The Linkage between Vocational Schools and Industries Cooperation a comparison in Developed and Developing Countries

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Abstract*:* The Lack of skills valuable in local and global labor markets has been a root cause of high youth unemployment thus being a constraint to economic growth, employment and income. So, many countries embrace vocational education as a solution to this problem. Since the main aims of vocational education are: preparing the graduates with skills, knowledge, competencies as well as the right attitude for the world of work where graduates can work independently or recruited in the existing job vacancies which can lead to improvement in the national income and productivity of the country making it competitive in the global economy. However, many vocational school graduates have not been fully absorbed by the industries or world of work leading to questions of "why is it like that vis-a-vis TVET objectives of employable skills?" Therefore, this paper analyzes this problem in relation to the linkage between the vocational schools' cooperation with industries as a solution to improving competence skills, knowledge and attitude of learners required by the industries through matching TVET programs with the industry needs thus bridging competence and quality standard for high performance exploring comparison case studies in developed and developing countries.

Keywords: vocational school, developed and developing countries, vocational schools' cooperation with industries.

According to Gary Becker (1995) & Joel Spring (2015), Education, Skills and Knowledge have become crucial determinant of a persons' and a nation's productivity in this century. It is now even worthy for one to call it an "Age of Human Capital" in the sense that the primary determinant of a country's standard of living is how well it succeeds in developing and utilizing the skills, knowledge, health and habits of its population. Therefore, it is in the consensus of many researchers that Human Capital development is major determinant of a nation's standard of living however, this human capital development is influenced by the quality of a nation's formal education that is; the better and higher the quality of a nation's education, the higher is its Human Capital development. That is why the International Organization such as ILO, UNESCO, World Bank endorses the quality of Education more so vocational education for economic and social development purposes for instance focusing on the eight Millennium Development Goals (MDGs) adopted at the United Nation's summit in 2000, two of them focus on education (UN 2000, 2005, 2010, & 2015). Many countries in this twenty first century have embraced Vocational Education as an appropriate strategy for human capital development.

Vocational school or *vocational college* is a post- secondary educational institution designed to provide *vocational education or technical skills* required to perform tasks of a particular job or offering instruction and practical introductory experience in skilled trades such as mechanics, plumbing, carpentry, construction, businesses, and information technology. Vocational Education is part of tertiary education and training that provides accredited training in job related and technical skills covering a number of careers and industries.

According to UNESCO Recommendations 2001, TVET as preferred word for VET means a comprehensive term of those aspects of educational process involving, in addition to general education, the study of technologies and related sciences, and the acquisition of practical skills, attitudes, understanding and knowledge relating to occupations in various sectors of economic and social life. It can also be understood as a means of preparing for occupational fields with effective participation in the world of work, including an aspect of lifelong learning and preparation for responsible citizenship as well as being an instrument for promoting environmentally sound sustainable development (Greening TVET international Framework); and a method of facilitating poverty alleviation. An Industry is a commercial field in nature that use job skills and technology to produce a product with the purpose of obtaining profit. Industry can be manufacturing (for product) or service (for services) such as banking, insurance, transportation, courier services and so on. *Vocational Schools'* cooperation with *Industries* refers to the relationship and partnership between the school learning activities and the activities of the industry as in relation to the competency, and high quality performance. It is the means by which an industry participates in the school activities on a mutual benefit.

A Developed country also referred to as "More Economically Developed Country" (MEDC) is any sovereign state with highly developed economy and advanced technological infrastructure in relation to those less industrialized states. They are states with high per capita incomes based on gross domestic product (GDP), high level of industrialization with advanced technologies, and high human development index (HDI). Also with high level of standard of living, higher life expectancy and high technologies with the service sector dominating the economy, such as Australia, Germany, France, Canada, Italy, Japan, South Korea, Spain, United Kingdom and United States. Developing/ Underdeveloped country (LEDC) is any country/ state with a less developed industrial base, low human development index (HDI), and low per capita income (low GDP) they have not yet achieved a significant level of industrialization in relation to their populations, have low/ medium standard of living and low income. Examples include most of African countries with an exception of Seychelles and South Africa, Indonesia, Malaysia, Vietnam, Thailand, Cuba, Argentina, Chile, Hungary, Moldova, Bulgaria. Although there is no universally agreed upon criterion for categorizing developed or developing countries however, International Organizations like World Bank, UN, IMF use the Economic criterion in grouping countries. The *Economic Criteria* in discussion focuses on the nation's (i) income per capita (GDP), (ii) Industrialization level, and (iii) Human Development Index (HDI) where countries with high gross domestic product, high industrialization level such as tertiary and quaternary sectors of industry and also with high human development index which is a combination of the economic measure, national income and life expectancy coupled with education indices.

