TRANSFORMING TVET IN THE ASIA-PACIFIC REGION FOR THE FUTURE:

INNOVATIONS AND IDEAS FOR SOCIO-ECONOMIC DEVELOPMENT

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Transforming TVET in the Asia-Pacific Region for the Future: Innovations and Ideas for Socio-Economic Development

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FOREWORD

The International Conference on Innovations in TVET for Socio-Economic Development was organized in Nepal last October 2018 to gather esteemed leaders, innovators, change makers and other important people in the field of TVET and Socio-economic development to exchange new information regarding the development of TVET in their respective agencies and countries. It is a timely and relevant engagement in the country, as it is in the cusp of economic and social development. Being a host of this event brings the Nepalese context of TVET and socio-economic development into the spotlight, as it also showcases the innovations and ideas of TVET in the region.

The publication was a product of the different policies, ideas and conversations about TVET agenda and reform that was presented by our respected experts and policymakers from all over the Asia-Pacific region. It aims to provide a proper documentation for the present and future generations to refer to. With this publication, we try to contribute to the growing clamor to put forward academic pursuits in TVET and to present the challenges and issues that the labor market in our respective countries tackle.

This book features a total of 20 papers and case studies presented by the participants from Bhutan, China Ecuador, Fiji, Malaysia, Maldives, Nepal, Pakistan, Papua New Guinea, Philippines, Sri Lanka and Thailand as well as from organizations such as the Colombo Plan Staff College, Diploma Engineers Association of Nepal (DEAN), Council of Technical Education and Vocational Training (CTEVT) and the Asian Development Bank. With the compilation of these papers, we aim to provide a reliable and credible resource material that can be used by academics, researchers and experts from all over the region and beyond.

We hope that you appreciate the efforts that the authors have provided in the book and it is our fervent wish that you use the information in the book to further create innovations for TVET

Sincerely,

Ramhari Lamichhane, PhD
Director General
Colombo Plan Staff College

ACKNOWLEDGMENT

This valued publication entitled: “Transforming TVET in the Asia-Pacific Region for the Future: Innovations and Ideas for Socio-Economic Development” is a product of the collective efforts, thoughts and ideas of CPSC country agencies and representatives who participated in the Regional Program on TVET for Socio-Economic Transformation and International and Conference on Innovations in TVET for Socio-Economic Development, held from October 1-3, 2018 in Kathmandu, Nepal.

The compilation of country papers and presentations aims to serve as a reference material to the policy makers, academics, professionals and practitioners in their pursuits to understand the innovations in TVET for the region’s holistic development.

It is a work that was made possible through the efforts of the participants and experts from Bhutan, China Ecuador, Fiji, Malaysia, Maldives, Nepal, Pakistan, Papua New Guinea, Philippines, Sri Lanka and Thailand as well as from organizations such as the Colombo Plan Staff College, Diploma Engineers Association of Nepal (DEAN), Council of Technical Education and Vocational Training (CTEVT) and the Asian Development Bank.

We are grateful to all the member governments of the Colombo Plan Staff College for providing their valuable support to its endeavors in uniting all of its members in a common venue to discuss and discern concerns, aspirations and ideas for the betterment and improvement of TVET in the region.

Our special recognition to the Government of the Federal Republic of Nepal for their relentless support to the endeavors of the organizers in forwarding their vision of a developed Nepal through TVET. Our appreciations to H.E. Ishwor Pokhrel, the Acting Prime Minister, whose presence made the event relevant and worthwhile.

Our appreciations as well to the officials of the Ministry of Education, Science and Technology (MoEST), Council for Technical Education and Vocational Training (CTEVT), Nepal and Diploma Engineers Association of Nepal (DEAN) for their support to the Colombo Plan Staff College in ensuring that the program and the invited guests are successful in their objectives.

We express our appreciations as well to the staff members under these organizations for their invaluable contribution to the program’s success.

