INNOVATION AND VOCATIONAL EDUCATION AND TRAINING IN TANZANIA

A Comparative Analysis of Entrepreneurs in the Metal Sector

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outline

- Introduction and statement of the problem
- Research Question
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Introduction

- Innovation is considered to be an engine for competition and transformation for the entrepreneurs
- Entrepreneurs innovate so as to maintain competition in the markets
- In entrepreneurship context, innovation means new values or improved solutions introduced to the market

Introduction cont.…

- However, for the entrepreneurs to have capacity to innovate they need skills and knowledge
- ??????? Where do they get this
- Some get from formal training such as universities, colleges and technical vocational training centers
  - This follows systematic arrangements of curriculum
- Other get from informal training such as in work activities, workshops, problem-solving, project work

Introduction cont.…

- The focus of this study is on formal training that takes place in VET
- Concept of "Vocational Education and Training (VET)" is discussed in relation to "innovation capacity"
- Scholars have argued that through VET, Entrepreneurs
  - transfer technology
  - build their capability
  - Develop expertise in a particular group of techniques
  - Acquire networks
- Thus, in 1994, Vocational Educational and Training Authority (VETA) was established as an autonomous government agency responsible for coordinating, regulating, financing and providing vocational educational and training in the country

Statement of the Problem

- The government of Tanzania has taken some initiatives to transfer skills and knowledge to entrepreneurs by building Vocational Training Centres (VTC) in each region.
- The purpose is to impart technical skills and innovative ideas to entrepreneurs so as to exploit market opportunities when setting up their firms.
- However, it is not clear on the performance of the entrepreneurs who have acquired skills through VET. Therefore, this study was a modest attempt to shade some lights on this.

Objectives

- The purpose of this study was to investigate the role of vocational educational and training in promoting innovation among metal entrepreneurs
- Specifically by looking on innovativeness of the entrepreneurs who have acquired skills through VET compared to apprenticeship

Research Question

- How innovative are entrepreneurs who have acquired skills through VET compared to apprenticeship?
- In terms of

➢ **Product-** introduction of goods or services that are either new or improved to the market

➢ **Process -** introduction of new or improved production method to the market

➢ **Market** - These are the strategies used by entrepreneurs to market the products produced.