The high rate of youth unemployment is a global alarming tragedy which has allured great concerns in many countries both nationally and internationally. This serious challenge is affecting developing countries due to poor quality education system more so the quality of vocational education as a result of mismatch between vocational programs and labor market needs. The purpose of this paper is to discuss the relationship/linkage between *Vocational Schools' cooperation with the Industries as a solution to the above mentioned problem through vocational education in skilling and improving youth's competencies and expertise by observing the changes in labor market needs. This comparison is between Developed and Developing countries* with cases in Europe, America, Asia, Africa and Australia with two countries taken as Case Study, one country representing developed and the second Developing countries. For example in Europe, a case study of developed countries will be represented by Germany and Macedonia as a developing country. In Africa, case studies of Mauritius as developed while Uganda as developing country. Indonesia is developing, and Singapore as

developed country in Asia. More so, US representing developed, and Brazil for developing countries will be the case studies in America.

DISCUSSIONS

Vet In Australia

Since 1990s, Australian VET system has changed from a system largely run by states and territories to a one at national level where all VET policies are determined by the nation's government. For instance the government set up a national competence-based system of qualifications through the Ministerial Council for Vocational and Technical Education (MCVTE) to regulate the vocational qualifications which led to an increase in proportion of working age in the vocational institutions. Industry is actively engaged in VET policy making and development of standards and delivery for instance the national training system is underpinned by commitment to competency-based training based on the standards set by Australian industry. VET competencies and qualifications cover 80% of Australians occupation. Australian VET system is flexible which allows people of all ages to participate for example in 2007, 11.3% of the population between 15 and 64 years participated in VET, VET programs range from a single module or unit of competency to advanced diploma with the training programs ranging from formal classroom to work-based learning which include flexible, self-paced learning, and online training. VET programs also is provided in both private and public registered training organizations (RTOs), in schools, universities or other higher education levels, adult and community education, as well as various cultural, religious institutions. Australia has over 4000RTOs and has a well-developed apprentice system that include traditional apprentice in trades and "traineeships" in other more service oriented occupations.

Vet in Germany

Germany is widely known for its high quality vocational education and training (VET) system. The Dual system of Germany TVET is a vocational education system provided by the vocational schools as well as the company with dual support of both the government and the industry. Vocational schools and the company can coordinate learning avenues which can take the form of learning workshops, company (trade, production and administration) according to the curriculum framework in order to provide an effective combination of theory and practice to reduce on the mismatch of skills hence narrowing unemployment gap among the young people.

The two key features of that system are (a) firm-based training programs accompanied by a school-based component (of one to two days per week), in which apprentices acquire upper secondary general education in core subjects (like math and German) and theoretical knowledge in their training occupation. This duality of practical and theoretical knowledge acquired at the workplace and at vocational schools is (b) accompanied by the private-public duality in the governance structure (i.e. public governance of the vocational schools, provide governance of the firm-based training). The impact of VET systems on school-to-work transitions is made possible by the German dual system as the main entry to labor market. In 2012, 66% of the apprenticeship graduates remained employed by the firm in which they were trained. This rate has even increased by 8 percentage points since 2000. This indicates that the German dual system still works well as a training and screening device for youth labor market entry. The increase reveals that, today more than in the past, firms train for their own labor

supply. The participation in VET programs (including prevocational measures) and the internal hiring of apprenticeship graduates are main reasons why youth unemployment and the so-called NEET (Not in Employment, Education, or Training) rate are low in Germany.