We also recognize the contributions of Mr. Pushpa Raman Wagle, CTEVT Member Secretary and Engr. Kameshwar Prasad Singh, President of DEAN for supervising the arrangements of the regional program. In addition, we would also like to appreciate the efforts made by the local resource persons and coordinators namely Prof. Pramod B. Shrestha of Tribhuvan University, Mr. Tek Bahadur Malla of the CTEVT Technical Division and Engr. Jibran Ghimire of DEAN for ensuring that the whole duration of the program runs smoothly as possible.

Lastly, we recognize with utmost gratitude and respect the industrious staff members of CPSC, CTEVT and DEAN for ensuring the success of this publication and whole program itself through their initiative to collect, edit, layout and disseminate this publication to the readers and researchers across the region and the world.

Truly, their dedication, passion and expertise in their respective responsibilities further demonstrates the benefits of a tripartite cooperation to achieve their common goals and targets.

Editorial Team

CONTEXT AND PURPOSE OF THE INTERNATIONAL CONFERENCE

With rapid technological innovations and modernization bringing intensified competitions in the market economy, the Technical and Vocational Education and Training (TVET) system has to realize its significant role in the socio-economic development of developing countries to catch up with this fast rising globalization.

To meet the demands of the increasing socio-economic divide brought about by globalization it is imperative that TEVT take up the challenge to weave innovations on their part to fully be able to contribute to socio-economic transformation of developing countries, thereby proving its catalyst impact in the economies in the region.

Some innovations in TVET may include, among many others, are to: raise the general education background of vocational education; widen the route from vocational education to higher education; deploy competence-based curriculum development mechanisms; strengthen the co-operation between the education authorities and employment organization as well as industries; decentralize the delivery system and to involve employers more in the process of TVET.

The International Conference set to be organized by the Colombo Plan Staff College (CPSC), Diploma Engineers Association, Nepal (DEAN) and the Council for Technical Education and Vocational Training (CTEVT) is in view of highlighting innovations, challenges and issues in TVET that may contribute to enhancing TVET systems to fully realize its impact in the socio-economic development of the region.

Topics lined up for presentations, discussions and deliberations will revolve around employability through technopreneurship in TVET; quality assurance in TVET; industry-institute partnership; vocational skills training initiatives for socio-economic development; global initiatives for TVET competitiveness; among many others.

OBJECTIVES

The International Conference seeks to:

- Provide a platform for discussions and sharing of innovations, best practices, initiatives and successful models in TVET targeted to create contributions in the socio-economic development of the countries in the region;
- Establish links for national, regional, and international TVET initiatives that will further enhance quality assurance through accreditation;
- Set a venue for establishing, and strengthening industry-institute linkages, networks and partnerships;
- Share awareness and deeper understanding on global trends and initiatives for TVET competitiveness, and;
- Come up with plans and policy views relevant to the learnings gained from the conference.

PARTICIPANTS

The international conference is bringing all stakeholders of TVET such as policy makers, international organizations and institutions, administrators, educators, industry representatives, experts, advocates, professionals and enthusiasts on a common platform to discuss and exchange viewpoints on trends and innovations in TVET to effect socio-economic transformation.

THE ORGANIZERS

Colombo Plan Staff College

The Colombo Plan Staff College (CPSC) is a unique inter-governmental organization for human resources development in Asia and the Pacific Region. As a specialized agency of the Colombo Plan System, CPSC is mandated to enhance the quality of technical and vocational education and training (TVET) in its member countries through the planning and implementation of demand-driven training programs, research and development, information dissemination and consultancy activities.

Council for Technical Education and Vocational Training (CTEVT)

The Council for Technical Education and Vocational Training (CTEVT) constituted in 1989 (2045 BS) is a national autonomous apex body of Technical and Vocational Education and Training (TVET) sector committed for the production of technical and skillful human resources required to the nation. It mainly involves in policy formulation, quality control, preparation of competency based curriculum, developing skill standards of various occupations and testing the skills of the people, conduct various research studies and training needs assessment.

