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Status of Technical and Vocational Education and Training TVET) in Post-secondary Education in Kenya

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Abstract
Technical and vocational education plays a major role in the development of middle level skill in Kenya. However for a long time, it has been regarded as low key despite its critical role in producing Kenya handlers of the economy. Recently, rejuvenated interest in TVET at post-secondary institutions has exploded into a national debate resulting in the restructuring of the entire arm of education. The establishment of TVETA and the creation of a distinct arm on VET in the national curriculum; and its recognition by the national qualifications authority are among the steps undertaken to strengthen this sector of education. The purpose of this paper is therefore to critically examine the current status of TVET with a view to bringing to the fore the challengers and prospects coming with the renewed interest in TVET.

Key terms: Kenya; Technical and Vocational Education and Training TVET); Post-Secondary Education; Ministry of Education, Science and Technology

Introduction
Technical and Vocational Education and Training (TVET) is considered a critical component for producing middle level manpower that is needed to drive Kenya's economy towards the attainment of Vision 2030 (Education Sector Report, 2016). In its role of supporting the national development agenda, the TVET sector envisions providing skilled and globally competitive employable human resource with the right attitudes and values required for growth and prosperity of the various sectors of the economy (Republic of Kenya, 2005, 2012).

This goal is anchored on 10 specific objectives of TVET, which emphasize the pivotal role TVET is envisaged to play in the social, economic and technological development of the country; laying a foundation for the vocational skills required for socio-economic development, to equipping students with entrepreneurial skills and positive attitudes for self or formal employment, and providing practical training that is responsive and relevant to the country's sustainable economic and industrial development (Maina, 2007; Ngware**,** Onsomu & Manda, 2005; Republic of Kenya, 1999). However, discrepancies are evident in the implementation of

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the TVET policy. For instance, life skills education had not been implemented in most TVET institutions. Moreover, the realization of the objectives is hampered by a fragmented TVET sector that is characterized by a mismatch of the curriculum content to the rapidly changing market needs and differing quality of training from one institution to another (Kigwilu, 2014; Republic of Kenya, 2016). This often results in high youth unemployment and the lack of qualified workers. Other factors aggravating the mismatch include lack of practical training elements in TVET courses, low level of involvement of enterprises in TVET training, outdated equipment and infrastructure at training institutions, and lack of well-trained teachers (German Development Cooperation in Kenya, 2017).

Nonetheless, the TVET sector has embarked on reforms geared, inter alia, towards the consolidation of the highly fragmented TVET sector. An integral part of the reforms is stronger involvement of the private sector in the design and implementation of TVET (German Development Cooperation in Kenya, 2017). These reforms are guided by a number of policy documents including: Vision 2030; Sessional Paper No. 2 of 2015; National Education Sector Program (NESP) 2014-2018; and the TVET Act of 2013. The Sessional Paper No. 2 of 2015 requires: attaining and sustaining a Gross Enrolment Ratio (GER) of 20% in TVET; and providing adequate opportunities for accessible competency based education and training (CBET). The CBET curriculum offers the required flexibility, particularly for adult learners, and opens ways to academic, professional, occupational, and area specific careers. By introducing CBET, the reforms contribute to improving access to, quality and relevance of TVET. The TVET policy is premised on the principles of: Access and equity; inclusivity and respect for cultural and social diversity; non-discrimination; quality and relevance; national integration; life-long learning; entrepreneurship culture; complimentarity, environmental protection; partnerships; information and communication, and; leadership.

Development of TVET in Kenya

A considerable body of literature suggests that TVET existed in Kenya as early as the pre-colonial era, as an embedment to the African indigenous education (Otiende, Wamahiu & Karagan, 1992; Simiyu, 2001). Traditional people were skilled in building their own houses, pottery and making domestic, farming and hunting tools such as pots, hoes, axes, spears, and knives. In most African traditional societies, technical and vocational education was mandatory (Simiyu, 2001) and required of every adult to acquire knowledge, skills and attitudes that fully integrated him or her into the traditions, customs and relevant activities of the society (Otiende et al, 1992). In many communities, education was taught by parents, siblings, elders and villagers (Okaka, 2001). Through apprenticeship system, young people worked with craftsmen such as blacksmiths, potters and basket-makers to equip them with some form of occupational training (Sifuna, Chege & Oanda, 2006). The learning did not, however, have a formal curriculum.

