 engineering tutors and 322 students in the engineering department. Out of 322 questionnaires distributed to students in the engineering department 14 were never returned. Of the 308 remaining, 12 were discarded due to reasons such as lack of response, improper filling, or incompleteness. This resulted in 296 fully completed questionnaires, indicating a response rate of 91.9%. Similarly, 26 questionnaires were distributed to engineering tutors, with two being discarded for similar reasons as above. This left 24 properly completed questionnaires, reflecting a response rate of 92.3%.

#### 4.2 Reliability Test Results

This study assessed the internal consistency of the research questionnaire. The results of analysis are shown in Table 4.1.

**Table 4. 1: Reliability Test**

<b>Variables</b>	<b>Cronbach's Alpha</b>	<b>Test Items</b>
Modular partnership strategy	.817	5
Modular digitalization strategy	.752	5
Modular assessment strategy	.825	5

As shown in Table 4.1, the results indicated that modular partnership strategy had the Cronbach's alpha coefficient (0.817), with five test items. Modular digitalization strategy had the Cronbach's alpha coefficient (0.752), with five test items. Modular assessment strategy had the Cronbach's alpha coefficient (0.814), with five test items. This implies that the research instrument met the reliability threshold as all the constructs had Cronbach's alpha coefficients greater than 0.7.

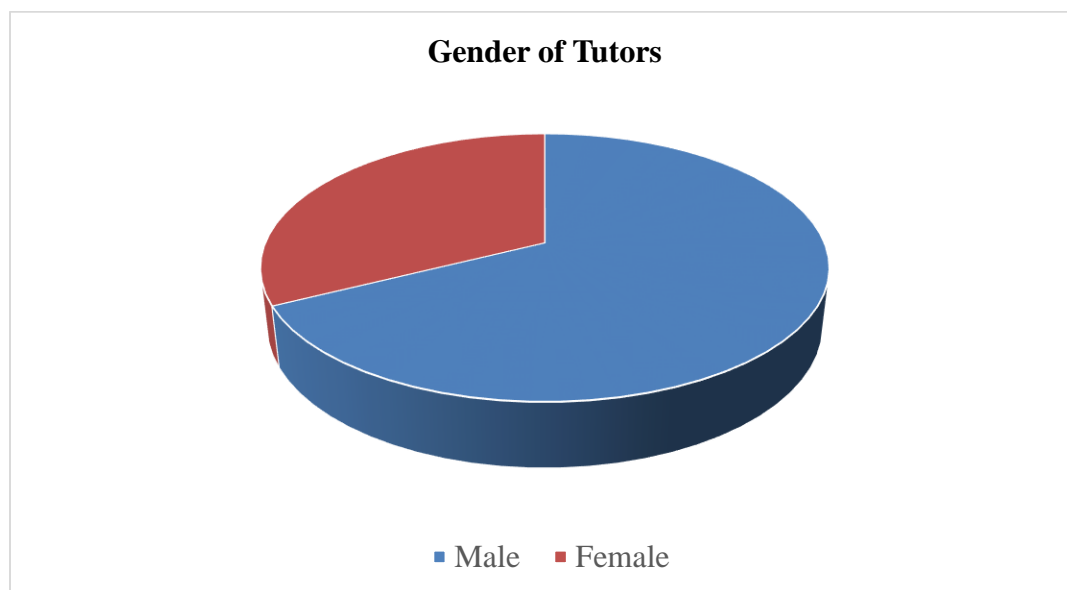
### **4.3 Demographic Information on Students**

The study put into account the demographic information of the respondents since the background information of the student respondents is crucial for the authenticity of the results. The demographic information of the respondents was grouped in terms of gender, age, level of education and duration worked in the profession.

#### **4.3.1 Gender of the Respondents**

The study examined the gender of the respondents. It begins with the gender of the tutors as presented in in figure 4.1. It revealed that majority (67.6%) of the respondents were males and (32.4%) females. This indicates that the gender ratio during recruitment by the

Tutors by the Public Service Commission adheres to the 2/3 rule stipulated in the Kenya Constitution.



**Figure 4. 1: Gender of the tutor's respondents**

The study also established the student's gender. The results are presented in Table 4.2.

**Table 4. 2: Gender of students**

Category	Frequency	Percent
Male	198	66.9
Female	98	33.1
<b>Total</b>	<b>296</b>	<b>100.0</b>

From the results, 198 (66.9%) were male and 118 (33.1%) female students. This suggests that enrollment in technical courses at TVET education adheres to gender equality,

fostering inclusive learning environments that cater to the needs and aspirations of all students, irrespective of gender.

#### **4.3.2: Age of the respondents**

The study sought to establish the age of the respondent. The results are presented in Table 4.3.

**Table 4. 3: Age of the tutors' respondents**

	<b>Frequency</b>	<b>Percent</b>
Less than 25 years	1	4.2
25-34 years	8	33.3
35-44 years	11	45.8
45 and above years	4	16.7
<b>Total</b>	<b>24</b>	<b>100.0</b>

From the findings in Table 4.3, it is evident that a majority 11 (45.8%) of the respondents were aged 35-44 years, 8 (33.3%) 25-34 years, 4 (16.7%) 45 years and above and 1 (4.2%) less than 25 years. This indicates that TVET have youthful tutors who are familiar with modern teaching methods and technologies, and ability to connect well with younger students, thereby enhancing engagement and relevance in vocational education.

#### **4.3.3 Level of education of the tutors Respondents**

The study established the level of education of the tutor's respondents. The results are presented in Table 4.4.

**Table 4. 4: Highest level of education by tutors**

	<b>Frequency</b>	<b>Percent</b>
Diploma	4	16.7
Bachelor's Degree	18	75.0
Postgraduate	2	8.3
Any Other	0	0
<b>Total</b>	<b>24</b>	<b>100.0</b>

The results in Table 4.4 indicates that majority 18 (75.0%) of the tutors had bachelor's degree, 4 (16.7%) had diploma, 2 (8.3%) post graduate. This suggests that the participants possess the necessary educational credentials for TVET teaching and demonstrate a solid understanding of modular syllabus implementation strategy and the performance of TVET.

#### **4.3.4 Duration worked in the profession**

The study sought to establish for how long the tutors had worked in their profession. The results are presented in Table 4.5.

**Table 4. 5: Duration worked in the profession by tutors**

<b>Category</b>	<b>Frequency</b>	<b>Percent</b>
Less than 1 year	2	8.3
1-3 years	4	16.7
4- 6Years	6	25.0
7-9 Years	8	33.3
Above 9 years	4	16.7
<b>Total</b>	<b>24</b>	<b>100.0</b>

The results in Table 4.6 indicate that majority 8 (33.3) of the respondents had worked for more than 7 to 9 years, 6 (25.0%) 4-6 years, 4 (16.7%) each, 1-3 years and above 9 years and 2 (8.3%) for less than one year. This indicates that that the respondents have substantial teaching experience, reflecting their familiarity with the modular syllabus implementation strategy and the performance of TVET.

#### **4.4 Descriptive Statistics**

This section illustrates descriptive findings and discussions based on the objectives of the study from the tutors and students' perspective. The study focused on the following features of the study variables; modular partnership, modular digitalization and modular assessment strategy. The findings were presented in form of Mean and Standard Deviations. The responses were measure on a 5 Point Likert-Scale ranging from: - Strongly Agree = 5, Agree = 4 Neutral = 3, Disagree = 2, and Strongly Disagree = 1.

#### 4.4.1 Effect of Modular Partnership Strategy on performance of technical course

The study determined the effect of modular partnership strategy on the performance of technical courses in TVET in Nairobi County, Kenya using five questionnaire items from the tutor's perspective.

**Table 4. 6: Descriptive Statistics for modular partnership strategy as by the tutor's response**

Category	N	S.D	D	N	A	SA	Mean	Std. Dev
Communication-based partnership strategy helps tutors manage the modular training defined at central level.	F	0	4	0	6	14	<b>4.25</b>	<b>1.113</b>
	%	<b>0</b>	<b>16.7</b>	<b>0</b>	<b>25.0</b>	<b>58.3</b>		
Communication-based partnership strategy enable tutors provide information on implementation of modular syllabus	F	2	5	0	7	10	<b>3.75</b>	<b>1.422</b>
	%	<b>8.3</b>	<b>20.8</b>	<b>0</b>	<b>29.2</b>	<b>41.7</b>		
An advisory-based partnership strategy allows tutors run modular training programmes in compliance with norms	F	0	12	7	5	0	<b>2.71</b>	<b>.806</b>
	%	<b>0</b>	<b>50.0</b>	<b>29.2</b>	<b>20.8</b>	<b>0</b>		
Cooperation-based partnership strategy enables tutors contribute to the definition of training organization norms.	F	4	0	6	9	5	<b>3.46</b>	<b>1.318</b>
	%	<b>16.7</b>	<b>0</b>	<b>25.0</b>	<b>37.5</b>	<b>20.8</b>		
	F	0	0	5	15	4	<b>3.96</b>	<b>.624</b>

Collaboration-based partnership strategy allow for institution's modular syllabus funding	%	0	0	20.8	62.5	16.7
<b>Valid N (Listwise)</b>		<b>24</b>				
<b>Weighted Mean</b>						<b>3.63</b>

---

The Table 4.6 indicate that 14(58.3%) of the respondents strongly agreed that the communication-based partnership strategy helped tutors manage the modular training defined at central level, 6(25.0%) agreed, 4(16.7%) disagreed and none strongly disagreed and had a neutral opinion. Consequently, the study suggested that respondents agreed (Mean = 4.25; Std Dev =1.113) that the communication-based partnership strategy helped tutors manage the modular training defined at central level. This implies that the communication-based partnership strategy helps tutors manage the modular training defined at central level. Lee, Kim and Woo (2021) that there should be a close communication between donor and beneficiary during design and implementation.

On whether the communication-based partnership strategy enabled tutors provide information on implementation of modular syllabus, 10(41.7%) of the respondents strongly agreed, 7(29.2%) agreed, 5(20.8%) disagreed, 2 (8.3%) strongly disagreed and none had neutral opinion. Accordingly, the study revealed that respondents strongly tended to agree (Mean = 3.75; Std Dev =1.422) that the communication-based partnership strategy enabled tutors provide information on implementation of modular syllabus. This was supported by an interviewee who had the following to say;

... Ensuring regular and open communication channels among tutors, administrators, and industry partners facilitates sharing of best practices, updates on curriculum changes, and feedback on student progress. It promotes a cohesive and informed approach to syllabus implementation,

ultimately leading to a more effective and responsive educational environment that meets the needs of all stakeholders ... *Male Participant, 57 years, Principal.*

This implies that the communication-based partnership strategy enables tutors provide information on implementation of modular syllabus.