Diploma Engineers' Association, Nepal (DEAN)

The Diploma Engineers' Association, Nepal (DEAN) is formed as a common, technology oriented and non-profitable organization. It was established in 1980 and registered in Kathmandu District Administration Office. Its Registration no is 33/046/47. To make Diploma Engineers capable and active in nation building and to supplement Diploma Engineers with high moral and protect their professional rights. DEAN represents about 25000 Diploma Engineers. It has already completed its 12th National Convention.

International Conference on
Innovations in TVET for Socio-Economic Development
October 4-5, 2018, Kathmandu, Nepal

KATHMANDU DECLARATION

The International Conference on “Innovations in TVET for Socio-Economic Development", held in Kathmandu, Nepal on October 4-5, 2018 was a two-day event jointly organized by the Diploma Engineers Association of Nepal (DEAN), Colombo Plan Staff College (CPSC), Manila, Philippines and the Council for Technical Education and Vocational Training (CTEVT), Nepal. It is in association with Ministry of Education, Science and Technology, Nepal and the SAARC Diploma Engineer's Forum (SDEF).

Echoing the need for immediate and tangible action from policymakers, educators, technologists, professionals, TVET practitioners and Technical Training Providers (TTPs) to strengthen and promote the role of Technical Education and Training and Vocational Training (TVET) in contributing to the advancement of the socio-economic status of their respective countries, regions and the world as a whole, hereby makes following Declaration:

Declarations:

1. The TVET Policy and Strategic Direction of government is identified as a key element to drive TVET towards sustainable development. Therefore, every government must have concrete laws and policy to develop National Vocational Qualification Frameworks (NVQF) and push towards the accreditation of programs and institutions offering TVET programs, in addition to the standardization of TVET programs to harmonize their practices with globally-accepted standards.
2. The competency of technical teachers is the basic requirement to ensure the quality in TVET. Therefore, there is an urgent need to develop the intellectual capacity of technical teachers, enhance the skills of the existing pool, introduce industrial experience, and implement the technical teacher's competency assessment system.
3. The Quality Management System (QMS) is a necessary element to ensure the success of the outcome-based TVET system. Therefore, it is essential to continually identify the institutions that will serve as models and benchmarks for performance through systems such as the Asia Pacific Accreditation and Certification (APACC) and the internal accreditation systems of the own country.
4. For effective coordination, minimization of resource duplication and productive exchange of best practices, countries should promote professional linkages among the government ministries, development partners, TVET authorities, professional organizations, and private sectors. Promotion of national and regional level policy dialogues through the organization of forums and networking opportunities can be explored.
5. To ensure the high quality of service provided by TVET professionals, an effective regulation of the TVET practice should be in place. Countries should be able to recognize and promote the role of relevant professional councils to achieve this plan.
6. Public Private Partnership (PPP) has been acknowledged as one of the effective models to implement the TVET programs as per the need and policy of the country. Therefore, it should be strengthened by encouraging the practical and effective participation of the private sector in TVET activities such as policy formulation, sector skill council formation, curriculum development, apprenticeship and TVET program implementation and post-program support such as the employment placement of graduates. In addition, the capacity enhancement of Technical Training Providers (TTPs) in the region is also recognized as urgent.

