**Sub-theme:** Fostering lifelong learning

**Title:** Bridging soft skills gaps among automotive engineering trainees in TVET: A case of Thika Technical Training Institute

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**Abstract**

TVET has been recognized worldwide as a tool for empowering the youth for sustainable livelihood and social-economic development. However, there are concerns that engineering TVET trainees lack the requisite soft skills for the world of work and this mismatch has implications for the supply of skills to the labour market and youth unemployment. The study based its theoretical explanations on the Human Capital theory. The researcher employed a descriptive survey utilizing both qualitative and quantitative techniques. Considering the limited time, a case study of Thika Technical Training Institute was conducted. The study involved 149 participants comprising 20 automotive engineering trainers, 90 automotive engineering trainees, 30 automotive engineering trainees who had graduated, 8 representatives of the industry players and the Director of Kenya Association of Manufacturers. The study mainly utilized questionnaires, interview guide and Focus Group Discussions. For the purpose of triangulation, document analysis was used. A pilot study was conducted on the research instruments in order to increase validity and reliability. Collected qualitative data was scored manually then organized and analysed systematically as per thematic areas in a narrative form and also in tabular form. Quantitative data was analysed using the Statistical Package for the Social Sciences (SPSS Version 26). The study established that the curriculum content for automotive engineering is short on soft skills, a mismatch in perceptions between the TVET trainers and selected representatives of industries working with TVET institutions and lack of collaboration between TVET and the industry. The study recommended that TVET curriculum should be reviewed so that soft skills are well infused and therefore taught before the trainees enter the labour market, increased collaboration in the mapping of the skills gaps, aligning curriculum content as well as practical industrial experience for the TVET trainers. Although the study is limited in scope, it is hoped that the findings could find relevance and applicability beyond the immediate context.

**Keywords:** Skills gaps, Soft Skills, Employability, Technical Vocational Education and Training, Automotive Engineering Trainees.

**Background to the Study**

Since the beginning of this millennium, a fresh awareness of the critical role that TVET can play in economic growth, reducing youth unemployment and national development has dawned among policymakers. In Kenya, the enactment of the TVET Act of 2013 was a major milestone in structuring and entrenching the TVET reform agenda in order to align with Kenya’s development blueprint Vision 2030 and the global Sustainable Development Goals (SDGs). The main objective of the Sustainable Goal Number 4, Target Number 4 seeks to significantly increase the number of trainees with skills for employability while Vision 2030 identifies TVET as an essential vehicle for transforming the country technologically as well as economically. Then, the Sessional Paper No. 1 of 2019 on Policy Framework for Reforming Education and Training for Sustainable Development in Kenya recognized the need to increase TVET technologists and technicians for the country to advance in technology and industrialize.

However, there is a mismatch in that while the TVET trainers feel that they have adequately prepared the trainees, the employers decry lack of skills and especially the soft skills. Studies indicate that the world of work is presently seeking TVET trainees who have the requisite soft over and above the competency in technical hands-on skills in order to blend well in the world of work.

Globally, the indication is that the world of work is gravitating towards soft skills to complement technical skills due to increasing cognizance of the potency of soft skills for efficiency at work and customer experience. Studies indicate that the US labour market is increasingly rewarding social skills. Since the 80s there has been a growth of up to 12% of jobs requiring high levels of human interaction (Deming, 2017).
At the regional level, studies in Ethiopia go beyond the practical skills to identify the soft skills. The employers perceive the following to be the existing skills gaps: Practical skills such as operating machines; Foundational Skills such as basic IT skills and financial skills; Entrepreneurial Skills like the creativity to set up their own businesses; Life Skills like facing challenges and dealing with different situations; and Soft Skills like punctuality, work ethics, teamwork and communication (Hundie & Tulu 2021).

In Kenya, a survey by World Bank (2018) indicated that more than 60% of employers have reported soft skills gaps. Specifically, there were skills gaps in socio-emotional skills, cognitive skills and also traversal skills. Research has also shown that employers in Kenya have complained that though the TVET graduates are technically qualified, they have poor communication skills and do not demonstrate the right attitude towards work (Ondieki, et al., 2019).

Although the concern is for TVET training in general, there are more concerns for engineering trainees and therefore the focus on automotive engineering. TVET engineering technicians require both technical and soft skills. While technical skills are important for performing on the job, the soft skills are important for navigating around the work environment within the context of the organization.