Additionally, 12(50.0%) of the respondents disagreed that an advisory-based partnership strategy allowed tutors ran modular training programmes in compliance with norms, 7(29.2%) had a neutral opinion, 5(20.8%) agreed and none strongly agreed and strongly disagreed. Therefore, the study suggested that respondents tended to have a neutral opinion (Mean = 2.71; Std Dev = .806) on whether an advisory-based partnership strategy allowed tutors ran modular training programmes in compliance with norms. This implies that an advisory-based partnership strategy tends to somehow allow tutors run modular training programmes in compliance with norms. This is in line with the findings of Engel-Hills, Winberg, Nomgauza and Nduna (2023) enhancing the establishment and maintenance of college-industry partnerships typically involves an advisory committee comprising academic staff, senior administrative, and management personnel.

On whether the cooperation-based partnership strategy enabled tutors contributed to the definition of training organization norms., 9(37.5%) of the respondents agreed, 6(25.0%) had neutral opinion, 5(20.8%) strongly agreed, 4(16.7%) strongly disagreed and none disagreed. Subsequently, the study revealed that respondents had a neutral opinion (Mean = 3.46; Std Dev = 1.318) about the cooperation-based partnership strategy enabled tutors contributed to the definition of training organization norms. This was supported by an interviewee who had the following to say;

... Fostering decision-making among tutors, administrators, and industry partners ensures that the practical insights and experiences of tutors are incorporated into the development of training standards. Although not all suggestions may be implemented, this inclusive approach ensures that tutors' perspectives are considered, leading to training norms that better reflect the realities of the classroom and industry requirements... *Male Participant, 54 years, Principal.*

This implies that the cooperation-based partnership strategy somehow enables tutors contribute to the definition of training organization norms.

Lastly, 15(62.5%) of the respondents agreed that the collaboration-based partnership strategy allowed for institution's modular syllabus funding, 5(20.8%) had a neutral opinion, 4(16.7%) strongly agreed and none strongly disagreed and disagreed. Therefore, the study suggested that respondents strongly tended to agree (Mean = 3.96; Std Dev = .624) that the collaboration-based partnership strategy allowed for institution's modular syllabus funding. This implies that the collaboration-based partnership strategy allows for institution's modular syllabus funding. This concurs with the findings of Ramamurthy, Alias and DeWitt (2021) and Jembere, Hybano and Jonsson (2023) that collaboration between industry and training institutions is crucial for developing pedagogical modules on technical communication for the automotive sector. The study further sought for the perception of students on the training modality and presented the findings on table 4.8.

**Table 4. 7: Descriptive Statistics for modular partnership strategy as by the student's response**

Category	N	S.D	D	N	A	SA	Mean	Std. Dev
Communication-based partnership helps students register for and enroll in modular training programs	F	0	59	0	61	176	<b>4.20</b>	<b>1.165</b>
	%	<b>0</b>	<b>19.9</b>	<b>0</b>	<b>20.6</b>	<b>59.5</b>		
Communication-based partnership enable students give information on modular syllabus	F	58	62	0	60	116	<b>3.39</b>	<b>1.620</b>
	%	<b>19.6</b>	<b>20.9</b>	<b>0</b>	<b>20.3</b>	<b>39.2</b>		
An advisory-based partnership allows students to sign internship agreements.	F	0	180	58	58	0	<b>2.58</b>	<b>.798</b>
	%	<b>0</b>	<b>60.8</b>	<b>19.6</b>	<b>19.6</b>	<b>0</b>		
Cooperation-based partnership enables students contribute to the definition of training organization norms.	F	64	0	56	118	58	<b>3.36</b>	<b>1.388</b>
	%	<b>21.6</b>	<b>0</b>	<b>18.9</b>	<b>39.9</b>	<b>19.6</b>		
Collaboration-based partnership allows students undertake modular internship in companies	F	0	0	58	180	58	<b>4.00</b>	<b>.627</b>
	%	<b>0</b>	<b>0</b>	<b>19.6</b>	<b>60.8</b>	<b>19.6</b>		
<b>Valid N (Listwise)</b>								<b>296</b>
<b>Weighted Mean</b>							<b>3.51</b>	

Table 4.7 indicate that 176(59.5%) of the respondents strongly agreed that the communication-based partnership helped students register for and enroll in modular training programs, 61(20.6%) agreed, 59(19.9%) disagreed and none strongly disagreed and had a neutral opinion. Consequently, the study suggested that respondents agreed (Mean = 4.20; Std Dev =1.165) that the communication-based partnership helped students register for and enroll in modular training programs. This implies that the communication-based partnership helps students register for and enroll in modular training programs. This supports the findings of Medina (2022) that to prepare students for real-life professions and instill a commitment to development, they are actively engaged in community projects, with extension activities being a key method.

Similarly, 116(39.2%) of the respondents strongly agreed that the communication-based partnership enabled students give information on modular syllabus, 62(20.9%) disagreed, 60(20.3%) agreed, 58(19.6%) strongly disagreed and none had neutral opinion. Accordingly, the study revealed that the students had a neutral opinion (Mean = 3.39; Std Dev =1.620) about the communication-based partnership enabled students give information on modular syllabus. This implies that the communication-based partnership somehow enables students give information on modular syllabus.

Additionally, 180(60.8%) of the respondents disagreed that an advisory-based partnership allowed students to sign internship agreements, 58(19.6%) agreed, a similar 58(19.6%) had neutral opinion and none strongly disagreed and strongly agreed. Therefore, the study suggested that respondents tended to have a neutral opinion (Mean = 2.58; Std Dev =.798) that an advisory-based partnership allowed students to sign internship agreements. This was supported by an interviewee who had the following to say;

...Expertise and networks of advisory committee members provides students with better access to internship opportunities. It creates a structured framework where students receive guidance and support in navigating the internship process, even though the effectiveness may vary. This approach helps bridge the gap between education and industry, ensuring that students gain practical experience that complements their academic learning... *Male Participant, 47 years, Principal.*

This implies that an advisory-based partnership tends to somehow allows students to sign internship agreements.

On whether the cooperation-based partnership enabled students contribute to the definition of training organization norms, 118 (39.9%) of the respondents agreed, 64 (21.6%) strongly disagreed, 58 (19.6%) strongly disagreed, 56 (18.9%) strongly agreed and none disagreed. Subsequently, the study revealed that respondents had a neutral opinion (Mean = 3.36; Std Dev =1.388) regarding whether the cooperation-based partnership allowed students to contribute to defining training organization norms. This implies that the cooperation-based partnership somehow enables students contribute to the definition of training organization norms. This concurs with the findings of Gebremariam, Kidane and Gillies (2023) revealed that students diversity found to have a significant influence on how cooperative learning is implemented.

Lastly, 180(60.8%) of the respondents agreed that the collaboration-based partnership allowed students undertake modular internship in companies, 58(19.6%) strongly agreed, a similar 58(19.6%) had a neutral opinion and none strongly disagreed and disagreed. Therefore, the study suggested that respondents agreed (Mean = 4.00; Std Dev =.627) that the collaboration-based partnership allowed students undertake modular internship in companies. This was supported by an interviewee who had the following to say;

...Strong partnerships between educational institutions and industry ensures that students have access to practical, real-world experiences that complement their modular coursework. Collaboration-based partnership strategy not only enhances the students' educational experience but also strengthens the ties between TVET institutions and the business community, ensuring that the training provided aligns with industry needs... *Female Participant, 52 years, Principal.*

This implies that the collaboration-based partnership allows students undertake modular internship in companies.

#### **4.4.2 Effect of Modular digitalization strategy on performance of technical course**

The study assessed the effect of modular digitalization strategy on the performance of technical courses in TVET in Nairobi County, Kenya using five questionnaire items from the tutor's perspective.

**Table 4. 8: Descriptive Statistics for modular digitalization strategy as by the tutor's response**

<b>Statement</b>	<b>N</b>	<b>S.D</b>	<b>D</b>	<b>N</b>	<b>A</b>	<b>SA</b>	<b>Mean</b>	<b>Std. Dev</b>
Tutors easily adapt to online modular learning	F	0	0	0	16	8	<b>4.33</b>	<b>.482</b>
	%	<b>0</b>	<b>0</b>	<b>0</b>	<b>66.7</b>	<b>33.3</b>		
Tutors used online tools when delivering modular syllabus lectures	F	0	0	0	19	5	<b>4.21</b>	<b>.415</b>
	%	<b>0</b>	<b>0</b>	<b>0</b>	<b>79.2</b>	<b>20.8</b>		
Tutors employ competency-based approach to modular digital competence development	F	5	0	0	10	9	<b>3.75</b>	<b>1.511</b>
	%	<b>20.8</b>	<b>0</b>	<b>0</b>	<b>41.7</b>	<b>37.5</b>		
Tutors use online management systems in delivering modular syllabus lectures	F	4	0	0	8	12	<b>4.00</b>	<b>1.445</b>
	%	<b>16.7</b>	<b>0</b>	<b>0</b>	<b>33.3</b>	<b>50.0</b>		
Tutor's adoption of modular digital platforms and technologies is accelerated by scaling up existing policies	F	0	0	10	14	0	<b>3.58</b>	<b>.504</b>
	%	<b>0</b>	<b>0</b>	<b>41.7</b>	<b>58.3</b>	<b>0</b>		
<b>Valid N (Listwise)</b>	<b>24</b>							
<b>Weighted Mean</b>							<b>3.98</b>	

Table 4.8 indicate that 16(66.7%) of the respondents agreed that tutors easily adapted to online modular learning, 8(33.3%) strongly agreed and none disagreed, strongly disagreed and had a neutral opinion. Consequently, the study suggested that respondents agreed (Mean = 4.33; Std Dev =.482) that tutors easily adapted to online modular learning. This was supported by an interviewee who had the following to say;

...Adaptability has allowed tutors to effectively deliver modular content through online platforms, maintaining the quality of education while offering flexibility to students. The ongoing support and continuous professional development are crucial in ensuring that tutors remain proficient in utilizing digital technologies, thereby enhancing the overall learning experience for students... *Male Participant, 57 years, Principal.*

This implies that tutors easily adapt to online modular learning.

On whether tutors used online tools when delivering modular syllabus lectures, 19(79.2%) of the respondents agreed, 5(20.8%) strongly agreed and none strongly agreed, disagreed and had a neutral opinion. Accordingly, the study revealed that respondents agreed (Mean = 4.21; Std Dev =.415) that tutors used online tools when delivering modular syllabus lectures. This implies that tutors use online tools when delivering modular syllabus lectures. This is in line with Razak and Khanan (2022) that lectures were proficient in using online tools when delivering lectures.