7. Professional organizations such as Diploma Engineers Association Nepal (DEAN), TVET Providers Association and other similar professional bodies have a potential in bridging the gap between institute and industries. Therefore, the government has to consider them as a key players in providing a clear career path to TVET graduates and in turn enhance their chances of being employed.
8. A Human Resource Development Plan with projection of supply and demand of skills and TVET graduates, which is in-line with the Development Plan of each government of the Region is critically important in promoting social inclusion.
9. The Integrated TEVT Act is deemed to be urgent especially in Nepal, considering the changed political context.
10. In order to address the challenges of Industrial Revolution (IR) 4.0, a promotion of creativity, innovation and entrepreneurship through quality TVET is essential and should be based on continuous research and development. These values are also equally important in facilitating the rapid socio-economic development of developing countries such as Nepal.
11. There must be an urgent need to adopt a strategic mindset in developing TVET programs that will provide lasting solutions to problems such as a mismatch in the supply of jobs to the demand for skilled workforce.
12. The Colombo Plan Staff College (CPSC) is expected to be a conduit in assisting its member countries in the formulation of strategies and support mechanisms in support of the capacity enhancement of TVET stakeholders, particularly in the quality Improvement of the trainers and instructors. Thus, Institutions affiliated with CPSC are encouraged and expected to contribute in enhancing the capacity of training providers through the organization's assistance or through bilateral agreements with other institutions.

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5th October 2018

Kathmandu, Nepal

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GLOBAL TREND OF DEMAND AND SUPPLY OF SKILLED WORKFORCE IN THE LABOR MARKET

Ramhari Lamichhane, PhD[1]

ABSTRACT

The paper discusses the key elements in understanding the global trend of demand and supply of skilled workforce. In line with other education programs, TVET programs need a paradigm shift to make our youth fit for global market with adequate competencies for global competitiveness in order to address future skills requirements. It is necessary, therefore to further integrate industry practices and participation to TVET programs to ensure that the global trend is addressed.

Keywords: TVET, Skilled Workforce, Labor Market

BACKGROUND

Technical and Vocational Education and Training (TVET) is the main source of skilled workforce. There were traditional ways of acquiring skills in pre-industrial revolution era. Most of the learning took place either in family-based workplace or at home. After industrial revolution 1.0 (18th- 19th century), industry became the place for acquiring skills through work. During industrial revolution 2.0 (beginning of 20th century), Apprenticeship became the most popular methods of learning skills. During industrial revolution 3.0 (1950- 1990), many trade schools/technical schools were established and began to produce skilled workers. The present stage is Industry 4.0 (After 1990) where different methods of learning, such as in-house training, on-the-job training, apprenticeship, online learning and learning by doing work in enterprises are existent.

Human resource development is the key element for the country's development. There are different ways to develop human resources. Some of which include literacy programs, school education, university education, technical and vocational education, recognition of prior learning, training and work experience. People enrich their knowledge, skills and attitude (KSA) from these ways of learning. All types of learning are important. However, the technical and vocational education and training (TVET) is highly relevant to impart competencies for the youth. TVET programs are well-recognized by national systems and societies in developed economies, while struggling in underdeveloped economies in both national system and social status.

While basic skills development and workforce preparation for the country are important in the Asia Pacific Region, a paradigm shift must take place recognizing that in order to be truly globally competitive, one must be globally competent. Educating young people to become global citizens will allow them to learn the interdependence of the world's systems, believe that solutions to global challenges are attainable, and feel morally compelled to confront global injustices and take responsible action to promote a just, peaceful and sustainable world. Global competency skills are necessary so that young people can invent a future that appropriately addresses global challenges.

Despite the importance of TVET, there is a mismatch between the demand and supply of workforce. A study (Hai, 2012) stated that there is a strong mismatch between the demands of industries from

[1]Dr. Ramhari Lamichhane is currently working as the Director General of Colombo Plan Staff College, Manila, Philippines. He is also known as Quality Management System, Project Management and TVET Expert.

the supply of TVET institutes in Vietnam. Industries are seeking qualified skilled workers but fail to acquire them. Similarly, TVET supply in Xinjiang, China does not meet the demand of students completing compulsory education, while the supply of skilled workforce by TVET has not yet played an important role compared to the national average (Xiao & Human, 2013).