Statement of the Problem

Soft skills are as important as the technical skills for automotive engineering trainees to successfully perform their day-to-day work. As much as the TVET automotive technologists and technicians need to be proficient in their ability to identify, formulate, and solve engineering problems, they also need the aptitude to navigate and manage the work environment. However, the requisite soft skills like communicative competence, teamwork, creativity and organizational abilities are not well infused into the TVET curriculum. This leads to a serious skills gap in the world of work.

The fact is that, in spite of the growth in technology, human interaction is still a prerequisite in the workplace. Technological advances cannot replace soft skills because the work environment is still seeking workers who are flexible, able to communicate effectively, respond to others intelligently and be team players in various contexts.

The study, therefore, set out to identify specific soft skills gaps, causes of these gaps and ways of bridging them. It is hoped that the findings from this case study could find relevance and applicability beyond the immediate context since practices in public TVET institutions are regulated and relatively homogeneous.

Theoretical Framework

The study based its theoretical explanations on the Human Capital theory. The basic tenet of the theory is that education should be evaluated based on economic efficiency. The central premise of the theory is one that suggests that education and training are investments that make individuals more productive and more employable, thus economic efficiency. Well-skilled human capital is important for the economic growth of the country. In the case of this study, the efficiency of technical education should be measured against the way the soft skills matches with the world of work.

The human capital theory is a useful tool for evaluating the link between the systems of education which are the inputs and the accruing social-economic payoffs which are the outputs (Netcoh, 2016). In this study, therefore, the curriculum offered in automotive course will form the input while the output will be highly skilled trainees who are competent and have the right attitude to make a valuable contribution to the economy.

Review of Related Literature

At the global level, there is a concern about the mismatch between TVET engineering skills and the requirements of the world of work in both developed and developing countries. This mismatch has negative implications for youth employability and sustainable livelihoods. The fact is that the training offered to the TVET engineering students falls short of the industry expectations (Ondiek et al., 2018; Malale & Gomba, 2016). Previous studies appear to focus on skills gaps in technical hands-on skills but recent studies mark a study gap in the need for soft skills among engineering TVET students. Studies in Malaysia reveal that engineering TVET students were found lacking in soft skills such as human relations skills, communication skills and cognitive skills that the prospective employers are looking for. The
employers in the industry have expectations and are looking for specific skills required from the engineering TVET job applicants that match the skills required to perform on their job but found that most of the trainees were insufficient (Kenayathulla et al., 2019).

A survey by Workplace Learning Report which was published on LinkedIn involving 1,200 talent developers, 2,200 employees, 400 managers, and 200 executives, revealed that soft skills were the top priority for talent development (Spar, et al., 2018). An empirical study on soft skills among TVET engineering graduates concurred that there were gaps in training areas like communication, teamwork and the ability to synthesize and link what is taught in class with what is happening in the field (Hassan et al., 2018).

A survey conducted by the World Bank in Kenya on Skills Towards Employment and Productivity (STEP, 2018) indicated that 60% of the employers were giving preference to soft skills over technical skills. The employers identified a broad set of cognitive skills, transferrable socio-emotion skills, high-order skills and personality traits. The employers thus perceived TVET graduates as lacking both soft skills and practical experience required to work in the industry.

Therefore, the study acknowledges that the world of work is increasingly demanding more proficiency in soft skills for the TVET automotive trainees in order to churn out graduates who are better equipped for both formal and self-employment in Kenya.

Methodology
The study employed a descriptive survey design utilizing both qualitative and quantitative approaches. According to Kothari (2014), the main purpose of descriptive research is to provide a description of the state of affairs as it exists at present. Descriptive research seeks to measure the study variables without attempting to control the variables.

So the descriptive survey design was appropriate for this research since it is an investigation that depicted the current situation of soft skills gaps among automotive trainees in TVET, identification of the specific soft skills, examining the causes and looking into ways of bridging the gaps. The design was adopted because it provides an in-depth understanding of the situation as it is in our TVET institutions. In view of the limited time, the study focused on Thika Technical Training Institution in Kenya.

In sampling the trainers, a simple random sampling was used to minimize the possibility of bias. The representatives of the industry that were interviewed were arrived through purposive sampling in order to get appropriate data. The study applied stratified sampling to select trainees who had graduated in the last ten years. Stratified sampling enabled the study to capture their diversity of experiences in the world of work since graduation. Respondents for the engineering TVET Trainees were arrived at through purposive sampling in order to focus on third-year engineering trainees. The purposive sampling technique enables the researcher to select respondents who will provide in-depth and detailed information (Sharma, 2017; Etikan, et al., 2016). Then the trainees within each year were selected using simple random sampling.