Tvet in Macedonia

The current system of vocational education and training in the country demonstrates both systemic and programmatic shortcomings. A huge number of persons without qualifications, problems in the relevance of syllabi and curricula, VET which is unattractive to youth and adults, poor collaboration between education institutions and the business sector, the need for new profiles and skills for continuation of education and/or successful transition to the labor market and euro-integration processes highlight the need for modernization of the country' VET. As part of the process, Republic of Macedonia initiated important steps in the reform of its education system as it relates to TVET and higher education, particularly as it relates to the upper secondary system within the education sector. Many of these initiatives, however, remain underfunded and unfinished. Profiles and curricula are still too narrow and are considered partly outdated, with too little emphasis on practical work experience. In order for young people to develop necessary practical skills, they need access to adequate workshop equipment and closer links with employers.

The most pronounced problem the country faces is high unemployment. The official unemployment rate, according to the Workforce Survey (ILO definition), amounted in the third trimester of 2012 to 30.6% and is the highest in Europe. In the third trimester of 2012, the activity rate was 56.3%, with an activity gender gap of 22.2% affecting mostly young people although the country has learnt some lessons like: Partnerships with industry and the private sector need to meet labor market demands. Skill needs are identified through effective partnerships and coordination with local industry/sector and industry associations. Local planning authorities are engaged in the development, implementation, and evaluation of new programs.

Tvet in US

TVET in US is called Career and Technical Education (CTE) a name adopted in 1998 by the Association for Career and Technical Education (2011) and it is an elective form of education that students are not required to participate in to earn a high school diploma or a college/ university degree. Historically, TVET has a focus on job preparation for entry-level positions and defined as educational courses and programs offered at less than the baccalaureate level. Ninety-six percent of all high school students in U.S. take at least one TVET course and one in four of all high school students take three or more courses in a single TVET program. Students engage in TVET programs in community and technical colleges while adults engage in the short-term postsecondary occupational training or retraining (Levesque et al., 2008). US TVET takes place in public education system largely limited to high school; community or technical colleges serving a wide range of public needs; various government programs; a miniscule apprenticeship system; and a large business-based training system disconnected from all of the others. *Career Pathways (CPs)* is a strategy applied by TVET providers in US to specify the knowledge and skills that students must acquire at the secondary and postsecondary levels in order to be better prepared for occupations within various career clusters. CPs are adopted by the Office of Vocational and Adult Education (OVAE) and defined as a coherent, articulated sequence of rigorous academic and career courses, commencing in the ninth grade. A Career Pathway is developed, implemented, and maintained in partnership with secondary

and post-secondary education, business, and employers. CPs is available to all students, including adult learners, and are designed to lead to rewarding careers.

Tvet System in Brazil

Brazil's Vocational and technical education and training (VET) is integrated into traditional education at secondary and tertiary levels, and offered as separate program by different public and private educational providers, especially for those who are already outside traditional education trajectories. This complexity led federal government's decision to massively scale it up, to institute *Programa Nacional de Acesso ao Ensino Técnico e Emprego* (PRONATEC, National Program for Access to Technical Education and Employment) in 2011. Coordinated by the *Ministério da Educação* (MEC, Ministry of Education), aiming at dramatically expanding the supply of VET students and providing an umbrella for the country's overlapping VET policies through market research of labor needs and required skills which can trained by TVET providers with the help of employers (OECD 2011), engaging employers and unions in curriculum development, sharing inputs and apprenticeship opportunities to ensure link and match of skills taught and modern workplace needs, developing and implementing qualification frameworks, standardized national assessments frameworks to ensure the quality and consistency of teaching and training. Brazil follows Australia, India, United Kingdom, Canada, and the European Union experience. Workplace learning is one of the best ways used to promote VET learning relating to the labor market needs as well as building and strengthening socio-emotional skills benefiting both the student and the employer as the student will have strong learning environment offering real on-the-job training experience making it easier to acquire hard and soft skills, facilitating a two-way flow of information, making recruitment more effective or less costly for the employer. In addition, employer willingness to offer workplace training is a verification signal that a VET program has labor market value.