Additionally, 10(41.7%) of the respondents agreed that tutors employed competency-based approach to modular digital competence development, 9(37.5%) strongly agreed, 5(20.8%) and none disagreed and had neutral opinion. Therefore, the study suggested that respondents strongly tended to agree (Mean = 3.75; Std Dev =1.511) that tutors employed competency-based approach to modular digital competence development. This implies that tutors strongly tend to employ competency-based approach to modular digital competence

development. This supports the findings of Zhong and Juwaheer (2024) digital competency domains of TVET leaders, educators, and learners, highlighting their significance and advocating for a holistic, competency-based approach to digital competence development in TVET.

On whether tutors used online management systems in delivering modular syllabus lectures, 12(50.0%) of the respondents strongly agreed, 8(33.3%) agreed, 4(16.7%) strongly disagreed and none disagreed and had neutral opinion. Subsequently, the study revealed that respondents agreed (Mean =4.00; Std Dev =1.445) that tutors used online management systems in delivering modular syllabus lectures. This was supported by an interviewee who had the following to say;

...Systems streamline the educational process by providing a centralized platform for sharing course materials, assignments, and assessments. Tutors utilize these systems to engage with students, track their progress, and offer timely feedback. The adoption of online management systems has enhanced the efficiency and flexibility of modular learning, enabling tutors to maintain high educational standards and support students' learning needs more effectively... *Female Participant, 51 years, Principal.*

This implies that tutors use online management systems in delivering modular syllabus lectures.

Lastly, 14(58.3%) of the respondents agreed that tutor's adoption of modular digital platforms and technologies was accelerated by scaling up existing policies, 10(41.7%) had neutral opinion and none strongly disagreed, disagreed and strongly agreed. Therefore, the study suggested that respondents tended to agree (Mean = 3.58; Std Dev =.504) that tutor's adoption of modular digital platforms and technologies was accelerated by scaling up existing policies. This was supported by an interviewee who had the following to say;

...Formalizing the use of digital platforms, tutors are encouraged to embrace these technologies, leading to more innovative and efficient teaching methods. Such policy-driven acceleration ensures that tutors are better equipped to meet the demands of modern education, ultimately improving the quality and accessibility of modular learning for students...  
*Male Participant, 49 years, Principal.*

This implies that tutor's adoption of modular digital platforms and technologies tends to accelerate by scaling up existing policies. The study further sought for the perception of students on institute module readiness and presented the findings on table 4.11.

**Table 4. 9: Descriptive Statistics for modular digitalization strategy as by the student's response**

<b>Statement</b>	<b>N</b>	<b>S.D</b>	<b>D</b>	<b>N</b>	<b>A</b>	<b>SA</b>	<b>Mean</b>	<b>Std. Dev</b>	
The students easily adapt to online modular learning	F %	14 4.7	15 5.1	9 3.0	202 68.2	56 18.9	3.92	.919	
Students used online tools when attending to modular classes	F %	2 0.7	0 0	0 0	235 79.4	59 19.9	4.18	.478	
Institution adopts competency-based approach to cultivate students' modular digital competence	F %	38 12.8	14 4.7	10 3.4	118 39.9	116 39.2	3.88	1.327	
Students utilize an online management system while attending modular classes	F %	33 11.1	19 6.4	12 4.1	110 37.2	122 41.2	3.91	1.308	
Students use of modular digital platforms and technologies is accelerated by scaling up existing policies	F %	8 2.7	13 4.4	19 6.4	98 33.1	158 53.4	4.30	.964	
<b>Valid N (Listwise)</b>	<b>296</b>								
<b>Weighted Mean</b>								<b>4.04</b>	

Table 4.9 indicate that 202(68.2%) of the respondents agreed that students easily adapted to online modular learning, 56(18.9%) strongly agreed, 15(5.1%) disagreed, 14(4.7%) strongly disagreed, 9(3.0%) had a neutral opinion and none strongly disagreed and had neutral opinion. Consequently, the study suggested that respondents strongly tended to agree (Mean = 3.92; Std Dev =.919) that the students easily adapted to online modular

learning. This implies that the students tend to easily adapt to online learning. This concurs with Chen and Chan (2024) that some students struggle to adapt to online learning.

Additionally, 235(79.4%) of the respondents agreed that the students used online tools when attending to modular classes, 59(19.9%) strongly agreed, 2(0.7%) strongly disagreed and none disagreed and had neutral opinion. Accordingly, the study revealed that the respondents agreed (Mean = 4.18; Std Dev =.478) that students used online tools when attending to modular classes. This was supported by an interviewee who had the following to say;

...Students frequently utilize online tools when attending modular classes. This trend underscores the importance of integrating digital resources into the curriculum, as it facilitates flexible learning and enhances access to educational materials. The use of these tools also helps in developing students' digital competencies, preparing them for the increasingly digital nature of the modern workforce... *Male Participant, 57 years, Principal.*

This implies that students tend to use online tools when attending to modular classes.

On whether the institution adopted competency-based approach to cultivate students' modular digital competence, 118(39.9%) of the respondents agreed, 116(39.2%) strongly agreed, 38(12.8%) strongly disagreed, 14(4.7%) disagreed and 10(3.4%) had neutral opinion. Therefore, the study suggested that respondents strongly tended to agree (Mean = 3.88; Std Dev =1.327) that the institution adopted a competency-based approach to cultivate students' modular digital competence. This was supported by an interviewee who had the following to say;

...The institution tends to adopt a competency-based approach to cultivate students' modular digital competence. This method ensures that students not only gain theoretical knowledge but also develop practical digital skills essential for the modern workplace. By focusing on competencies, the institution aims to produce graduates who are proficient in using digital

tools and technologies, thereby enhancing their employability and readiness for industry demands... *Male Participant, 47 years, Principal.*

This implies that the institution tends to adopt a competency-based approach to cultivate students' modular digital competence.

Similarly, students utilized an online management system while attending modular classes, 122(41.2%) of the respondents strongly agreed, 110(37.2%) agreed, 33(11.1%) strongly disagreed, 19(6.4%) agreed and 12(4.1%) had a neutral opinion. Subsequently, the study revealed that respondents strongly tended to agree (Mean = 3.91; Std Dev =1.308) regarding the students utilized an online management system while attending modular classes. This implies that students tend to utilize an online management system while attending modular classes.

Lastly, 158(53.4%) of the respondents strongly agreed that students use of modular digital platforms and technologies was accelerated by scaling up existing policies, 98(33.1%) agreed, 19(6.4%) had neutral opinion, 13(4.4%) and 8(2.7%) strongly disagreed. Therefore, the study suggested that respondents agreed (Mean = 4.30; Std Dev =.964) that students use of modular digital platforms and technologies was accelerated by scaling up existing policies. This implies that students use of modular digital platforms and technologies is accelerated by scaling up existing policies. This concurs with the International Telecommunication Union (2021) and Yang and Yang (2024) that adoption of digital platforms and technologies has accelerated, through escalation of existing policies. Moreover, the emergence of a digital economy and society further accelerates this digital transformation.

#### 4.4.5 Effect of Modular assessment strategy on performance of technical courses

The study established the effect of modular assessment strategy on the performance of technical courses in TVET in Nairobi County, Kenya using five questionnaire items from the tutor's perspective.

**Table 4. 10: Descriptive Statistics for modular assessment strategy as by the tutor's response**

Statement	N	S.D	D	N	A	SA	Mean	Std. Dev
Tutors consider competition in modular assessment	F 0	3	0	21	0	3.75	.676	
	% 0	12.5	0	87.5	0			
Tutors consider feedback as a critical aspect in assessment of modular	F 5	0	7	12	0	3.08	1.176	
	% 20.8	0	29.2	50.0	0			
Time allocated for assessment ensure that its process attain curriculum coverage	F 0	0	0	18	6	4.25	.442	
	% 0	0	0	75.0	25.0			
Tutors prioritize moderation as significant in student modular assessment	F 4	0	6	8	6	3.50	1.351	
	% 16.7	0	25.0	33.3	25.0			
Tutors often extend assessment schedules to accommodate students who miss sessions or perform below average	F 0	0	0	14	10	4.42	.504	
	% 0	0	0	58.3	41.7			
<b>Valid N (Listwise)</b>	<b>24</b>							
<b>Weighted Mean</b>						<b>3.80</b>		

Table 4.10 indicate that 21(87.5%) of the respondents agreed that tutors considered competition in modular assessment, 3(12.5%) disagreed and none strongly disagreed and had a neutral opinion. Consequently, the study suggested that respondents strongly tended to agree (Mean = 3.75; Std Dev =.676) that tutors considered competition in modular assessment. This was supported by an interviewee who had the following to say;

...Competitive modular assessment encourages tutors to deeply engage students with the material, strive for higher performance, and develop a sense of achievement. It also provides tutors with a clearer understanding of each student's capabilities, allowing for more targeted and effective feedback... *Female Participant, 52 years, Principal.*

This implies that tutors strongly tend to consider competition in modular assessment.

On whether tutors considered feedback as a critical aspect in assessment of modular, 12(50.0%) of the respondents agreed, 7(29.2%) had neutral opinion, 5(20.8%) strongly disagreed and none strongly agreed and disagreed. Accordingly, the study revealed that respondents had neutral opinion (Mean = 3.08; Std Dev =1.176) about tutors' consideration of feedback as a critical aspect in assessment of modular. This was supported by an interviewee who had the following to say;

...Constructive feedback plays a pivotal role in guiding tutors towards improvement and understanding students' strengths and areas needing development. Providing timely and specific feedback, tutors aim to enhance student learning outcomes and ensure that assessments are meaningful and supportive of student growth. It fosters a supportive learning environment where students are encouraged to reflect on their progress and make necessary adjustments to succeed in their modular studies...*Male Participant, 49 years, Principal.*

This implies that tutors somehow consider feedback as a critical aspect in assessment of modular.

Additionally, 18(75.0%) of the respondents agreed that time allocated for assessment ensured that its process attained curriculum coverage, 6(25.0%) strongly agreed and none strongly agreed, disagreed and had neutral opinion. Therefore, the study suggested that respondents agreed (Mean = 4.25; Std Dev =.442) that time allocated for assessment ensured that its process attained curriculum coverage. This implies that time allocated for assessment ensure that its process attain curriculum coverage.

On whether tutors prioritized moderation as significant in learners' modular assessment, 8(33.3%) of the respondents agreed, 6(25.0%) strongly agreed, a similar 6(25.0%) had a neutral opinion, 4(16.7%) strongly disagreed and none disagreed. Subsequently, the study revealed that respondents tended to agree (Mean = 3.50; Std Dev =1.351) that tutors prioritized moderation as significant in learners' modular assessment. This was supported by an interviewee who had the following to say;

... Through moderation, tutors aim to maintain the integrity and reliability of assessment processes, ensuring that all students are evaluated fairly and equitably. It also supports continuous improvement in teaching practices and assessment methodologies, contributing to the overall quality of education within the institution's modular framework...*Male Participant, 57 years, Principal.*

This implies that tutors tend to prioritize moderation as significant in learners' modular assessment.