The researcher used Google online questionnaires for the trainers in the automotive department. The researcher went further and customized the online questionnaire in a way that the respondents could access it like a link through the WhatsApp mobile phone application. The questionnaire for representatives of industries working with TVET institutions collected both qualitative and quantitative data on areas of the employers’ perceptions of existing soft skills gaps in the automotive engineering TVET graduates.

The study conducted focus group discussions (FGDs) with the TVET automotive students who had graduated to identify the actual soft skill gaps in the practices as experienced by these students upon leaving school. The study also conducted focus group discussions with selected third-year TVET automotive trainees to bring out their experience during industrial attachment.

The research entailed both qualitative and quantitative data. Qualitative data was first transcribed in narrative form by the researcher. The analysis of this data considered the inferences that were made from the opinions of the respondents. In analyzing quantitative data, the study leveraged both google sheets and SPSS. The google forms survey was collated, stored in a spreadsheet, then downloaded in CSV format and analyzed using SPSS.
Results and Discussions

i) Identification of the specific soft skills gaps for TVET automotive trainees

Through the FGDs, the third-year TVET automotive trainees brought out their experience during industrial attachment regarding soft skills. They confirmed that their supervisors in the industry found them wanting in areas like time management, written and spoken communication, failure to follow instructions, relationships with their immediate supervisors and colleagues, handling of their mobile phones during working hours and other corporate ethical procedures. The majority of these students felt that interpersonal relations and communication were the major soft skills gaps in their training.

The representatives of industries working with TVET indicated the following ten as the most essential areas in soft skills among the TVET automotive engineering students and ranked them with communication being perceived as the most deficient while creativity was the least deficient as indicated in the figure below.

**Figure 1 Ranking of soft skills deficiency among TVET automotive trainees**

![Bar chart showing the ranking of soft skills deficiency among TVET automotive trainees]

Qualitative findings in the study confirmed the above findings and underscored the fundamental role of soft skills:

*A trainee may be very good in the technical hands-on aspects like human-machine interface, artificial intelligence, big data and data analytics, block chain and all the latest technology in the automobile industry but most importantly, the trainee needs to make judgments in a timely and efficient manner on a variety of issues. How do you train somebody to do that?* (Male, Industry Representative, March 2022)

The study also found that the set of skills required by the industry may change from one corporate to another from time to time. The industry players indicated that:

*The list of soft skills is also expanding with time. For instance, following the Covid-19 pandemic, the industry discovered that our workers need some level of*
resilience. So you see, resilience was added to the list of critical soft skills for the industry today.  
(Female, Industry Representative, March 2022)

The focus group discussions with trainees who have graduated confirmed that they experienced inadequacy in interactions at the workplace. It is after they left school that they realized that they had challenges keeping time, communicating effectively and smoothly plugging into the corporate culture. They cited cases of losing opportunities for failure to meet the corporate demands even when one is technically competent.

*You have to change your behaviors quickly otherwise you will be shown the door.*  
(Male, TVET Trainee who has graduated, FGD March 2022)

*Companies are more concerned with the way you come to work and relate with others and especially your supervisors.*  
(Female, TVET Trainee who has graduated, FGD March 2022)

A cross-referencing of literature affirms that soft skills augment hands-on technical skills. Even as the 21st-century world of work becomes increasingly complex in terms of technology, automation of the production processes and machinery, the equally complex workplace interactions call for employees who understand that social and interpersonal skills cannot be automated and who demonstrate soft skills that machines cannot provide. The workers must rise to the expectations and supplement and complement the growing capacities of the machines. (Miller, 2017; Robles, 2012; Itani & Srour, 2016; David, 2015; Autor et al., 2003)

**ii) Examining the causes of the soft skills gaps among TVET automotive trainees**

The study went further to examine the curriculum for TVET automotive trainees through an in-depth content analysis of the current syllabus for the Diploma in Automotive Engineering. The findings revealed the following: Module I entails Communication Skills, Life Skills, Information and Communication Technology (ICT), Entrepreneurship Education, Mathematics I, Mechanical Science, Electrical and Electronics Principles, Basic Engineering Drawing, Materials Technology and Metallurgy, Workshop Technology, Vehicle Technology. Module II entails, Business Plan, Mathematics II, Strength of Materials, Mechanics of Machines, Industrial Organization and Management, Engineering Drawing and Design, Engine technology, Vehicle Body Work, Time for Module II, Time for Industrial Attachment. Module III entails Computer-Aided Design, Thermodynamics, Fluid Mechanics, Control Systems and Instrumentation, Mathematics III, Auto Electrics and Electronics, Trade Project, Time for Industrial attachment. These findings are critical for this study because out of the 28 units of competency, only communication and life skills are directly oriented towards the training of soft skills. Secondly, the findings revealed that this training is mainly theoretical, more oriented towards basic education and not oriented towards the world of work. Thirdly, the two units are only offered during the first year of training when the trainees have no link with the world of work. Therefore, in the second and third years, the focus is mainly on technical skills.