Singaporean Tvet System

Technical Education in Singapore started as a single vocational institution in 1964 (Law, 1990: 4). The national system of technical education was adopted to support the growing needs of human resource during industrialization after independence as a means of economic diversity and growth. This was supported in as efficient-driven model concentrating on providing mass education to equip the young with employable skills especially in the early phase of industrialization which lasted in 1972 with technical education delivered through vocational institutes within school system under the Ministry of Education Control. The *"factory school*" is a common idea in Singaporean TVET system and very powerful because it enables Singapore to train its workforce to truly state-of-the-art standards, engaging industry as a close partner in training, enabling students to learn in an environment that is designed for training and it combines the advantages of a first-rate apprenticeship system with those first-rate school-based VET system. This shows a strong link between the VET schools and the business since the factory school model is itself based on and designed to foster close links between the VET system and business. The design of the apprenticeship system also requires teachers in the school-based system to work periodically with in the firm in the same field they teach, requiring students to spend time working in firms, as well as the deep involvement of employers in advising the various VET institutions on programs and setting occupational standards, assessing candidates for diplomas, in providing state-of-the-art equipment for instruction. Industries as potential employers greatly contribute in defining the skills, competence standards and values required however, the nature and levels of industry participation will ensure relevance, quality

of skills and cost effectiveness in school. In this respect, various Industry-based Training (IBT) Schemes (ie Traineeship, Approved Training Centers and Certified On-Job-Training Centers) have been established to facilitate training by industry. Another form of partnerships is the joint establishment of Centers of Excellence in various technologies to facilitate exchange of technology, expertise and training resources.

Tvet In Indonesia

According to Asian Development Bank projects reviews in VET across Asia and Pacific, reveal that industry cooperation with VET providers is the basis of successful training. In Indonesia, vocational schools rely much on industry partners like Chambers of Commerce, local government and local business community in matching with the labor market needs. These partners are included on the school committee board to advise on the course content (curriculum), provide instructor and work placement opportunities like internship vacancies, provision of learning materials like equipment, scholarships and others. Vocational schools in Indonesia have increased their cooperation with industries to an international level including industries like Caterpillar, Cisco, Nivea, Philips and others. These help in work internship for students, certification and job opportunities as well as assessing students' practical skills. Dual System of Education (PSG) [in form of internship] is a common form of education professional expertise, which combines systematic and synchronized between educational programs in schools (SMK) through direct work activities in the workplace to achieve a level of professional expertise. Implementation of a dual system of education in Indonesia, has been running long enough but there are still many problems to be solved like: (1) many vocational schools do not have the cooperation with industry, (2) the time that is not the same organization, (3) a long time practice of different industries, (4) still many students do not earn a place in accordance with industry practice expertise, and (5) lack of monitoring of school counselors to industry. Implementation of the dual system of education, it is necessary to get the attention of all parties, particularly vocational education, with some of the following: (1) the coordination of the industry's practice to fit the students' areas of expertise, (2) the timing of policy on industry practice, and (3) the efforts of the school to continue to work closely with industry continuously, and (4) completion of a task force for monitoring on an ongoing basis and the reward for implementers /teachers (Sutikno, 2013).

Tvet In Mauritius

In Mauritius, education is free from pre-primary up to tertiary level and compulsory up to the age of 16 years. The country has a literacy rate of 89.9% among the population aged 12 years and above.

The Mauritius Institute of Training and Development (MITD) operates a network of 25 Training Centers comprising of 15 vocational training centers and 9 dedicated NTC Foundation/Pre-Vocational centers. The vocational training centers offer technical and vocational courses at National Certificate up to higher national Diploma level in a number of different fields. The courses are provided through different modes including: apprenticeship training, full time training, part time training and targeted training. In 2012 the total number of people trained by MITD was 10,168. Training under Apprenticeship System introduced by the IVTB in the TVET sector yielded relatively high employment rate among TVET graduates. The Dual Apprenticeship System combines on-the-job training with Centre-based learning to develop the necessary skills and knowledge required for a trade which is extended to include Diploma and Degree programs as from 2014.On the other hand, the number of unemployed

youth who have attained tertiary education level has increased significantly from 1,300 in 2006 to 5,000 in 2012. According to a report prepared by the MEF, one of the main causes of youth unemployment is the lack of adequate education, training and employable skills.