Paradigmal shifts in the offerings of TVET began to be experienced during the colonial era when formal education was introduced by missionaries. However, racial segregation dominated the missionary education such that Africans were placed in vocational and agricultural education for the ultimate goal of supplying cheap manual labour for the colonial

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masters (Republic of Kenya, 1999; Bogonko, 1992; Sheffield, 1971). This greatly affected the perception of Africans towards TVET to the extent that they saw it as a subtle attempt to provide them an inferior form of education (Simiyu, 2001; Bogonko, 1992; Otiende, Wamahium & Karagan, 1992; Hamilton & Asiedu, 1987).

A major development of TVET in pre-independent Kenya came following Professor J. Nelson Frazer's report of 1909 which recommended the provision of industrial education for Africans and the establishment of department of education (Sifuna, Chege & Oanda, 2006). Consequently, the department of education was established in 1911 and it encouraged the mission centers to develop the industrial education through government grants-in-aid which were made available for carpentry, masonry, agriculture, tailoring, smithing, printing, and medical work (Urch, 1971).

By 1912, a number of schools began to offer basic industrial skills such as carpentry, agriculture, typing and smithing. Existing schools were expanded and new ones established to realize this goal. Furthermore, through Phelps-Stokes Commission (1924) recommendations, Native Industrial Training Depot (NITD) was established at Kabete to train African artisans to replace the Indian artisans (Sifuna et al). By 1934, formal education began to lay a strong emphasis on vocational education, and offered such pratical subjects as rural agriculture, arts and crafts, rural carpentry and domestic science (Okech & Asiachi, 1992).

The Educational Committee of 1949 (Beecher Report) brought some relief to the then disconcerted Africans, by recommending that a more positive approach be given to the industrial and agricultural orientation of the African curriculum. In the same year, a committee chaired by G. P. Willoughby recommended the establishment of a technical and commercial institute in Nairobi, leading to the formation of Royal Technical College of East Africa in 1954. The college offered certificates in such skills as science engineering, domestic science, arts, architecture and surveying. It began to offer degree courses in 1961 and changed name to Royal College, Nairobi (now University of Nairobi). Meanwhile, NITD was converted into a technical and trade school and similar schools established countrywide such as Thika, Sigalagala, Eldoret, Mombasa, Machakos and Kenya Polytechnic (Ferej, Kitainge & Ooko, 2012).

The major milestone in reforming education in Kenya was achieved through the Kenya Education Commission report of 1964 which recommended, inter alia, the abolition of technical and vocational education in primary education (Republic of Kenya, 1964). The report emphasized academic education that was presumed to have greater economic gain as opposed to vocational education that was depicted to emphasize manual tasks with a lesser gain at the time. Consequently, the Government trade schools were converted to technical secondary schools to prepare graduates to enter TVET after graduating from secondary schools (Republic of Kenya, 1999; Ngerechi, 2003). TVET continued to face a number of problems. For example, the Report of the Training Review Committee (1972) decried that most students left vocational schools with no terminal qualifications of marketable value and that the schools offered only pre-craft training in masonry, carpentry, and the allied trades (D'Souza, 1976).

In 1976, the National Committee on Educational Objectives and Policies (NCEOP) recommended the need to revise the curriculum to make it more practically oriented and

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encouraged the teaching of vocational subjects in the technical, agricultural and business fields (Republic of Kenya, 1976). Subsequently, the 1981 Presidential Working Party on the Second University (the Mackay Report), made three crucial recommendations in favour of TVET: (i) the second university should be a technological university; (ii) vocational education should be expanded in order to increase the training opportunities for the increasing school leavers, and; (iii) the need to enrich the school curriculum with technical subjects (Ngerechi, 2003; Republic of Kenya, 1981). The establishment of the second university (Moi University) as a technological university was, however, not actualized since the established university began to offer many non-technological programs at the onset. The goal of expanding technical and vocational education precipitated the inclusion of vocational subjects at primary and secondary school curriculum (Ngerechi, 2003). As a result, the introduction of the 8-4-4 system in 1984 saw the introduction of vocational subjects in primary and secondary schools and the conversion of the former technical secondary schools to technical training institutes in 1985 (Republic of Kenya, 1999).