Further, the study sought to juxtapose the perceptions of selected representatives of industries working with TVET institutions and that of the TVET trainers on the level of importance of identified skills for the labour market. The idea was to gauge if both the educators and the employers were reading from the same script with regard to skills that ought to be the focus of training. The study used a synthesis of key skills requirements identified by accreditation bodies for engineering and technician trainees. These bodies generally identify the following soft skills sets including communication, decision making, creativity, teamwork, flexibility, interpersonal skills, self-drive, time management, problem solving skills and organizational skills. Although these skill sets are not exhaustive, they provide an empirical view of the situation regarding soft skills for TVET automotive engineering students in Kenya. The analysis is presented below:
The findings indicated a mismatch in perceptions between the TVET trainers and selected representatives of industries working with TVET institutions. The two seem to have a different understanding of the importance of the soft skills sets for the performance of work relating to their skills. The research opines that this mismatch in perceptions has implications for training in that the TVET trainers are likely to lay more emphasis on a set soft skills while the industry is focusing on another.

Therefore study looked into the level of interactions and consultation between the industry and TVET institutions on the curriculum. Findings from the representatives of the industry indicated that only 12.5% of the industry players are aware of structured consultations on curriculum development with TVET. The remaining 87.5% have not had any meaningful engagements with TVET on the curriculum.

The KAM Director confirmed that the lack of comprehensive labour market information is a serious impediment to bridging the skills gap. Collaboration between the industry and TVET would enhance feedback and the continuous development of information on market needs. The director noted that this lack of the collaboration is one the major cause of the skills gaps.

It also emerged that most of the TVET instructors do not have the requisite industrial and practical experience. The study found that only 12% of the sampled TVET trainers had industrial experience since graduation. The remaining 88% had only occasionally visited the industry during the industrial assessment of students and academic trips. This lack of industrial exposure and experience by the TVET instructors has implications for curriculum content and delivery since the trainers are not likely to depict and emphasize the current soft skill sets in their training hence exacerbating of the skills gap.

iii) **Looking into ways of bridging the soft skills gaps among TVET automotive trainees**

The study recognized the importance of collaboration between TVET institutions and the industry towards bridging the soft skills gaps among automotive engineering trainees:
The industry hires for attitude and trains for skills. It is imperative that the training in TVET and the requirements of the industry are in tandem.
(Female, Industry Representative, March 2022)

The findings are therefore indicative of the need for TVET institutions to collaborate with the industry in identifying the critical soft skills required in the industry. The outcomes would enhance the TVET training programs in being responsive to the needs of the world of work.

The KAM Director recommended periodic industrial experience and exposure for the TVET trainers so that they are at par with what is currently happening in the world of work. It will therefore be easy for them to transfer the same to the trainees. Moreover, the TVET trainers are critical in continuous content development in their areas of specializations and their knowledge would achieve significance beyond their immediate institutions, especially now in the digital era when information flows quickly.

Conclusion and Recommendations

This study established that the disconnect lies in the model of training where the industry believes in hiring for attitude and training for skills while the TVET institutions are training for skills and leaving the industry to train for attitude. The study established that the curriculum content for automotive engineering is short on soft skills.

The study, therefore, makes a number of recommendations that could act as a reference point for policymakers and stakeholders in education and training towards bridging soft skills gaps among automotive engineering trainees in TVET.

To begin with, the TVET curriculum should be reviewed so that soft skills are well infused and therefore taught before the trainees enter the labour market. The curriculum ought to be more inclusive to factor in broader skills sets like teamwork, creativity, following instructions, interpersonal skills and communication skills.

Secondly, the industry is best positioned to help TVET in bridging the soft skills gaps through increased collaboration in the mapping of the skills gaps, aligning curriculum content as well as attachments, internships and mentorship for trainees. The collaboration is mutually beneficial in that the TVET institutions benefit from skills acquisition while the industry is saved the cost of retraining the job entrants.

Thirdly, TVET trainers should periodically acquire practical experience from the industry so that they are in touch with the current skills requirements which they will infuse into the training for sustainable development practice. TVET trainers are at the heart of training and their exposure and experience would be a game-changer in bridging soft skills gaps in TVET training.
References