Lastly, 14(58.3%) of the respondents agreed that tutors often extended assessment schedules to accommodate students who missed sessions or performed below average, 10(41.7%) strongly agreed and none strongly disagreed, disagreed and had neutral opinion. Therefore, the study suggested that respondents agreed (Mean = 4.42; Std Dev =.442) that tutors often extended assessment schedules to accommodate students who missed sessions or performed below average. This implies that tutors often extend assessment schedules

for accommodation of students who either missed sessions or performed below average. Atukunda and Maja (2022) that lecturers often extended assessment schedules to accommodate students who missed or performed below average. The study further analyzed perception of the students on modular instructional methodology using five questionnaire items. This is shown in Table 4.15.

**Table 4.15: Descriptive Statistics for modular assessment strategy as by the student's response**

<b>Statement</b>	<b>N</b>	<b>S.D</b>	<b>D</b>	<b>N</b>	<b>A</b>	<b>SA</b>	<b>Mean</b>	<b>Std. Dev</b>
Modular assessment allows for students' competition	F 0	0	58	0	0	238	<b>3.61</b>	<b>.795</b>
	%	<b>0</b>	<b>19.6</b>	<b>0</b>	<b>0</b>	<b>80.4</b>		
Ongoing feedback is provided to help students improve and reach the required level of competency	F 40	0	58	148	50		<b>3.57</b>	<b>1.183</b>
	%	<b>13.5</b>	<b>0</b>	<b>19.6</b>	<b>50.0</b>	<b>16.9</b>		
Modular syllabus coverage is achieved through the time allocated for students' modular assessments	F 14	16	12	198	56		<b>3.90</b>	<b>.930</b>
	%	<b>4.7</b>	<b>5.4</b>	<b>4.1</b>	<b>66.9</b>	<b>18.9</b>		
Students' modular assessment is moderated	F 60	0	58	178	0		<b>3.20</b>	<b>1.174</b>
	%	<b>20.3</b>	<b>0</b>	<b>19.6</b>	<b>60.1</b>	<b>0</b>		
Extended assessment schedules accommodate students who miss sessions or perform below average	F 0	0	0	176	120		<b>4.41</b>	<b>.492</b>
	%	<b>0</b>	<b>0</b>	<b>0</b>	<b>59.5</b>	<b>40.5</b>		
<b>Valid N (Listwise)</b>	<b>296</b>							
<b>Weighted Mean</b>							<b>3.74</b>	

Table 4.15 indicate that 238(80.4%) of the respondents strongly agreed that modular assessment allowed for students' competition, 58(19.6%) disagreed and none agreed, strongly disagreed and had a neutral opinion. Consequently, the study suggested that respondents tended to agree (Mean = 3.61; Std Dev =.795) that modular assessment allowed for students' competition. This implies modular assessment tend to allow for students' competition.

Similarly, 148(50.0%) of the respondents agreed that ongoing feedback was provided to help students improve and reach the required level of competency, 58(19.6%) had neutral opinion, 50(16.9%) strongly agreed, 40(13.5%) strongly disagreed and none disagreed. Accordingly, the study revealed that respondents tended to agree (Mean = 3.57; Std Dev =1.183) about the ongoing feedback provided to help students improve and reach the required level of competency. This implies that the ongoing feedback tends to be provided to help students improve and reach the required level of competency.

Additionally, 198(66.9%) of the respondents agreed that modular syllabus coverage was achieved through the time allocated for students' modular assessments, 56(18.9%) strongly agreed, 16(5.4%) disagreed, 14(4.7%) strongly disagreed and 12(4.1%) had a neutral opinion. Therefore, the study suggested that respondents strongly tended to agree (Mean = 3.90; Std Dev =.930) that modular syllabus coverage was achieved through the time allocated for students' modular assessments. This was supported by an interviewee who had the following to say;

... While modular assessments are integral for monitoring progress and ensuring comprehensive coverage, they must be strategically planned to align with the syllabus objectives. Not only assessing student learning but also utilizing assessment data to inform instructional adjustments and provide targeted support where needed. Additionally, there is need for

flexible scheduling and adequate resources to support both teaching and assessment activities, thereby fostering an environment conducive to thorough syllabus coverage and meaningful student learning outcomes ...*Female Participant, 51 years, Principal.*

This implies that modular syllabus coverage strongly tends to be achieved through the time allocated for students' modular assessments.

On whether students' modular assessment was moderated, 178(60.1%) of the respondents agreed, 60(20.3%) strongly disagreed, 58(19.6%) had a neutral opinion and none disagreed and strongly agreed. Subsequently, the study revealed that respondents had a neutral opinion (Mean = 3.20; Std Dev =1.174) regarding the students' modular assessment moderation. This implies that students' modular assessment is somehow moderated.

Lastly, 176(59.5%) of the respondents agreed that extended assessment schedules accommodated students who missed sessions or performed below average, 120(40.5%) strongly agreed and none strongly disagreed, disagreed and had neutral opinion. Therefore, the study suggested that respondents agreed (Mean = 4.41; Std Dev =.492) that extended assessment schedules accommodated students who missed sessions or performed below average. This implies that assessment schedules are extended for accommodation of students who either miss sessions or perform below average.

## **4.6 Diagnostic Test Results**

### **4.6.1 Linearity Results**

Linearity refers to the consistency of change or the rate of change between scores on two sets of variables across the entire range of those variables (Jin, Yang, Wang, and Jordan, 2020). Therefore, it is the consistent rate of change in slope that represents the relationship

between an independent variable and a dependent variable. Linearity describes how two (or more) variables change at a consistent rate (Sachdeva, Fotheringham, Li, & Yu, (2022). The linearity assumption correctly captured the relationship between the dependent and independent variables. Non-linearity in the regression analysis underestimated the true relationship between the study variables. Linearity was done by use of the Pearson product moment correlation. A correlation coefficient of 1 indicates a perfect linear correlation, while values between 0.9 and 1 indicate a strong positive correlation. Between 0.7 and 0.9 suggests a high positive correlation, and between 0.5 and 0.7 indicates a moderate positive correlation. A correlation between 0 and 0.5 shows a weak correlation, and a correlation of 0 indicates no relationship. A correlation between -1 and 0 indicates a negative relationship. Therefore, the linearity assumption was n was satisfied (Quintero-Rincon, D'Giano, and Risk, 2020). This implies that all the dimensions of the variables under study jointly have a positive and significant relationship with the performance of technical courses in Technical Vocational Education Training in Nairobi County, Kenya. The results are presented in Table 4.11.

**Table 4. 11: Linearity results**

		<b>Correlations</b>			
		Partnersh ip	Digita lizatio n	Assess ment	Performance of Technical courses
Partnership	Pearson Correlation	1			
	Sig. (2-tailed)				
Digitalization	Pearson Correlation	.592**	1		
	Sig. (2-tailed)	.000			
Assessment	Pearson Correlation	.445**	.510**	1	
	Sig. (2-tailed)	.000	.000		
Performance of Technical courses	Pearson Correlation	.755**	.781**	.615**	1
	Sig. (2-tailed)	.000	.000	.000	
N		320	320	320	300

\*\* . Correlation is significant at the 0.01 level (2-tailed).

#### 4.6.2 Normality Test Results

The researcher performed a normality test on the regression model to verify that the observations likely originated from normally distributed data. This test is crucial for selecting appropriate statistical tests and ensuring that the assumptions of normal distribution are not violated (Hatem, Zeidan, Goossens, & Moreira, 2022). The results are presented in Table 4.11.

**Table 4. 12: Normality test results**

	Descriptive Statistics					
	N	Mean	Skewness	Kurtosis		
	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Modular partnership strategy	320	3.5144	-.046	.136	-.784	.272
Modular digitalization strategy	320	4.0319	-1.029	.136	.142	.272
Modular assessment strategy	320	3.7400	-.524	.136	-1.021	.272
Performance of technical courses	320	3.7000	-.927	.136	-.506	.272
Valid N (listwise)	320					

From Table 4.12 therefore, it was noticed that modular partnership strategy had a skewness value of  $-.046$  and a kurtosis value  $-.784$ . Modular digitalization strategy had a skewness value  $-1.029$  and a kurtosis value  $.142$ . The study also revealed that modular assessment strategy had a skewness value  $-.524$  and kurtosis value of  $-1.021$ . Finally, Performance of technical courses had a skewness value of  $-.927$  and kurtosis value of  $-.506$ . Skewness measures the symmetry of a distribution, with an acceptable range from  $-3$  to  $+3$ . Kurtosis assesses the tail-heaviness of a distribution, considered acceptable between  $-10$  and  $+10$ . A kurtosis value near  $0$  suggests a shape close to normal; negative values indicate a more

peaked distribution, while positive values suggest a flatter shape (Cox, 2010). These metrics imply that the variables followed a normal distribution.

#### 4.6.3 Multicollinearity Test

To assess the correlation between variables, a multicollinearity test was conducted. Multicollinearity is a statistical phenomenon where two or more predictor variables in a multiple regression model exhibit high correlation (Daoud, 2017). This issue arises when there is a linear relationship among independent variables within a single equation model (Daoud, 2017). In multiple regression analysis, the estimated regression coefficients can vary widely and become less reliable as the correlation between independent variables increases (Shrestha, 2020). Results of the multicollinearity test are detailed in Table 4.13.

**Table 4. 13: Multicollinearity Results**

Model	Collinearity Statistics	
	Tolerance	VIF
(Constant)		
1		
Modular partnership strategy	.622	1.607
Modular digitalization strategy	.574	1.742
Modular assessment strategy	.709	1.411

Detection Tolerance and Variance Inflation Factor (VIF) method was used to test for multicollinearity (Elsayed, 2021). The researcher suggested that generally, a VIF above 4 or tolerance below 0.25 indicates that multicollinearity might exist, and further investigation is required. When VIF is higher than 10 or tolerance is lower than 0.1, there is significant multicollinearity that needs to be corrected. Table 4.18 indicates that Variance

Inflation Factor (VIF) results for the study variables were less than 4 and all the Tolerance results were greater than 0.25 which shows no multicollinearity between predictor variables.

#### 4.7 Inferential Analysis

This section outlined the relationship between the various independent variables on the dependent variable. This study conducted correlation analysis and regression analysis between the independent variables and the dependent variable.