The Report of the Presidential Working Party on Education and Manpower Training for the Next Decade and Beyond (Republic of Kenya, 1988) recommended the introduction of entrepreneurship education and training at all levels to promote self-employment among graduates of these institutions. The Mungai Report (1995), however, concerned with the quality of TVET graduates, made four recommendations: (i) that linkages should be developed for Youth Polytechnics to ensure vertical mobility for graduates; (ii) the introduction of the Bachelor of Technology degree programme, (iii) greater autonomy for polytechnics; and (iv) establishment of closer linkages between formal TVET and the *Jua Kali* sector as a way of improving the quality of products produced by *Jua Kali* artisans (Republic of Kenya, 1999).

The emphasis on TVET continued to be echoed through various education commissions set up by the government. For instance, one of the mandate of the Commission of Inquiry into the Education System of Kenya (Koech Commission of 1999) was to recommend ways and means of enabling the education system to facilitate accelerated industrial and technological development (Republic of Kenya, 1999). This Commission made a number of recommendations relating to TVET and underscored the role of stakeholders in ensuring continued support, timely response and relevance of TVET programmes. Despite the piecemeal implementation of the report, significant increase in enrolment in TVET has been witnessed over the years.

At present, TVET is provided by several government departments in addition to the Ministry of Higher Education. These include the Ministries of Defence; Youth and Sports; and Labour. The government has established an independent TVET authority (Technical and Vocational Education and Training Authority, TVETA) that coordinates all TVET activities in the country. TVETA, Curriculum Development, Assessment and Certification Council (CDACC) and the TVET Funding Board were established under TVET Act, 2013 to play a key role in standardizing accreditation, quality assurance, curriculum, assessment, certification and resource mobilization. In addition, the Kenya National Qualification Authority (KNQA) has been established by the Kenya National Qualification Framework Act of 2014 with the mandate to establish and regulate national qualifications framework.

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Current Status of TVET in Kenya with Focus on pedagogy and staff capacity

Currently, TVET is provided through state and non-state sources including: Technical University Colleges, National Polytechnics, Technical Training Institutes, Institutes of Technology, Industrial Training Centres, National Youth Service, Government Training Institutes (e.g. Kenya School of Government), National Industrial Training Agency, Youth Polytechnics, *Jua Kali*, Non-Governmental Organizations and private TVET institutions. These various providers are broadly categorized into: Youth Polytechnics, Technical and Vocational Colleges (TVCs), National Polytechnics and Polytechnic University Colleges/Technical universities.

The Artisan courses are offered in Youth Polytechnics (and on-the-job training in the formal sector and informal sector (*Jua Kali* apprentices), and award Artisan Certificate. The TVCs comprise Technical Training Institutes (TTIs) and Institutes of Technology (ITs). They offer craft level courses (and some offer technician courses) and award Craft Certificate and Technician Diploma. National Polytechnics offer technician and technologist courses and award Technician Diploma and Technologist Degree (in collaboration with universities). Finally, Technical Universities train technologists and award Technologists and Post Graduate Degree.

Table 1 shows the distribution of growth in the number of these institutions over a five year period.

Table 1: TVET Institutions 2012-2016

Category	2012	2013	2014	2015	2016
Public Youth Polytechnics	647	701	701	816	816
Private Youth Polytechnics	-	-	-	-	62
Public Technical and Vocational Colleges	49	49	51	55	62
Private Technical and Vocational Colleges	-	-	-	-	382
National Polytechnics	3	3	3	3	11
Polytechnic University Colleges	2	-	-	-	-
Total	701	753	755	874	1,300

-Data not available

Source: Kenya National Bureau of Statistics, 2017

Table 1 shows a low increase in number of TVET institutions over the years relative to the high rate of young people graduating annually from the secondary school system and not transiting to university education. There is therefore a likelihood of these institutions over-enrolling students for TVET courses. However, a remarkable growth is noted in the National Polytechnics that rose from three in 2015 to eight in 2016. This increase is attributed to upgrading of eight TVCs to National polytechnics.