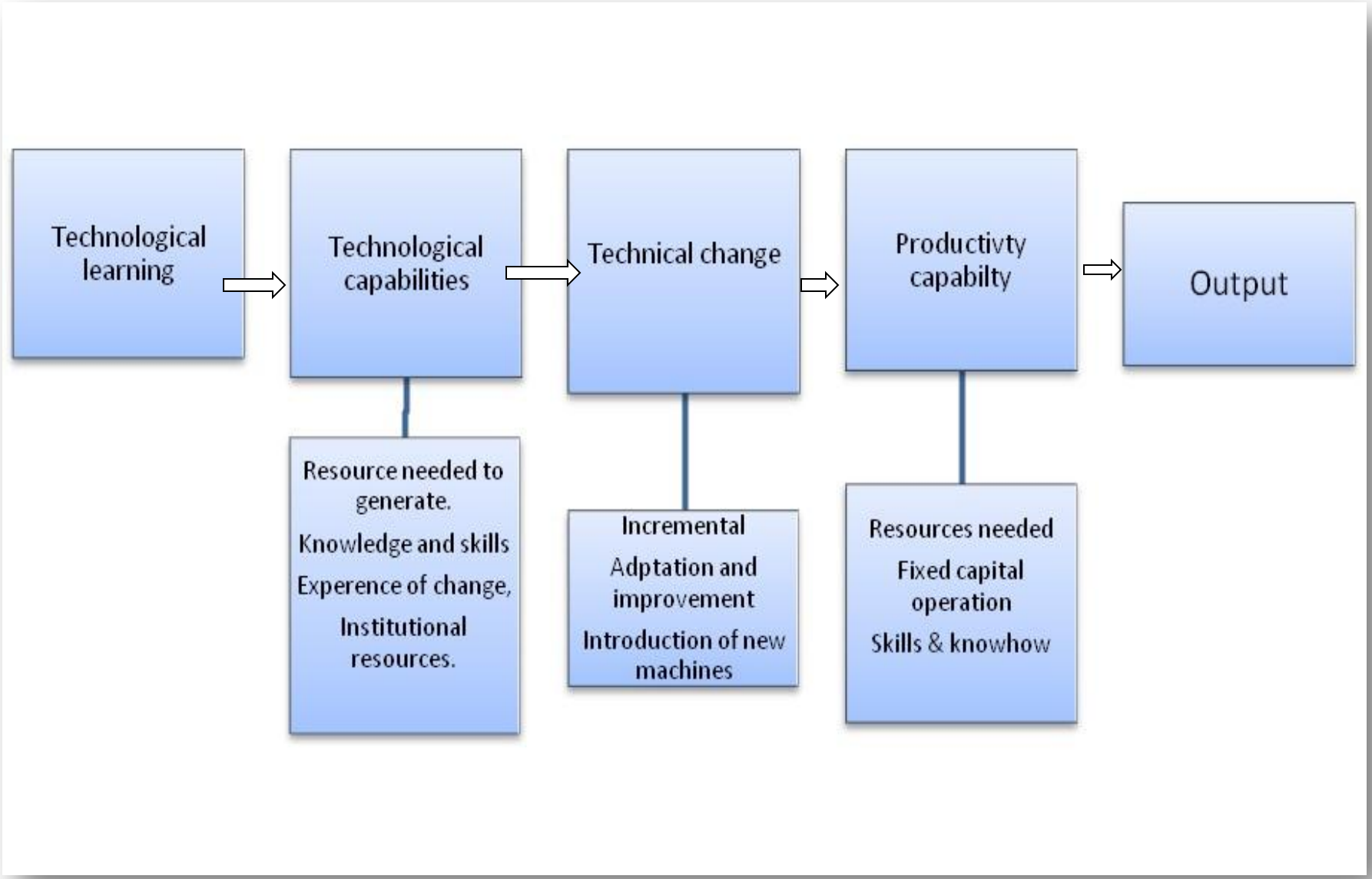
Conceptual Framework

- Technological capability building and innovation is a function of technological learning
- Technological learning- acquisition of skills and knowledge through experience, practice or by being taught in the class (Eraut, 2004)
- Technological capability- ability to create and improve the products or processes using the skills and knowledge acquired (Lall,1992)

➢ The assumption made here is that there is technological learning from VET whereby trainees acquire skills and knowledge.

➢ It is further assumed that, using the skills and knowledge acquired from VET, trainees will be capable to adapt and improve the existing technology

Conceptual Framework For Technological Learning, Capability Building and Innovation



Research Methodology

- **Research Approach-**Qualitative and quantitative
- **Study Area-** Dar as Salaam, Kinondoni District
- **Population-**Metal entrepreneurs
- **Sample Size** eight (68) respondents. Twenty entrepreneurs with VET, twenty with apprenticeship and VET and twenty with apprenticeships, two instructors, four students and two heads from VET in Chang'ombe Vocational Training College.
- **Sampling Techniques-** Snowball sampling techniques were used identify VET and non VET entrepreneurs.
- **Data Collection Methods-** Questionnaire, Interviews and Observation
- **Data analysis-**Number of new and improved products and process that were successfully introduced to the market

Categories of Entrepreneurs Studied

- For the purpose of this work, all three categories of entrepreneurs are defined in order to familiarize the reader with them

➢ VET' entrepreneurs who have attended only formal technological learning in VET

➢ Apprenticeship and VET'' entrepreneurs who have attended informal technological learning in apprenticeships and later joined formal learning in VET

➢ Apprenticeship'' are entrepreneurs who have attended only informal technological learning in apprenticeships

Research Findings

- **Profile of the Respondents**
- **Level of Entrepreneurs Education**

➢ Majority of metal entrepreneurs had primary and secondary education.

Profile of the Respondents cont..