##### 4.7.2 Multiple Regression Analysis

The study established combined effect of modular partnership strategy, modular digitalization strategy, modular assessment strategy on performance of technical courses in TVET in Nairobi County, Kenya. The results of multiple regression analysis shown in Table 4.20.

**Table 4. 14: Effect of modular partnership, digitalization and assessment strategy on performance of technical courses in Technical Vocational Education Training in Nairobi County, Kenya**

<b>Model Summary<sup>b</sup></b>					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.880 <sup>a</sup>	.775	.772	.24938	1.830

a. Predictors: (Constant), Modular assessment strategy, Modular partnership strategy, Modular digitalization strategy

b. Dependent Variable: Performance of technical courses

**ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	67.547	3	22.516	362.035	.000 <sup>b</sup>
	Residual	19.653	316	.062		
	Total	87.200	319			

a. Dependent Variable: Performance of technical courses

b. Predictors: (Constant), Modular assessment strategy, Modular partnership strategy, Modular digitalization strategy

**Coefficients<sup>a</sup>**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
	(Constant)	.349	.113		
Modular partnership strategy	.296	.025	.403	11.915	.000
Modular digitalization strategy	.366	.030	.432	12.263	.000
Modular assessment strategy	.222	.033	.216	6.794	.000

a. Dependent Variable: Performance of technical courses

Table 4.14, under Model Summary, shows that the Durbin-Watson's value was 1.830. Typically, DW test statistic values between 1.5 and 2.5 are considered normal, while values outside this range may raise concerns. Additionally, the adjusted R-squared measures the proportion of variation in the dependent variable explained by the independent variables.

In the model summary ( $R = 0.880$ ,  $R\text{-squared} = 0.775$ ,  $\text{Adjusted } R\text{-squared} = 0.772$ ), the adjusted  $R\text{-squared}$  of  $0.772$  indicates that  $77.2\%$  of the variation in performance of technical courses in TVET in Nairobi County, Kenya, is explained by the predictor variables (Modular partnership, assessment, digitalization strategy). This suggests that modular syllabus delivery has a strong positive effect on the performance of technical courses in TVET. However, it also implies that approximately  $22.8\%$  of the variation is influenced by factors not considered in this study.

Additionally, table 4.14, under ANOVA, shows a statistically significant effect of the independent variables on the dependent variable ( $F=362.035$ ;  $p=0.00$ ). This indicates that the multiple regression model was a good fit for the data. It also indicates that perception on modular syllabus deliver such as modular partnership strategy, modular digitalization strategy and modular assessment strategy all affect the performance of technical courses in TVET.

Table 4.14, under Coefficients, indicate that effect of modular partnership strategy on the performance of technical courses in TVET was positive and significant ( $B_1 = 0.403$ ,  $p = 0.000$ ). The effect of modular digitalization strategy is denoted by ( $B_2 = 0.432$ ,  $p = 0.000$ ). The results also showed that the effect of modular assessment strategy was ( $B_3 = 0.216$ ,  $p = 0.000$ ). The Equation 1 thus showed the regression equation for the regression model 1 in Table 4.14 as follows;

$$Y = 0.403 X_1 + 0.432 X_2 + 0.216 X_3 \dots\dots\dots \text{Equation 1}$$

$$Y = 0.349 + 0.296 X_1 + 0.366 X_2 + 0.222 X_3 \dots\dots\dots \text{Equation 2}$$

In equation 1, the coefficients refer to the slope of the regression line and amount of variance each predictor contributes to the general regression equation. Therefore, adjusting modular partnership strategy by 1 unit led to .403 units change in performance of technical courses in TVET. It is also noted that changing 1 unit of modular digitalization strategy would lead to .432 units change in performance of technical courses in TVET, and a 1-unit change in modular assessment strategy would lead to .216 units change in performance of technical courses in TVET. Consequently, all variables are statistically significant predictors of the dependent variable. The results implied that modular digitalization strategy ( $t = 12.263$ ) affected the performance of technical courses in TVET the most followed by modular partnership strategy ( $t = 11.915$ ) and lastly modular assessment strategy ( $t = 6.794$ ). Finally, the results in Equation 1 indicate that if TVET does not address perceptions of modular syllabus delivery, the outcome would remain constant at 0.349 units.

#### **4.10 Hypotheses Testing of the Results**

In this study, a t-test was used to assess the individual significance of the coefficients under the null hypothesis. The test was conducted at a 95% confidence level ( $\alpha = 0.05$ ) with a critical value of  $t = 1.96$ . The null hypothesis was rejected when the t-calculated exceeded the t-tabulated value. The results were as follows:

*H<sub>01</sub>: There is no statistically significant effect of modular partnership strategy on the performance of technical courses in Technical Vocational Education Training in Nairobi County, Kenya.*

The test was conducted at a 95% confidence level ( $\alpha = 0.05$ ). According to the model in Table 20, the p-value obtained for modular partnership strategy was less than 0.05 ( $p =$

0.000). Therefore, this study rejected the null hypothesis, implying that there is a statistically significant effect of modular partnership strategy on the performance of technical courses in TVET in Nairobi County, Kenya.

***H<sub>02</sub>: There is no statistically significant effect of modular digitalization strategy on the performance of technical courses in Technical Vocational Education Training in Nairobi County, Kenya.***

The test was conducted at a 95% confidence level ( $\alpha = 0.05$ ). According to the model in Table 20, the p-value obtained for modular digitalization strategy was less than 0.05 ( $p = 0.000$ ). Therefore, this study rejected the null hypothesis, implying that there is a statistically significant effect of modular digitalization strategy on the performance of technical courses in Technical Vocational Education Training in Nairobi County, Kenya.

***H<sub>03</sub>: There is no statistically significant effect of modular assessment strategy on the performance of technical courses in Technical Vocational Education Training in Nairobi County, Kenya.***

The test was conducted at a 95% confidence level ( $\alpha = 0.05$ ). According to the model in Table 20, the p-value obtained for modular assessment strategy was less than 0.05 ( $p = 0.000$ ). Therefore, this study rejected the null hypothesis, implying that there is a statistically significant effect of modular assessment strategy on the performance of technical courses in TVET in Nairobi County, Kenya.

**Table 4. 15: Summary of Results for Hypotheses Testing**

<b>Hypothesis</b>	<b>Statements</b>	<b>t</b>	<b>Sig</b>	<b>Decision rule</b>
H <sub>01</sub>	There is no statistically significant effect of modular partnership strategy on the performance of TVET in Nairobi County, Kenya.	11.915	.000	Null hypothesis rejected
H <sub>02</sub>	There is no statistically significant effect of modular digitalization strategy on the performance of TVET in Nairobi County, Kenya.	12.263	.000	Null hypothesis rejected
H <sub>03</sub>	There is no statistically significant effect of modular assessment strategy on the performance of TVET in Nairobi County, Kenya.	6.794	.000	Null hypothesis rejected

## **CHAPTER FIVE**

### **SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS**

#### **5.0 Introduction**

The main objective of this study was to investigate the effect of modular syllabus implementation strategies on the performance of technical courses in Technical Vocational Education Training in Nairobi County, Kenya. The study determined the effect of modular partnership strategy on the performance of technical courses in Technical Vocational Education Training in Nairobi County, Kenya; assessed the effect of modular digitalization strategy on the performance of technical courses in Technical Vocational Education Training in Nairobi County, Kenya; and established the effect of modular assessment strategy on the performance of technical courses in Technical Vocational Education Training in Nairobi County, Kenya.

#### **5.1 Summary**

##### **5.1.2 Effect of Modular digitalization Strategy on performance of technical course**

On the tutor's perception, the study suggested that respondents agreed that the communication-based partnership strategy helped tutors manage the modular training defined at central level. On whether the communication-based partnership strategy enabled tutors provide information on implementation of modular syllabus, the study revealed that respondents strongly tended to agree. Additionally, the study suggested that respondents tended to have a neutral opinion on whether an advisory-based partnership strategy allowed tutors ran modular training programmes in compliance with norms. On whether the cooperation-based partnership strategy enabled tutors contributed to the definition of

training organization norms, the study revealed that respondents had a neutral opinion. Lastly, the study suggested that respondents strongly tended to agree that the collaboration-based partnership strategy allowed for institution's modular syllabus funding.

On the student's perception, the study suggested that respondents agreed that the communication-based partnership helped students register for and enroll in modular training programs. Similarly, the study revealed that the students had a neutral opinion about the communication-based partnership enabled students give information on modular syllabus. Additionally, the study suggested that respondents tended to have a neutral opinion that an advisory-based partnership allowed students to sign internship agreements. On whether the cooperation-based partnership enabled students contribute to the definition of training organization norms, the study revealed that respondents had a neutral opinion. Lastly, the study suggested that respondents agreed that the collaboration-based partnership allowed students undertake modular internship in companies.

Inferential statistics revealed no statistically significant effect of the modular assessment strategy on the overall performance of TVET in Nairobi County, Kenya. However, under coefficients, the effect of the modular partnership strategy on the performance of technical courses in TVET was positive and significant. A 1-unit adjustment in the modular partnership strategy led to a 0.403-unit change in the performance of technical courses. The results implied that the modular partnership strategy had the second most substantial effect on the performance of technical courses in TVET.

### **5.1.2 Effect of Modular Partnership Strategy on performance of technical course**

On the tutor's perception, the study suggested that respondents agreed that tutors easily adapted to online modular learning. On whether tutors used online tools when delivering modular syllabus lectures, 19(79.2%) of the respondents agreed, the study revealed that respondents agreed. Additionally, the study suggested that respondents strongly tended to agree that tutors employed competency-based approach to modular digital competence development. On whether tutors used online management systems in delivering modular syllabus lectures, the study revealed that respondents agreed. Lastly, the study suggested that respondents tended to agree that tutor's adoption of modular digital platforms and technologies was accelerated by scaling up existing policies.

On the student's perception, the study suggested that respondents strongly tended to agree that the students easily adapted to online modular learning. Additionally, the study revealed that the respondents agreed that students used online tools when attending to modular classes. On whether the institution adopted competency-based approach to cultivate students' modular digital competence, the study suggested that respondents strongly tended to agree. Similarly, the study revealed that respondents strongly tended to agree regarding the students utilized an online management system while attending modular classes. Lastly, the study suggested that respondents agreed that students use of modular digital platforms and technologies was accelerated by scaling up existing policies.

Inferential statistics revealed no statistically significant effect of the modular digitalization strategy on the overall performance of TVET in Nairobi County, Kenya. However, under coefficients, the effect of the modular digitalization strategy on the performance of technical courses in TVET was positive and significant. A change of 1 unit in the modular

digitalization strategy would lead to a 0.432-unit change in the performance of technical courses. The results implied that the modular digitalization strategy had the most substantial effect on the performance of technical courses in TVET.