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Access and Equity

Table 2 presents enrolment in registered TVET institutions from 2012 to 2016.

Table 2: Enrolment in TVET Institutions

Institution type	2012		2013		2014		2015		2016	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Technical Universities (2)	3,888	2,174	7,862	4,113	7,682	4,477	6,746	4,150	4,214	2,485
National Polytechnics (11)	4,986	2,805	5,304	3,216	6,978	4,125	5,717	3,928	18,540	11,676
Public Technical and Vocational Colleges	28,153	18,631	31,956	23,989	29,632	21,232	32,221	23,087	17,589	9,569
Private Technical and Vocational Colleges	-	-	-	-	-	-	-	-	27,280	30,298
Vocational Training Colleges	40,233	26,821	42,942	28,627	45,473	28,222	47,625	29,840	46,340	34,565
Sub-total	68,386	45,452	74,898	52,616	75,105	49,454	79,846	52,927	91,209	74,432
Total	127,691		148,009		147,821		153,314		202,556	

-Data not available

Source: Kenya National Bureau of Statistics, 2017

The total enrolment in TVET institutions grew by 32.1 per cent from 153,314 in 2015 to 202,556 in 2016, with national polytechnics and technical universities recording the highest increase in enrolment of 79.7 per cent from 20,541 in 2015 to 36,915 in 2016. However, gender disparities are evident over the years with more male than female students enrolling in TVET institutions. The upward spiral in enrolment in VTCs is attributed to the expansion of the VTCs and infrastructure development by the County Governments, development and introduction of

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Youth Polytechnics curriculum, in-servicing of instructors, government's effort to rehabilitate, modernize and expand the Youth Polytechnics, and the introduction of the Subsidized Youth Polytechnic Tuition (SYPT) Scheme (Kenya National Bureau of Statistics, 2017).

Staff Capacity

Kenya generally practices two types of TVET teacher training: the concurrent model and the consecutive model. In the concurrent model, trainees are put through an integrated curriculum featuring subject-specific and pedagogical courses, followed by a practical period in the industry before one is certified as a diploma or degree holding TVET teacher. In the consecutive model, trainees initially obtain subject-focused specialization and work experience in the industry before undertaking pedagogical training to become a TVET teacher (UNESCO-UNEVOC, 2013). In the informal training sector, the government has established a mechanism for providing trade tests for certification at the artisan and craft level. Grade 3 corresponds to the initial qualification for artisans, followed by grades 2 and 1 culminating in master craftsman certification (Kerre & Hollander, 2009).

The Teachers Service Commission (TSC) provides teachers to public TVET institutions through the Ministry of Education and the Ministry of Labour. However, other ministries that offer TVET have mechanisms for recruiting and remunerating teachers in their respective institutions. Currently public technical training institutions face shortage of technical trainers (Republic of Kenya, 2016). To supplement the shortage, TVET institutions recruit trainers. However, this is unsustainable due to relatively low remunerations and unattractive terms of service that results in high turnover and understaffing (Republic of Kenya, 2016).

Another issue in TVET teacher education is the low quality of technical skills the teachers are exposed to during pre-service training at universities. Most local universities offer teacher education programs that are oriented to secondary school education. As such, trainers qualify in disciplines other than education and then convert to teaching through deployment in TVET institutions. In the past, TVET trainers are not required to have pedagogical competency as a condition for recruitment.

Currently however, diploma TVET trainers acquire pedagogical skills training at the Kenya Technical Teachers College (KTTC). In the teacher training model adopted at KTTC, the technical competencies, industrial work experience and pedagogy are integrated. Trainees in business and industrial arts take about 3 years to complete their training as the industrial attachment component is not part of their training. Those with industrial attachment take about 5 years. Moi University follows an integrated model to train degree technical teachers.