In the case of Nepal, the employment rate of TVET graduates is not satisfactory. Most of the country's employment rate is below than set standard. For example, in all skills development projects, Nepal had set target of 80% employment but, actual employment rate ranges from 50-60%(Lamichhane, 2006). On the other hand, employers are not getting qualified and competent workers to fulfill their vacancies. According to ADB (2015), skills mismatch is widespread in Asia and the Pacific. In fact, data on difficulty in filling vacancies for skilled positions (Figure 1) suggest that skills mismatch may be more serious in this region than the global average.

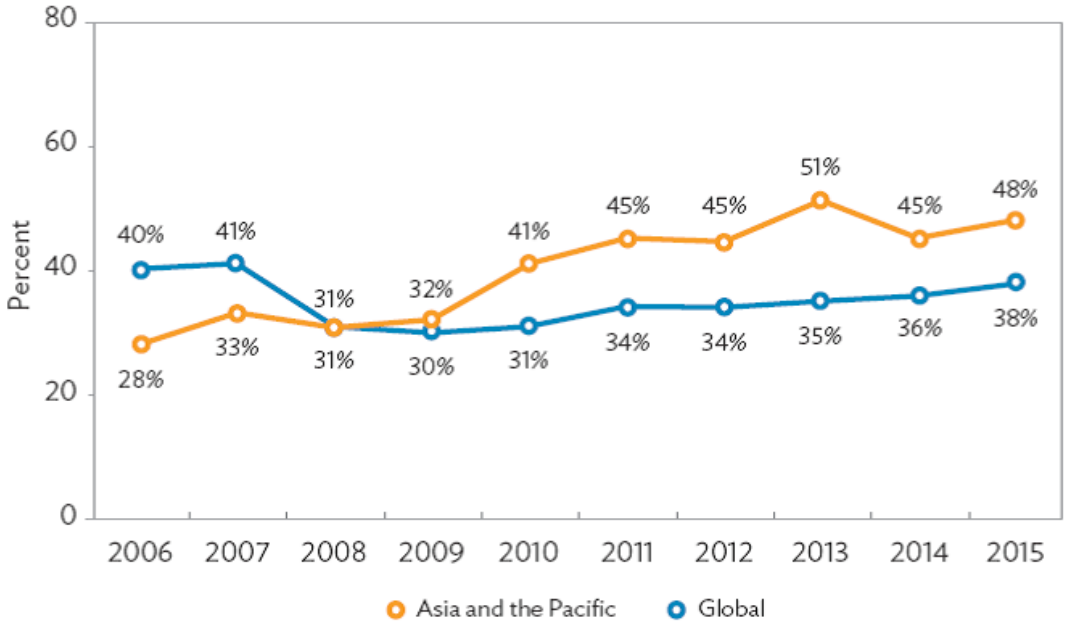

Figure 1: Difficulty Filling Vacancies in Asia and the Pacific. Adapted from the Manpower Group (2015). Talent Shortage Survey.

The attraction of TVET is increasing day by day in spite of low social recognition. Considering the importance of TVET for socio-economic development and the issues of mismatch between demand and supply of TVET graduates, it is important to explore the global trend of demand and supply of workforce from TVET sector.

GLOBAL TREND OF DEMAND OF SKILLED WORKFORCE

The global trend of workforce demand is very dynamic. It has been changing rapidly in recent years with industrial revolution through technology, level of education and changing pattern of employment sector as catalysts.

Industrial Revolution through Technology

The trend of skills workforce demand is rapidly changing. The demand of skills workforce is changing in line with the stages of industrial revolution. In each stage of industrial revolution, competencies of skills workforce have been changed. The following stages of industrial revolution (Schwab, 2016) shows the required competencies of industrial workforce.

First Industrial Revolution: The First Industrial Revolution took place from the 18th to 19th centuries in Europe and America. It was a period when mostly agrarian and rural societies became industrial and urban. The iron and textile industries, along with the development of the steam engine, played central roles in the Industrial Revolution.

Second Industrial Revolution: The Second Industrial Revolution took place between 1870 and 1950. It was a period of growth for pre-existing industries and expansion of new ones, such as steel, oil and electricity, and used electric power to create mass production. Major technological advances during this period included the telephone, light bulb, phonograph and the internal combustion engine.

