

**INFLUENCES ON GENDER DISPARITY IN TVET  
ENROLMENT: A COMPARISON OF  
ENGINEERING AND BUSINESS COURSES IN  
KENYA.**

**BY**

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degree of Doctor of Philosophy**

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## **DECLARATION**

I hereby certify that the content of this thesis relates to my own work taking into account normal candidate-supervisor relations. The thesis contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text. I give consent to the final version of my thesis being made available worldwide when deposited in the University's Digital Repository, subject to the provisions of the Copyright Act 1968.

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**Meshack Chuma Opwora**

**December, 2013**

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## **DEDICATION**

This thesis is dedicated to our Lord and Saviour Jesus Christ who though not physically seen was always close to me and provided for all my spiritual and physical needs including peace, good health, knowledge, wisdom and understanding. Thank you Lord my God! Amen!

## **ABSTRACT**

Technical, Vocational Education and Training (TVET) has become one of the key policy priorities in education and training in Africa due to the recognition of its effects on social and economic empowerment of the society. In Kenya, TVET has been identified to provide requisite skills and build human capacities especially in key priority areas including science, technology and engineering that support the achievement of its *Vision* of becoming a prosperous and industrial nation by the year 2030. However, there is serious gender imbalance in technology and engineering programmes offered in TVET institutions where the proportion of female students enrolled is much lower than males posing female economic empowerment and equity challenges. Studies on gender enrolment in Kenya focus on other education levels, with very little undertaken at TVET level and provision of up-to-date information at this level, can further inform and may ideally, enhance policy formulation and review.

This study focused on the factors that influence student choice of courses at TVET level generally and by gender, the barriers to female enrolments in technology and engineering courses, their relative importance as well as the effectiveness of the government interventions to bridge the gender gap and other perceived measures that could achieve a more effective solution. Quantitative and systematic analysis of government enrolment data were used to analyse enrolment data from seven technical training institutions as well as opinions of 999 (91%) students and 64 (100%) Heads of Departments of technology and engineering and business departments in 16 technical training institutes in Kenya collected using a separate questionnaire for each sample. Inclusion of business department respondents made it possible to compare engineering and non-engineering students' and their departmental heads' opinions on influences on student enrolment in engineering and business courses, thus, enabling an applicability of the findings to TVET programmes more generally. Enrolment trends in the two courses, students' interests, and opinions on influences on their enrolments in the courses and causes of gender disparities in technology and engineering courses were analysed. The Heads of Department opinions on causes of these disparities as well as measures to address them were also analysed.

The study found a range of factors affecting student enrolment in TVET courses including their interests and attitudes towards courses, related employment and the respective prerequisite secondary school subjects, the subject teachers, parents, career advisors, relatives and friends, TVET policies and system, media, student

objectives to do the course, and culture. Among these factors, student interests in the courses, influences from the respective subject teachers (science and business teachers), employment interests and interests in secondary school subjects (science or business) were the most important in prediction of the differences of student choice of courses at this level.

Unlike in developed countries where getting a better salary is important in choice of courses, this was not so in the case of enrolment in TVET courses in Kenya where students were more driven by their desire to gain employment. The same was the case of use of media in relaying careers information where respondents indicated that they were more influenced by newspapers as opposed to TV and internet which are predominant in conveying this information in developed countries. Compared with males, females in general including those who were enrolled in engineering and technology courses in TVET were less interested in engineering courses, the related employment and prerequisite secondary school subjects which was a major barrier to their enrolment and retention in the engineering courses. Other barriers to female enrolment in engineering were competing interests in other courses, employment and unrelated secondary school subjects, negative cultural stereotyping about female performance in technology and engineering employments, lack of role models, and low quality of training.

The government intervention through bursary awards to encourage female enrolments in technology and engineering courses significantly reduced their dropout rates but had low impact on achieving gender parity in these courses since it did not address the other barriers. Thus, the study concluded that a holistic approach involving all key stakeholders in formulation and implementation of relevant laws, policies and programmes to address the short term, medium term and long term enrolment needs could be a more effective solution.