### **5.1.3 Effect of Modular Assessment Strategy on performance of technical course**

On the tutor's perception, the study suggested that respondents strongly tended to agree that tutors considered competition in modular assessment. On whether tutors considered feedback as a critical aspect in assessment of modular, the study revealed that respondents had neutral opinion. Additionally, the study suggested that respondents agreed that time allocated for assessment ensured that its process attained curriculum coverage. On whether tutors prioritized moderation as significant in learners' modular assessment, the study revealed that respondents tended to agree. Lastly, the study suggested that respondents agreed that tutors often extended assessment schedules to accommodate students who missed sessions or performed below average.

On the student's perception, the study suggested that respondents tended to agree that modular assessment allowed for students' competition. Similarly, the study revealed that respondents tended to agree about the ongoing feedback provided to help students improve and reach the required level of competency. Additionally, the study suggested that respondents strongly tended to agree that modular syllabus coverage was achieved through the time allocated for students' modular assessments. On whether students' modular assessment was moderated, the study revealed that respondents had a neutral opinion. Lastly, the study suggested that respondents agreed that extended assessment schedules accommodated students who missed sessions or performed below average.

Inferential statistics revealed no statistically significant effect of the modular assessment strategy on the overall performance of TVET in Nairobi County, Kenya. However, under coefficients, the effect of the modular assessment strategy on the performance of technical courses in TVET was positive and significant. A 1-unit change in the modular assessment strategy would lead to a 0.216-unit change in the performance of technical courses. The results implied that the modular assessment strategy had the least effect on the performance of technical courses in TVET.

## **5.2 Conclusion**

In conclusion, applying modular syllabus strategies including partnerships, digitalization, and continuous assessment has a significant effect on the performance of technical courses in TVET institutions. Adopting these strategies leads to marked improvements in the effectiveness and outcomes of technical education programs within TVET institutions. The modular digitalization strategy has the most substantial effect on the performance of technical courses in TVET, followed by modular partnership strategy, and lastly modular assessment strategy.

Modular partnership strategies significantly affect the performance of technical courses in TVET. Tutors' perspective that when a communication-based partnership strategy is adopted, tutors effectively manage modular training as defined at the central level and provide crucial information on the implementation of the modular syllabus. An advisory-based partnership strategy somehow helps tutors run modular training programs in compliance with established norms. Cooperation-based partnership strategies somehow enable tutors to contribute to defining training organization norms, while collaboration-based partnership strategies tend to facilitate funding for the institution's modular syllabus.

From the students' perspective, communication-based partnerships help them register for and enroll in modular training programs and somehow provide information on the modular syllabus. Advisory-based partnerships tend to somehow facilitate the signing of internship agreements. Cooperation-based partnerships somehow allow students to contribute to defining training organization norms, while collaboration-based partnerships enable students to undertake modular internships in companies.

Modular digitalization strategies significantly affect the performance of technical courses in TVET. Tutors perceive that they easily adapt to online modular learning and use online tools when delivering modular syllabus lectures. They strongly tend to employ a competency-based approach to developing modular digital competence and utilize online management systems for their lectures. Additionally, the adoption of modular digital platforms and technologies by tutors is accelerated by scaling up existing policies. From the students' perspective, they easily strongly tend to adapt to online modular learning and use online tools for attending modular classes. The institution strongly tends to adopt a competency-based approach to cultivate students' modular digital competence. Students also tend to utilize an online management system during modular classes, and their use of modular digital platforms and technologies is accelerated by scaling up existing policies.

Modular assessment strategies significantly affect the performance of technical courses in TVET. Tutors tend to recognize the importance of competitive aspects in modular assessments and value feedback as essential to the assessment process. Adequate time allocation for assessments ensures thorough coverage of the curriculum. Additionally, tutors prioritize moderation to maintain fairness in learners' modular assessments and frequently extend assessment schedules to support students who miss sessions or perform

below average. From the students' perspective, modular assessments tend to foster healthy competition, and ongoing feedback tend to help them improve and reach the required level of competency. Comprehensive modular syllabus coverage is often strongly tended to achieve through the time allocated for assessments. These assessments are somehow moderated to ensure fairness, and extended schedules accommodate students who miss sessions or perform below average.

### **5.3 Recommendations**

The policy and stakeholder should ensure implementation of:

Modular partnership strategies to enhance management of modular training, facilitate crucial information dissemination for tutors, ensure compliance with norms, support student enrollment, facilitate internship agreements, and foster collaborative opportunities for modular internships in companies.

Modular digitalization strategies to promote tutors' adaptation to online tools and competency-based teaching, facilitating students' seamless adaptation to online learning, competency development, and digital platform utilization, accelerated through enhanced policy scaling.

Modular assessment strategies, emphasizing tutors' consideration of competition, critical feedback, comprehensive curriculum coverage through allocated assessment time, moderation for fairness, and accommodating extended schedules for students to foster healthy competition and competency development.

Modular syllabus strategies, including modular partnership, modular digitalization, and modular assessment.

### **5.3.1 Area for Further Research**

Further research should focus:

Moderating effect on the relationship between modular syllabus strategies, such as modular partnership, modular digitalization, and modular assessment, and the performance of technical courses in TVET.

## REFERENCES

- Acuña, M. H., Ogilvie, K. W., Baker, D. N., Curtis, S. A., Fairfield, D. H., & Mish, W. H. (1995). The global geospace science program and its investigations. *Space Science Reviews*, 71, 5-21.
- Aghlimoghadam, L. (2023). Solar Business in an Oil-Rich Country? A Socio-Technical Investigation of Solar PV Businesses in Iran. *Sustainability*, 15(11), 8973.
- Agole, P., Kerre, B., Okaka, W., & Ochieng, R. (2022). Confronting the Challenges of University Technical Vocational Education and Training in Uganda.
- Akaranga, S. I., & Makau, B. K. (2016). Ethical Considerations and their Applications to Research: a Case of the University of Nairobi. *Journal of Educational Policy and Entrepreneurial Research*, 1-9.
- Alexander, G. (2021). Possible merger, entrepreneurship education in TVET engineering studies: A case for South Africa. *Journal of Entrepreneurship Education*, 24(2).
- Alvarez, C., Samary, M. M., & Wise, A. F. (2024). Modularization for mastery learning in CS1: a 4-year action research study. *Journal of Computing in Higher Education*, 36(2), 546-589.
- Atukunda, j., & Maja, M. (2022). Computer Practice Module Lecturers' Experiences of Internal Continuous Assessment at Technical Vocational Education and Training Colleges. *International Journal of Educational Methodology*, 8(1), 151 - 162.
- Bryman, A., & Bell, E. (2007). *Business Research Methods*. Oxford University Press.
- Chen, X., & Chan, S. (2024). Implementing digital pedagogy in TVET: A Connectivist perspective. *Vocation, Technology & Education*, 1(2).
- Chitema, D. D. (2021). Technical and vocational Education and training (TVET) in Botswana: implications for graduate employability. . *The Education Systems of Africa*, 371-389.
- Cohen, L., Lawrence, M., & Keith, M. (2007). *Research Methods in Education Sixth edition*. Routledge .
- Collis, J., & Hussey, R. (2009). Business Research: A practical guide for undergraduate and post-graduate students. 3rd edition, Palgrave Macmillan Construction Industry. *Engineering, Construction and Architectural Management*, pp. 10(5):333-342.
- Creswell, J. W. (2012). *Educational Research: Planning, Conducting and Evaluating Quantitative and Qualitative Research*. Boston: Pearson Education.
- Dejene, W., & Chen, D. (2019). . The practice of modularized curriculum in higher education institution: Active learning and continuous assessment in focus. *Cogent Education*, 6(1).

- Dejene, W., & Chen, D. (2019). The practice of modularized curriculum in higher education institution: Active learning and continuous assessment in focus. *Cogent Education*, 6(1).
- Denzin, N.K & Lincoln, Y.S. (2000). *A Handbook of Qualitative Research*. California: Sage Publications.
- Diao, J., & Qu, Y. (2024). Teaching competence of TVET teachers in the digital age: Implementation and evaluation of a training program in China. *Evaluation and Program Planning*, 103, 102402.
- DuPlooy, G. (2002). *Communication Research: Techniques, methods and applications*. Landsdowne: Juta and Co. Ltd.
- Easterby-Smith, M., Thorpe, R., & Jackson, P. (2008). *Management Research*. London: Sage.
- Edralin, D., & Pastrana, R. (2023). Technical and vocational education and training in the Philippines: In retrospect and its future directions. *Bedan Research Journal*, 8(1), 138-172.
- Engel-Hills, P., Winberg, C., Nomgauza, T., & Nduna, J. (2023). *TVET College Industry Partnerships Technical Report*. Cape: Professional Education Research Institute.
- Fosnot, C. T. (2013). *Constructivism: Theory, perspectives, and practice*. Teachers College Press.
- Frazer, L., & Lawley, M. (2000). *Questionnaire design and administration: a practical guide*. Queensland, Australia: John Wiley & Sons.
- Gay, L. R. (1992). *Education Research Competencies for Analysis and Application*. New York: Macmillan.
- Gebremariam, G. R., Kidane, B. Z., & Gillies, R. M. (2023). The Influence of Student Diversity on Applying Cooperative Learning in Ethiopian Polytechnic Colleges. *Education Sciences*, 13(10), 1048.
- Gewer, A. (2021). *Formal and informal VET in Subsaharan Africa. Overview, Perspectives and the Role of Dual VET*. Zurich: Donor Committee for Dual Vocational Education and Training (DC dVET). Zurich.
- Gyimah, N. (2020). Assessment of Technical and Vocational Education and Training (TVET) on the development of the World's Economy: Perspective of Africa, Asia and Europe. *Asia and Europe*.
- Husna, M., & Retneswari, M. (2009). Reliability (Internal Consistency) of the Job Content Questionnaire on Job Stress Among Office Workers of a Multinational Company in Kuala Lumpur. *Asia-Pacific Journal of Public Health*, Vol 21(2)., Vol 21(2).