Third Industrial Revolution: The Third Industrial Revolution took place from 1950 to 2000. It is also known as the Digital Revolution, which refers to the advancement of technology from analog, electronic and mechanical devices to the digital technology available today. The era started during the 1980s and is ongoing. Advancements during the Third Industrial Revolution include the personal computer, the internet, and information and communications technology (ICT).

Fourth Industrial Revolution: The Fourth Industrial Revolution started in the beginning of 21st century. It builds on the Digital Revolution, representing new ways in which technology becomes embedded within societies and even the human body. The Fourth Industrial Revolution is marked by emerging technology breakthroughs in a number of fields including robotics, artificial intelligence, nanotechnology, quantum computing, biotechnology, the Internet of Things (IoT), 3D printing and autonomous vehicles. The summary of the stages industrial revolution is presented in Figure 2 below.

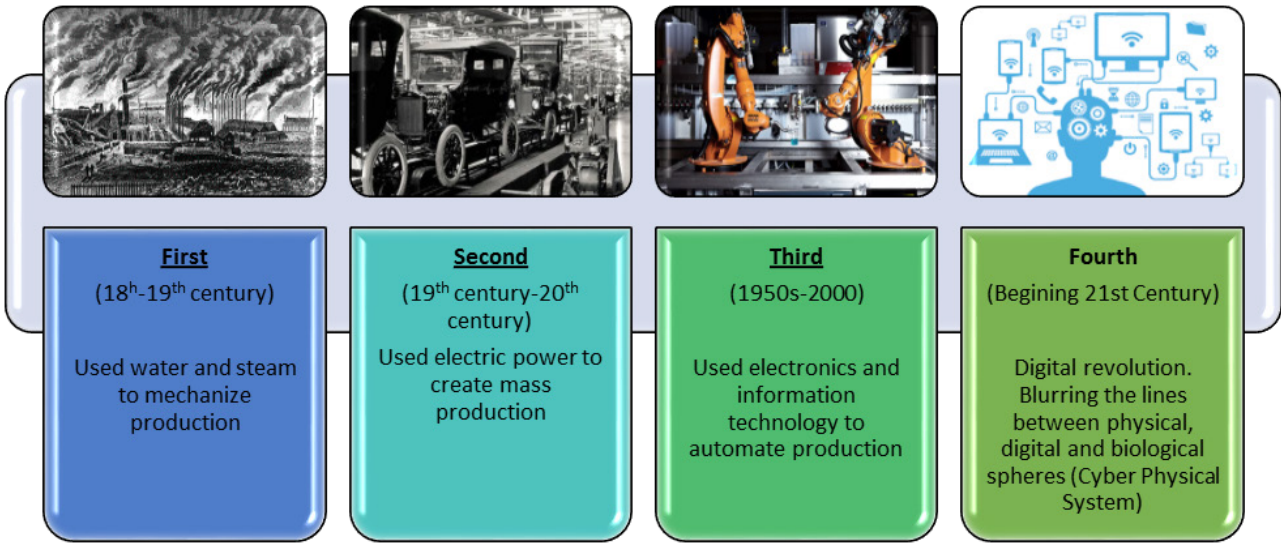

Figure 2: Stages of Industrial Revolution

Therefore, the competencies of TVET graduates should have hard and soft skills, as well as digital and cyber physical skills to address the demand of industry 4.0.

Level of Education

The level of education is one of the elements for the changing demand of job in the labour market. The tertiary sector has provided more new jobs in Xinjiang, China in the past ten years. The total employed population in Xinjiang increased from 6.85 million in 2001 to 8.95 million in 2010, representing a 30.5% increase. The share of workers in primary sector jobs decreased from 56.6%

to 49.0%, while employment in the secondary and tertiary sectors went up from 13.5% to 14.8% and from 29.9% to 36.2% respectively (Xiao & Human, 2013). The study (ADB, 2015) supported that due to the increased or advanced education level and technology, there are high demand in middle and advanced level employment than basic level.