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## **LIST OF ABBREVIATIONS AND ACRONYMES**

1.	ANOVA	Analyses of Variance
2.	AU	African Union
3.	CTE	Career and Technical Education
4.	DEEWR	Department of Education, Employment and Work Place Relations
5.	EFA	Education For All
6.	ETB	Engineering and Technology Board
7.	FAWE	Forum For African Women Educationists
8.	FET	Further Education and Training
9.	IFAD	International Fund for Agricultural Development
10.	ILO	International Labour Organisation
11.	ISAE	Institute Supérieur de Agriculture et Elevage
12.	IT	Information Technology
13.	FAO	Food and Agriculture Organisation
14.	GDP	Gross Domestic Product
15.	GER	Gross Enrolment Ratio
16.	GPI	Gender Parity Index
17.	HOD	Head of Department
18.	KBS	Kenya Bureau of Statistics
19.	KESSP	Kenya Education Sector Support Programme
20.	MDGs	Millennium Development Goals
21.	MOE	Ministry of Education
22.	MOEST	Ministry of Education, Science and Technology
23.	MOHEST	Ministry of Higher Education, Science and Technology

24.	NCVER	National Centre for Vocational Education Research
25.	NGOs	Non-Governmental Organisations
26.	OAU	Organisation of African Union
27.	OECD	Organisation for Economic Co-operation
28.	SMT	Science, Mathematics and Technology
29.	STEM	Science, Technology , Engineering and Mathematics
30.	STI	Science, Technology and Innovation
31.	SSA	Sub-Sahara Africa
32.	TAFE	Technical and Further Education
33.	TTI	Technical Training Institute
34.	TV	Television
35.	TVET	Technical and Vocational Education and Training
36.	TIVET	Technical, Industrial, Vocational Education and Training
37.	UNDP	United Nations Development Programme
38.	UNESCO	United Nation Educational, Scientific and Cultural Organisation
39.	UNECA	United Nations Economic Commission for Africa
40.	UK	United Kingdom
41.	UPE	Universal Primary Education
42.	USA	United States of America
43.	VET	Vocational Education and Training
44.	VTE	Vocational and Technical Education
45.	YP	Youth Polytechnic

For the purpose of this study, **VET, TVET, TIVET, TE, VTE** and **TAFE** were used interchangeably to mean technical and vocational education.

## DEFINITION OF OPERATIONAL TERMS

**Artisan level:** The certificate training designed for producing basic trade skills outputs.

**Craft level:** The advanced certificate training for producing multi-skilled outputs.

**Education:** The long-term development of human resources through transmission of accumulated knowledge, skills and positive values and attitudes.

**Enrolment:** Refers to the number of trainees who get admitted to the engineering courses in the technical training institutes.

**Female Preferred courses:** These are courses that are offered in training institutions that were hoped to make female trainees to perform their traditional responsibilities.

**Gender:** Refers to the cultural and social construction or representation of being a male or female.

**Industrial education:** Is a general form of education about industry that imparts knowledge and skills and attitudes towards the processes of industry. It is usually provided in Kenya at secondary school level.

**Institutes of Technology:** These are institutions that were formerly run by the communities before gaining support from government. They offer courses up to Diploma level.

**National polytechnics:** Are the largest middle level colleges, which cater for a variety of post-secondary career courses, leading to a certificate, ordinary diploma and higher diploma awards.

**Participation:** Refers to whether learners are enrolled in the TVET sub-sector in technical training institutes engineering departments or not; whether they enrol. In this study, participation is indicated by existing data on enrolment and dropout.

**Technical Training:** Refers to those programmes that impart skills, knowledge, values and attitudes to individuals preparing to take middle level professional position in the world of work, particularly in engineering and scientific disciplines.

**Technical Training Institute:** These are institutions, which were formerly technical secondary schools before their conversion to colleges. They offer TVET courses up to High Diploma level.

**Training:** The art of imparting skills and knowhow for creation of the labour force needed for various production activities.

**Vocational Training:** Refers to those programmes that impart scientific occupational skills and knowledge required in the world of work.

**Youth polytechnics:** These are community based training institutions offering courses for imparting to trainees basic skills at Artisan level.