Btvet System in Uganda

Although Uganda recognizes the importance of Skills development as a tool for reducing poverty and enhancing productivity, competitiveness, and employability as highlighted in a series of ILO discussions and conclusions limited efforts shows its reality. It is also clear that Employers play an important role in improving effectiveness and relevance of skills training however as revealed in Youth Map Uganda, 2011:19 report by IYF, skills mismatches are witnessed by an interviewed employers who confirmed that there is a huge gap between what students learn in formal education system and what the economy needs. High youth unemployment is closely linked to the lack of skills, which arises from weaknesses in education and training. For example in Mbale town, one hospitality sector employer explained that they need individuals who have a set of skills like plumbing, refrigeration, and electrical/mechanical engineering, but schools are not producing such graduates with practical skills. Also, one telecommunications sector employer explained, "Graduates have no prior technical skills to join our company and they need further training during our staff development programs while on the job.". Skilling Uganda is an ambitious reform program aiming at overhauling the current system of Skills Development in Uganda. It outlines the framework for a modern, state of the art open system for skills development in the country Strengthen employer-based training supporting training activities by employers either in-house or delivered by external training providers since internships provision currently is not sufficient to meet the growing demand. With employers, training authorities will develop a plan to improve the availability of internships including a flexible academic calendar to ensure that internships can be provided year round, support of pilot programs for partnerships development in training (e.g. dual training).

COMPARISON AND CONCLUSION

In this 21st century, both developed and developing nations are faced with the demands of a rapidly changing and more globally competitive world due to major forces driving this change in the world of work, such as advances in information and communication technology (ICT), the introduction of new manufacturing processes, increased economic integration between countries, and increased competition due to trade liberalization. The impact of economic globalization, however, has been uneven for instance in developing countries, China and India, have considerably improved their stand in the global economy, yet others not. Many are seeing expansion of the informal economy, characterized by a reliance on unskilled labor force combined with formal economy stagnation. Recent progress in education development meant that there is more skilled workers in the world than available job prospects increasing the global unemployment, as shocks provoked by the international financial crisis continue to reduce the capacity of the global economy to add new jobs making technical and vocational education and training (TVET) an agenda of governments and donor agencies internationally. The political and policy communities in many low-and middle-income countries (LMICs) are attracted to TVET due to its linkage to unemployment reduction through equipping individuals with relevant skills and knowledge to respond to employment opportunities. UNESCO is an advocate of TVET highlighting its policy importance of higher-order skills and its central role in the global knowledge-based economy, particularly with regard to poverty reduction,

economic growth and social stability (UNESCO, 2010a). There is a shift in priorities evidenced in Global Monitoring Report 2012 on Education for All (EFA), which strengthens the focus on TVET and skills development that might expand opportunities for marginalized groups (UNESCO, 2012). TVET has become a key area focus and investment in developing countries and many initiatives have been implemented to address unemployment issues and improve economic growth.

Considering several research results from various countries shows that there is a better TVET system in developed countries like in Australia, Germany, Singapore, Mauritius and US with more emphasis on industry cooperation with vocational schools in form of dual system, teaching factories, on-job training and apprenticeship and work-based learning right from high school to tertiary institutions and universities. This close linkage has reduced skills mismatch improving quality skills and competency by matching vocational education with labor markets needs hence reducing on the unemployment gap in these countries.

Similarly, there has been a close relationship and linkage between vocational school and the industry also in some developing countries like Indonesia, Brazil though more efforts and appropriate strategies are needed for example periodical curriculum synchronization in all vocational schools with industry needs and increase in duration of dual system. However, there are less evidences of vocational school cooperation with the industry in Uganda that explains why there is high rate of youth unemployment in comparison to similar developing countries like Indonesia, Tanzania, Kenya and others.

Conclusively therefore, cooperation between the vocational school and industry is pivotal and crucial turning point to both the school as it enables the school to produce quality output through updated curriculum and better learning models based on the industry needs, while enabling the industry also to get skilled and competent workforce at reduced costs as well as increasing the productivity that increases the nation's GDP hence leading to economic growth and development and full employment.

Suggestions

Vocational schools can improve their cooperation with industries according to the conclusion through: (1) Implementing the learning model applicable in both places like work based learning, teaching factories. (2) Including Industrial personnel/experts on school committee boards to advice on the learning content through developing appropriate curriculum students' assessment and provision of updated learning equipment.

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