- **Entrepreneurs Working Experience**

➢30% of VET entrepreneurs had five or less years of working experience, 35% had between 6-10 years and 35% had more than ten years of working experiences

➢35% entrepreneurs with apprenticeship and VET had five or less years of working experience, 40% had between 6-10 years and 25% had more than ten years of working experience

➢45% apprenticeship entrepreneurs had five or less years of working experience, 35% had between 6-10 years and 20% had more than ten years of working experience.

- VET entrepreneurs had many years of experience in metal working than apprenticeship entrepreneurs.

Profile of the Respondents cont..

- **Products Produced, Raw Materials Used and Equipment**

➢*Products produced*- Construction equipment, metal furniture and motor vehicles parts such carriers and bumper, Bajaj parts

➢*Equipmen*t-Welding machine, grading machines, drilling machines, cutting disc and rewinding machines

➢*Raw materials*- angle line, aluminum sheets and steel iron

Adoptive Product Innovation

Category of entrepreneurs	Number of Innovations achieved	Number of entrepreneurs (N=60)	Total number of innovations	Total frequency number of innovation
VET	0 1 2 3	4(6.7%) 8(13%) 7(11.3%) 1(1.7%)	0 8 14 3	25
Apprenticeship and VET	0 1 2 3 4 6	4(6.7%) 7(11.3) 4(6.7%) 3(5%) 1(1.7%) 1(1.7)	0 7 8 9 4 6	34
Apprenticeship	0 1 2 3 4 5	2(3.35%) 3(5.0%) 12(20%) 1(1.7%) 1(1.7%) 1(1.7%)	0 3 24 3 4 5	39

Incremental Product Innovation

Category of entrepreneurs	Number of Innovations achieved	Number of entrepreneurs (N=60)	Total number of innovations	Total frequency number of innovation
VET	0 1 2	12(20%) 4(6.7%) 4(6.7%)	0 4 8	12
Apprenticeship and VET	0 1 2 3	9(15%) 3(5%) 6(10%) 2(3.3%)	0 3 12 6	21
Apprenticeship	0 1 2 3	7(11.7%) 4(6.7%) 7(11.7%) 2(3.3%)	0 4 14 6	24

Adoptive Process Innovation

Category of entrepreneurs	Number of Innovations achieved	Number of entrepreneurs (N=60)	Total number of innovations	Total frequency number of innovation
VET	0 1 2 3	13(21.7%) 5(8.3%) 1(1.7%) 1(1.7%)	0 5 2 3	10
Apprenticeship and VET	0 1 2 3	11(18%) 4(6.7%) 4(6.7%) 1(1.7%)	0 4 8 3	15
Apprenticeship	0 1 2 3	9(15%) 4(6.7%) 6(10%) 1(1.7%)	0 4 12 3	19

Incremental Process Innovation

Category of entrepreneurs	Number of Innovations achieved	Number of entrepreneurs (N=60)	Total number of innovations	Total frequency number of innovation
VET	0 1 2 3 6	12(20%) 5(8.3%) 1(1.7%) 1(1.7%) 1(1.7%)	0 5 2 3 6	16
Apprenticeship and VET	0 1 3 4 6	11(18.3%) 5(8.3%) 2(3.3%) 1(1.7%) 1(1.7)	0 5 0 6 4 6	21
Apprenticeship	0 1 2 3 4 5 6	5(8.3%) 3(5%) 4(6.7%) 4(6.7%) 2(3.3%) 1(1.7%) 1(1.7%)	0 3 8 12 8 5 6	42

Market Innovation

- Strategies used by entrepreneurs to market the products

➢ In VET entrepreneurs, 5% participate in exhibitions to sell their products. 15% used advertisements such as business cards and brochures, 80% never use any strategy

➢ In entrepreneurs with apprenticeship and VET, 30% participate exhibitions, 20% use advertisements such as business cards and brochures. 50% never use any strategy

➢ In apprenticeship entrepreneurs 25% participate in the exhibitions, 30% used advertisements such as business cards and brochures, 45% never use any strategy.

- The marketing strategies used by VET entrepreneurs were local, and did not correspondent with the present day marketing technology. Most of them were using the word-of- mouth.

Training in VET vs. Apprenticeship

- The quality of training in VET is low, with a lot of emphasis on theory and certification rather than on skills acquisition as compared to apprenticeship
- As this, VET graduates sought for practical skills in apprenticeships.