Over half of the current TVET teachers (54%) undertook their teacher training after acquiring their subject specialization; 19% undertook the integrated model; 23% were degree holders that passed through an integrated model and only 5% took a post graduate teacher training (Ferej, Kitainge & Ooko, 2012). The authors further point out that besides initial training, only 44% of TVET teachers have subsequently upgraded their qualifications (further education), the most popular routes being the Bachelor of Education in Technology at Moi University or Higher Diploma at one of the National Polytechnics.

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Republic of Kenya (2016) reports that as a measure to improving the capacity for instruction in TVET, 131 lecturers undertook higher qualification training at Technical University of Mombasa, 105 TVET trainers were trained in the Netherlands and Peoples Republic of China on the use and maintenance of the equipment provided under respective projects. Also, 200 trainers were trained on the use and maintenance of equipment in the country under the Netherlands Project. However, the aforesaid capacity building efforts were not directed towards enhancing the pedagogical competences of the TVET trainers.

Challenges

The main challenges bedeviling the TVET sector in Kenya range from lack of qualified instructors (Farstad, 2002; Republic of Kenya, 1999; UNESCO, 2010; Mupinga, Busby & Ngatiah, 2006; Hooker, et al., 2011; Kigwilu, 2014) to the absence of or limited in-service training/further education (Indoshi, Wagah & Agak, 2010; Kigwilu, 2014; Cohen & Hill, 2001). Other challenges include insufficient number of trainers with pedagogical competency, inadequate number of TVET centres, low enrolment in TVET institutions, inadequate teaching and learning resources/materials (Ayuba & Gatabazi, 2010; Farstad, 2002; Hooker, et al., 2011; Indoshi, et al., 2010; Mupinga, et. al., 2006; Sharma, 2008; UNESCO, 2010; Kigwilu, 2014), weak institutional-industry linkages (Ferej, Kitainge & Ooko, 2012; Kigwilu, 2014), negative perception and apathy towards TVET (Aryeetey & Andoh, 2011; Mureithi, 2008; Sharma, 2008; Akala, 2014). The public, parents and potential trainees view TVET as last resort career choice (Republic of Kenya, 2016).

Other challenges include low enrolment for females in Science Engineering and Technology courses (Hicks, et al., 2011; UNESCO, 2010; Kigwilu, 2014) and unfriendly environment for people with special needs. Further, there is uncoordinated admission of students to TVET institutions. In spite of the rapid technological advances being witnessed the world over, there still is low adoption of ICT in TVET by teachers/trainers and managers (Republic of Kenya, 2016). Moreover, TVET courses at technical universities are taught and supervised largely by trainers that have a strong tradition in the academic genre or track of education (Akala, 2017). In many instances, TVET institutions rely on apprenticeship model of teacher education whereby their students become TVET teachers, devoid of desired pedagogical skills (Changilwa, 2015). Nonetheless, the technologies and crafts in the curricula for TVET are not contextualized to the local needs and realities (Akala, 2017).

Emerging Pedagogic Issues

- TVET curriculum and structure is not matched to industry needs (supply orientation) resulting in high unemployment reality upon graduation. Where the graduates are employed the various industries are forced to retrain and re-orient them to latest trends to enable them to cope and participate in production.
- Highly qualified trainers in the various study areas in TVET are grossly inadequate skills/experience/limited exposure with industry/modern technology. Furthermore, a majority

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of them lack background training in the field of education and teaching resulting in use of inappropriate pedagogies and training practices
- Quality assurance mechanisms are weak leading to poor curriculum delivery in technical and vocational training centres
- Weak collaboration/linkages between TVET institutions hindering mobility of trainers/credit transfer
- Research capacity of trainers low, owing to the nature and structure of their training progression hence it limits research and innovation expected to reinvigorate discipline development and marketability of programmes

Conclusion

Ongoing curriculum reform and the creation of a district education track for VET in Kenya is certainly an impressive game changer likely to result in improvement of TVET. Apparently meaningful progress will be realized if a structure with independent curriculum research and development units are established to manage the interventions proposed in this paper and in the vision and mission of the rejuvenated TVET programmes in Kenya.

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