- International Labour Organization (ILO). (2020). *The Digitization of TVET and Skills Systems*.
- International Telecommunication Union. (2021). *Accelerating digital transformation in challenging times*.
- Jembere, E., Hybano, A., & Jonsson, A. C. (2023). Knowledge Transfer through Public-Private Development Partnerships: Sustainability of TVET Interventions in Ethiopia and Zambia. *Skandinavisk tidsskrift for yrker og profesjoner i utvikling*, 8(1), 21–42.
- Kasomo, D. (2006). *Research Methods in Humanities and Education*. NAKURU: Egerton University.
- Kenya National Bureau of Statistics (KNBS). (2019). *2019 Kenya Population and Housing Census Results*. Nairobi.
- Kenya Universities and Colleges Central Placement Service (KUCCPS). (2019).
- Kirogo, W., Wawire, V., & Kirimi, F. (2023). Strategies for aligning institutional engineering Technical Vocational Education and Training practices with industry skills requirements in Kenya. *Reviewed Journal of Education Practice*, 4(1), 96 – 116.
- Kombo, D. K& Tromp, D.L.A. (2006). *Proposal and Thesis Writing: An Introduction*. Nairobi: Paulines Publishers Africa.
- Koros, H. K. (2021). Linking Technical and Vocational Education and Training (TVET) with entrepreneurship education: A case of Kenya Technical Trainers College (KTTC). *The Kenya Journal of Technical and Vocational Education and Training*, 4.
- Kothari, C. R., & Garg, G. (2014). *Research methodology Methods and Techniques*. New Delhi: New Age International (P) Ltd. .
- Le, A. T., Phung, Q., Nguyen, T. X., & Nguyen, T. L. (2022). Establishing a Collaboration Model for BIM Training Program in Technical and Vocational Education and Training (TVET): A Vietnam case study. In *IOP Conference Series: Earth and Environmental Science* (Vol. 1101, p. 092032). IOP Publishing.
- Lee, Y., Kim, W., & Woo, H. (2021). A case study for technical and vocational education and training professional development training in untact era: Focusing on official development assistance project in botswana. *Journal of Technical Education and Training*, 13(2), 10-24.
- Madimabe, M. P., Bunmi, I. O., & Cias, T. T. (2020). Indigenous knowledge as an alternative pedagogy to improve student performance in the teaching and learning of mathematical Geometry in TVET College. *Proceedings of ADVED*.

- Magut, C., & Kihara, A. (2019). Influence of student retention strategies on performance of TVETs in Nairobi County, Kenya. *Journal of Business and Strategic Management*, 4(1), 1-24.
- Maina, L., & Muathe, S. (2023). Revitalizing Performance Of Technical And Vocational Education And Training Institutions In Kenya Through Strategic Interventions. *International Journal of Scientific and Research Publications*, 13(3).
- Makrygiannis, P. S., Paradisi, A., Tsapelas, T., Papakitsos, E. C., & Piromalis, D. (2020). An Example of Designing Modular Vocational Syllabi. *European Journal of Engineering and Technology Research*, 17-21.
- Mazrekaj, D., & De Witte, K. (2020). The effect of modular education on school dropout. *British Educational Research Journal*, 46(1), 92-121.
- Medina, B. (2022). Development Communication and Extension: The Case of a Premier State University in CALABARZON, Philippines. *International Journal of Multidisciplinary: Applied Business and Education Research*, 3(10), 1895-1905.
- Ministry of Labour and Human Resources, D. o. (2022). *Guideline for Development and Implementation of Modular Course*. Nairobi.
- Mlambo, P. B., & Mkhwanazi, M. S. (2024). Investigating Factors Contributing to Poor Performance in Teaching and Learning of N3 Assembly Drawing: A Case of uMgungundlovu TVET College. *Jurnal Penelitian dan Pengkajian Ilmu Pendidikan: e-Saintika*, 8(1), 102-121.
- Moustafa, A. S., Riungu, F. K., & Rintari, A. (2023). Influence of situational analysis in TVET institutions on graduate employability in Kenya. A case of Nairobi Metropolitan Counties. *Reviewed Journal International of Business Management*, 4(1), 334 – 349.
- Mugenda, O. &. (1999). *Research Methods: Qualitative and Quantitative Approaches*. Nairobi : Acts Press.
- Mutungi, G., Kibaara, T., & Mwirichia, S. (2023). Trainees Employability Skills and Students' Decisions in Selecting Public TVET Institutions in Nairobi County, Kenya. *International Journal of Professional Practice (IJPP)*, 11(2).
- Mwaura, A. N., Mugwe, M., Edabu, P., & Thinguri, R. (2022). Effectiveness of industrial attachment exposure in developing trainees' employability skills from TVET institutions in Nairobi County. *East African Journal of Education Studies*, 5(2), 274-284.
- Nairobi City County. (2023). *County Intergrated Development Plan 2023-2027*. Nairobi.
- Ndikumana, Y., Mugabo, L., & Nsabimana, A. (2024). Exploring the Challenges and Strategies for Enhancing Biotechnology Instruction in a Modularized Context at University of Rwanda College of Science and Technology. *International Journal of Learning, Teaching and Educational Research*, 23(3), 219-247.

- Nguyen, T., Pham, H., Tran, T., DO, L., & Pham, A. (2024). Perceived Impacts And Challenges To The Modular Approach To Curriculum Development In Viet Nam: Vocational Education And Training. *Proceedings of the 15th International Conference on Society and Information Technologies*.
- Nummela, S., & Holm, P. (2023). *Diagnosis of Vocational Education and Training (TVET) in Vietnam for building further cooperation between EU, Finland and Viet Nam*.
- Ododa, F. O., & Kariuki, P. (2023). Factors Influencing Implementation of TVET-CDACC Courses in TVET Institutions. A Case Study of Nyandarua National Polytechnic Nyandarua County, Kenya. *The Kenya Journal of Technical and Vocational Education and Training*, 6(51).
- Okelo, O., Matere, M., & Syonhi, J. (2021). Assessment of Emerging Trends in Technical, Vocational Education and Training Institutions Policies in Relation to Students' Academic Achievement in Uasin Gishu County, Kenya. *Journal of Research Innovation and Implications in Education*, 5(4), 342 – 351.
- Okemwa, K. S., Ferej, A., & Wanami, S. (2022). Influence of Management and Utilization of Electronic Laboratory and Equipment on Skill Acquisition among Technician Trainees in TVET Institutions in Nairobi, Kenya. *African Journal of Education, Science and Technology*, 7(2).
- Olabiyi, O. (2023). Economic revatalization through Technical Vocational (TVET) Education for Training and National Development. *Nigerian Online Journal of Educational Sciences and Technology*, 5(2), 25-40.
- Olabiyi, O. S., & Uzoka, N. (2020). Innovative policies for implementation of TVET curriculum in enhancing students competencies for sustainable industrial development in South-west, Nigeria. *Vocational and Technical Education Journal*, 2(1).
- Omariba, B., Simiyu, J., & Dimo, H. (2023). Influence of the Mode of Training on the Level of Satisfaction of Marine Engineering TVET Graduates from the Coastal Region of Kenya. *Journal of Technology & Socio -Economic Development*, 12(1), 1-14.
- Onyango, N., Sika, J., & Gogo, J. (2022). Challenges of the internal efficiency of science and technology education training programs in the TVET institutions in Nyanza region, Kenya. *European Journal of Education Studies*, 9(6).
- Osumbah, B., & Wekesa, P. (2023). Development in technical and vocational education and training: Synopsis and implications of education policies for right skills in Kenya. *Educational Research and Reviews*, 18(8), 181-193.
- Parker, K., & Chiang, C. T. (2024). Modular Design of Teaching Cases: Reducing Workload While Maximizing Reusability. *Communications of the Association for Information Systems*, 54(1), 16.

- Poschauko, V. C., Kreuzer, E., Hirz, M., & Pacher, C. (2024). Engineering Education goes Lifelong Learning: Modularized Technical Vocational Education and Training Program for the Automotive Sector. *Procedia Computer Science*, 232, 1799-1808.
- Rahman, S. (2022). Transition from Traditional Curriculum to Modular Curriculum: Possible Challenges. *Journal of Gandhara Medical and Dental Science*, 93(1), 1–2.
- Ramamurthy, V., Alias, N., & DeWitt, D. (2021). The need for technical communication for 21st century learning in tvet institutions: Perceptions of industry experts. *Journal of Technical Education and Training*, 13(1), 148-158.
- Ramamurthy, V., DeWitt, D., & Alias, N. (2021). The need for technical communication pedagogical module for 21st century learning in TVET institutions: Lecturers' typical instructional strategies. *MOJES: Malaysian Online Journal of Educational Sciences*, 9(3), 37-46.
- Raza, T., Raza, T. K., Pal, I., Peralta, J. F., Lim, H. A., Mayo, S. M., & Oinde, E. (2023). Mainstreaming disaster risk management technical and vocational education and training (DRM-TVET) program in higher education institutions: flexible ladderized capacity building model amid COVID-19. In *Multi-Hazard Vulnerability and Resilience Building* (pp. 249-279). Elsevier.
- Razak, A., & Khanan, M. (2022). Digital Learning in Technical and Vocational Education and Training (TVET) In Public University, Malaysia. *Journal of Technical Education and Training*, 14(3), 49-59.
- Riechi, A. R. (2021). The Education System of Kenya: Philosophy, Vision, and Mission. *The Education Systems of Africa*, 211-224.
- Riegler, A. (2011). Constructivism. In *Paradigms in theory construction* (pp. 235-255). New York, NY: Springer New York.
- Saleem, A., Kausar, H., & Deeba, F. (2021). Social constructivism: A new paradigm in teaching and learning environment. *Perennial journal of history*, 2(2), 403-421.
- Serth, S., Staubitz, T., van Elten, M., & Meinel, C. (2022). Measuring the effects of course modularizations in online courses for life-long learners. In *Frontiers in Education* (Vol. 7, p. 1008545). Frontiers Media SA.
- Shakeel, S. I., Haolader, M. F., & Sultana, M. S. (2023). Exploring dimensions of blended learning readiness: Validation of scale and assessing blended learning readiness in the context of TVET Bangladesh. *Heliyon*, 9(1).
- Siena, R. A. (2024). Implementation of TVET program: Input to action plan towards enhanced program implementation. *Ignatian International Journal for Multidisciplinary Research*, 2(6), 735-756.