➢ **one entrepreneur said**: *It was very difficult for him to gain enough skills during his studies at a Vocational training because the teaching equipment was not enough; a lot of time was being spent on the theoretical part.*

➢ *What he gained is only certificate. After the training, he was trained afresh in a certain workshop . It was that workshop that imparted sufficient skills and knowledge* to *him*

➢ **One entrepreneur with apprenticeship and VET said that:** When *he was working in the street some people advised him to attend Vocational training. He agreed. When he completed the training, he asked himself what knowledge he had added. He realized that he had added only a certificate*

Training in VET vs. Apprenticeship

- One instructor from welding and fabrication department said;

➢*The facilities are not enough. Machines are too old. They have not been replaced since 1988*

- He also noted that the curriculum content is not very much relevant to student needs. He was quoted saying:

➢*We have been teaching Form four Basic Mathematics. One should be taught skills only. Elementary mathematics knowledge is enough than confusing them with form four Basic Mathematics*

- Apart from the actual training, vocational training provides related courses. These are English Language, Basic Mathematics, Entrepreneurs Skills, Engineering Science and Technical Drawing. Also, cross cutting subjects such as life skills, HIV and drug abuse.

Training in VET

- Introduction of Competence Based Education and Training (CBET) approach.
- Approach emphasis on practical training and require students to score 80 percent in all practical examinations.
- The approach did not work due to lack of enough facilities such as materials, personnel, tools and equipment for practical examination.
- Therefore, the approach has been changed to Competence Based Assessment (CBA) which focuses on the written examination
- Because of low practical skills, entrepreneurs who graduated from VET hire the apprenticeship entrepreneurs for technical advice and sometimes "sell" some work that they can not perform to them.

Training in VET Cont…..

- During data collection, the researcher happened to meet an entrepreneur who had studied in Kenya Vocational Training. This entrepreneur was making vibrator block making machines, mixer block machines, interlocking machines and vibrator pavement block making machines.
- An interview was conducted to investigate how training was being conducted in Kenya Vocational Training. The following was his response:

➢ *When you enter Kenya Vocational Training an instructor takes you in three fields, namely, Electricity, Welding and Fabrication and Tailoring.*

➢ *Then, instructors diagnose where you perform better and then they take you in the field where you have demonstrated a good performance. After that, you take the course for two years.*

➢ With regard to training, he said: *There is sufficient training equipment to the extent that each student has one cupboard for the tools, enough workshops. More practical is emphasized.*

Conclusion

- Entrepreneurs who have acquired skills through VET in Tanzania are less innovative in adopting the new products and make some modifications on the existing technology as compared to apprenticeship.
- Entrepreneurs with apprenticeship who later join VET under normal circumstances are expected to be innovative than apprenticeship because they have both theory and practice. However, the study showed that they are less innovative than entrepreneurs. It has been observed when entrepreneurs joined VET for two years apprenticeship entrepreneurs were making more new products in terms of adopting and making some modifications

Conclusion Cont……

- Therefore, it is enough to conclude that in Tanzania informal, training is more capable of building the capacity of entrepreneurs than the VET.
- This is because informal training follows *problem-based training* pedagogy in which trainees training is through practical such as observing, asking questions, project work, coaching and being part of multi-disciplinary teams
- This model is very different from traditional classroom/lecture teaching philosophy which most of the VET colleges follow.

Recommendations

- Appropriate training equipment and tools are needed
- Qualified instructors with experience in enterprises.
- The number of subjects has to be reduced and an emphasis be put on the student's specialization.
- Students have to be enrolled according to available facilities rather than enrolling many students who could not fit the available facilities
- VET colleges need to redefine their curriculum and syllabus to follow *problem-based training* pedagogy
- Classroom/lecture teaching philosophy in VET colleges should be discouraged.
- Training should be according to somebody talent

Areas for Further Research

Researchers are advised to investigate which one between formal and informal training is capable of building the capacity of entrepreneurs in different sectors.

ASANTENI SANA

- Let us put emphasis on practical training to VET