- Stander, L., Plooy, B. D., & Scheckle, E. (2022). "Some of them are afraid of the language": Perceptions of TVET college staff about the relationship between English language proficiency and academic performance among Engineering students. *South African Journal of Higher Education*, 36(1), 296-311.
- Technical and Vocational Education and Training Authority (TVETA). (2020). *National TVET Standards: The Kenya Report*.
- Technical Vocational Education Training, A. a. (2021). *Strategic Plan (2021-2025)*. Nairobi.
- Tekle, A., Areaya, S., & Habtamu, G. (2024). Enhancing Stakeholders' Engagement in TVET Policy and Strategy Development in Ethiopia. *Journal of Technical Education and Training*, 16(1), 271-285.
- The Republic of Uganda. (2020). *The Technical Vocational Education and Training (TVET) Policy: Implementation guidelines*. Kampala.
- The Republic of Uganda. (2022). *Modular Assesment syllabus for National Certificate in Welding and Fabrication (NCWF): Technical Vocational and Training (TVET)*. Kampala.
- TIKA, T., Gowon, K. E., & Saidu, A. B. (2021). Challenges of implementing psychomotor skills in building trades modular curriculum in Technical Colleges of Adamawa and Taraba States. *UNIZIK Journal of Educational Research and Policy Studies*, 5, 200-215.
- Tshong, P., & Yasin, R. (2023). TVET Educational Learning Strategies and their Impact on Students: A Systematic Literature Review. *International Journal of Academic Research in Business and Social Sciences*, 13(11).
- United Nations Educational Scientific and Cultural Organization (UNESCO). (2019). *Actors and Partnership in Vocational Education and Training*. Dakar: IPE - Pôle de Dakar.
- Usoro, A., & Ezekiel, C. (2024). Competency-based curriculum model for Technical Vocational Education and Training (TVET) in Nigeria. *International Journal of Studies in Education*.
- Wahungu, D., Wawire, V., & Kirimi, F. (2023). Institutional engineering technical vocational education and training practices and implications for alignment with industry skills requirements in selected Central Kenya counties. *Reviewed Journal International of Education Practice*, 4(1), 56-70.
- Wu, M., & Liu, P. (2022). Modular curriculum design under German vocational training standards. *SHS Web of Conferences*.
- Yang, X., & Yang, W. (2024). *Challenges, Trends, and Recommendations. Digital Transformation in Global TVET: Methodology and Practices*. Shenzhen: UNESCO Chair on Digitalization in TVET.

- Yaro, L., & Shafak, T. F. (2024). Curriculum Evaluation of the Textile and Fashion Design Department of Cameroon Opportunities Industrialization Center (COIC), Buea. *American Journal of Education and Practice*, 8(1), 73-93.
- Zeng, X., Chieng, S. L., & Liu, H. (2024). Bridging theory and practice: Exploring digital transformation in entrepreneurship education through a conceptual curriculum development framework in TVET. *Vocation, Technology & Education*, 1(2).
- Zhang, H. (2020). The Reconstruction of Modular Curriculum System of Higher Vocational Specialty and The Scheme and Implementation Of Course Certificate Integration. *International Journal of Social Sciences in Universities*, 3(3), 100.
- Zhang, T., Zhou, Q., Yang, C., Bai, X., Han, X., Cui, G., & Wang, Y. (2023). Exemplars of Good Practice. In *Handbook of Technical and Vocational Teacher Professional Development in the Digital Age* (pp. 91-119). Singapore: Springer Nature Singapore.
- Zhang, Y., Xu, D., Wang, T., Yang, K., Yao, X., Cheng, M., & Ge, D. (2023). The intercultural communication competence improvement for pre-service CSL teachers: A blended learning method based on SVVR. *Human Systems Management*, 1-16.
- Zhong, Z., & Juwaheer, S. (2024). Digital competence development in TVET with a competency-based whole-institution approach. *Vocation, Technology & Education*, 1(2).

## APPENDICES

### APPENDIX I: QUESTIONNAIRE FOR TUTORS

This study focuses on the perception of tutors on the effect of modular syllabus implementation strategies on performance of technical courses in technical Vocational education training in Nairobi County, Kenya. Please note that your responses are confidential and anonymous as you are not required to indicate your name. The questionnaire will be purely for academic purposes. Kindly answer all questions to the best of your knowledge.

#### PART I: DEMOGRAPHIC INFORMATION

(Please tick your answers in the boxes provided)

1. What's your Gender

Male  Female

2. What's your age bracket

Less than 25 years  25-34 years  35-44 years  and above years

3. What's your level of education

Diploma  Bachelor's Degree  Postgraduate  Any Other

4. What's the duration you have worked in the profession

Less than 1 year  1-3 years  4-6 years  7-9 years  Above 9 years

## PART II: MODULAR PARTNERSHIP STRATEGY

This section contains four parts. Please indicate the extent to which you agree or disagree with each statement by placing a tick where appropriate using the following 5-Point Likert scale:

**5 = Strongly Agree (SA) 4 = Agree (A) 3 = Neutral (N) 2 = Disagree (D) 1 = Strongly Disagree (SD)**

### SECTION A: MODULAR PARTNERSHIP STRATEGY

	Statements	1	2	3	4	5
A1	Communication-based partnership strategy helps tutors manage the modular training defined at central level					
A2	Communication-based partnership strategy enable tutors provide information on implementation of modular syllabus					
A3	An advisory-based partnership strategy allows tutors run modular training programmes in compliance with norms					
A4	Cooperation-based partnership strategy enables tutors contribute to the definition of training organization norms.					
A5	Collaboration-based partnership strategy allow for institution's modular syllabus funding					

## SECTION B: MODULAR DIGITALIZATION STRATEGY

	<b>Statements</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
B1	Tutors easily adapt to online modular learning					
B2	Tutors used online tools when delivering modular syllabus lectures					
B3	Tutors employ competency-based approach to modular digital competence development					
B4	Tutors use online management systems in delivering modular syllabus lectures					
B5	Tutor's adoption of modular digital platforms and technologies is accelerated by scaling up existing policies					

**SECTION C: MODULAR ASSESMENT STRATEGY**

	<b>Statements</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
C1	Tutors consider competition in modular assessment					
C2	Tutors consider feedback as a critical aspect in assessment of modular					
C3	Time allocated for assessment ensure that its process attain curriculum coverage					
C4	Tutors prioritize moderation as significant in student modular assessment					
C5	Tutors often extend assessment schedules to accommodate students who miss sessions or perform below average					

**SECTION D: PERFORMANCE OF TECHNICAL COURSES**

	<b>Statements</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
D1	There is an increase in graduation rate in the engineering courses increases					
D2	There is rise in job placement rate in the engineering courses increases					
D3	There is improvement in student competency in the engineering courses increases					
D4	There is an increase in students' retention rate in the engineering courses increases					
D5	There is rise in enrollment rate in the engineering courses increases					

***THANK YOU FOR YOUR TIME AND GENUINE RESPONSE***

## **APPENDIX II: QUESTIONNAIRE FOR STUDENTS**

This study focuses on the perception of students on the effect of modular syllabus implementation strategies on performance of technical courses in technical Vocational education training in Nairobi County, Kenya. Please note that your responses are confidential and anonymous as you are not required to indicate your name. The questionnaire will be purely for academic purposes. Kindly answer all questions to the best of your knowledge.

### **PART I: DEMOGRAPHIC INFORMATION**

(Please tick your answers in the boxes provided)

2. What's your Gender

Male [ ] Female [ ]

### **PART II: MODULAR PARTNERSHIP STRATEGY**

This section contains four parts. Please indicate the extent to which you agree or disagree with each statement by placing a tick where appropriate using the following 5-Point Likert scale:

**5 = Strongly Agree (SA) 4 = Agree (A) 3 = Neutral (N) 2 = Disagree (D) 1 = Strongly Disagree (SD)**

**SECTION A: MODULAR PARTNERSHIP STRATEGY**

	<b>Statements</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
A1	Communication-based partnership helps students register for and enroll in modular training programs					
A2	Communication-based partnership enable students give information on modular syllabus					
A3	An advisory-based partnership allows students to sign internship agreements.					
A4	Cooperation-based partnership enables students contribute to the definition of training organization norms.					
A5	Collaboration-based partnership allows students undertake modular internship in companies					

**SECTION B: MODULAR DIGITALIZATION STRATEGY**

	<b>Statements</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
B1	The students easily adapt to online modular learning					
B2	Students used online tools when attending to modular classes					
B3	Institution adopts competency-based approach to cultivate students' modular digital competence					
B4	Students utilize an online management system while attending modular classes					
B5	Students use of modular digital platforms and technologies is accelerated by scaling up existing policies					

**SECTION C: MODULAR ASSESMENT STRATEGY**

	<b>Statements</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
C1	Modular assessment allows for students' competition					
C2	Ongoing feedback is provided to help students improve and reach the required level of competency					
C3	Modular syllabus coverage is achieved through the time allocated for students' modular assessments					
C4	Students' modular assessment is moderated					
C5	Extended assessment schedules accommodate students who miss sessions or perform below average					

### SECTION D: PERFORMANCE OF TECHNICAL COURSES

	<b>Statements</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
D1	There is an increase in graduation rate in the engineering courses increases					
D2	There is rise in job placement rate in the engineering courses increases					
D3	There is improvement in student competency in the engineering courses increases					
D4	There is an increase in students' retention rate in the engineering courses increases					
D5	There is rise in enrollment rate in the engineering courses increases					

***THANK YOU FOR YOUR TIME AND GENUINE RESPONSE***

### **APPENDIX III: INTERVIEW GUIDES**

This study focuses on the perception of TVET principals on the effect of modular syllabus implementation strategies on performance of technical courses in technical Vocational education training in Nairobi County, Kenya. Please note that your responses are confidential and anonymous as you are not required to indicate your name. The interview will be purely for academic purposes. Kindly answer all questions to the best of your knowledge.

#### **PART I: DEMOGRAPHIC INFORMATION**

(Please tick your answers in the boxes provided)

1 What's your Gender?

Male [ ] Female [ ]

3. What's your age?

#### **PART II: SPECIFIC OBJECTIVES**

4. How does the modular partnership strategy impact the performance of technical courses in Technical Vocational Education Training (TVET) in Nairobi County, Kenya?
5. How does the modular digitalization strategy affect the performance of technical courses in Technical Vocational Education Training (TVET) in Nairobi County, Kenya?
6. What is the effect of the modular assessment strategy on the performance of technical courses in Technical Vocational Education Training (TVET) in Nairobi County, Kenya?

**APPENDIX IV: NAIROBI COUNTY MAP**



## APPENDIX V: SIMILARITY REPORT



University of Eldoret

**Certificate of Plagiarism Check for Thesis**

Author Name	JOSEPH IRUNGU KIMEMIA. SEDU/TED/M/ S/001/16
Course of Study	Type here...
Name of Guide	Type here
Department	Type here...
Acceptable Maximum Limit	Type here...
Submitted By	titustoo@uoeld.ac.ke
Paper Title	EFFECT OF MODULAR SYLLABUS IMPLEMENTATION STRATEGIES ON PERFORMANCE OF TECHNICAL COURSES IN TECHNICAL VOCATIONAL EDUCATION TRAINING IN NAIROBI COUNTY, KENYA
Similarity	11%
Paper ID	4629248
Total Pages	110
Submission Date	2025-11-05 20:48:35

Signature of Student 	Signature of Guide 
University Librarian 	Head of the Department Director of Post Graduate Studies

This report has been generated by DrillBit Anti-Plagiarism Software