According to U S Bureau of Statistics, employment by entry level of education is shown in Figure 3. About 28% of May 2016 employment in USA was in occupations that typically require no formal educational credential for entry. This education category includes the two largest occupations: retail salespersons and cashiers. Other occupations that typically require no formal educational credential for entry include janitors, maids and housekeeping cleaners, stock clerks and order fillers, personal care aides, landscaping and grounds keeping workers, and most food preparation and serving-related occupations. Similarly, about 37% of employment require high school diploma or equivalent.

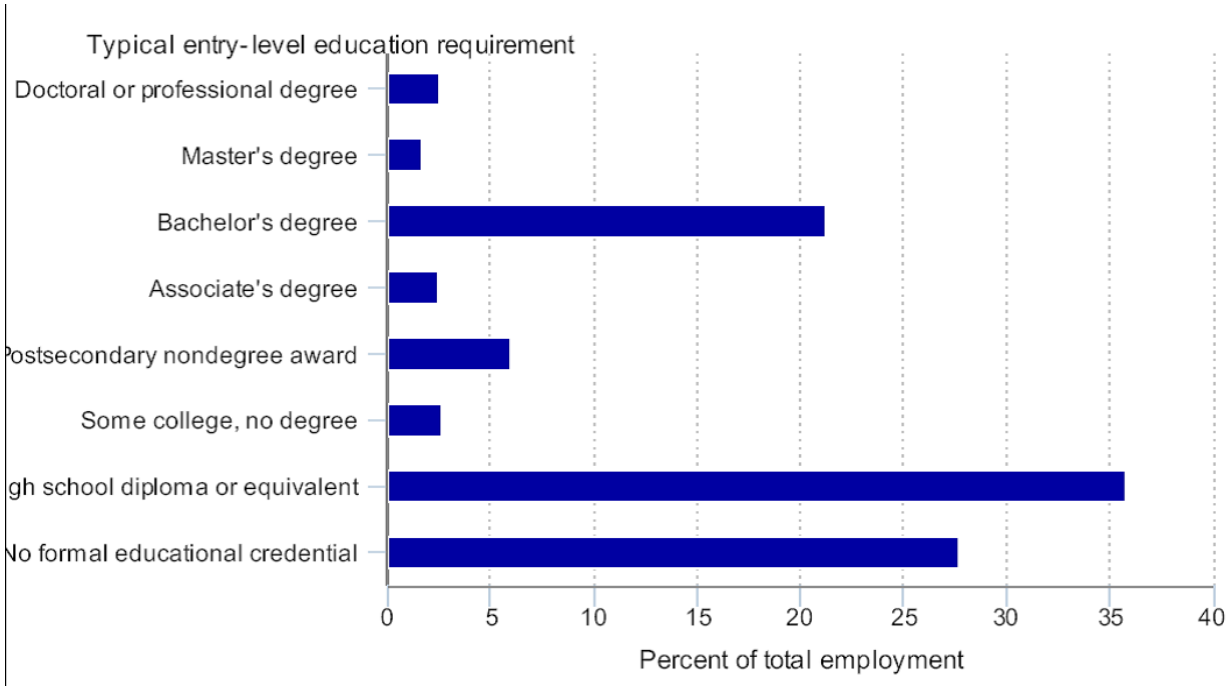

Figure 3: Employment by Entry-Level Education Requirement (May 2016). Adapted from Occupational Employment Statistics Program, U S Bureau of Labor Statistics (2016).

Industries vary in their occupational composition. Employment trends by entry education are closely related to the economic performance of different industries over the course of the business cycle. As a result of a study conducted in USA in May 2016, employment by industry sector and entry education is shown in Figure 4. For simplicity, the analysis below uses a three-category version of entry education, with all the post-secondary education designations combined into a single category.

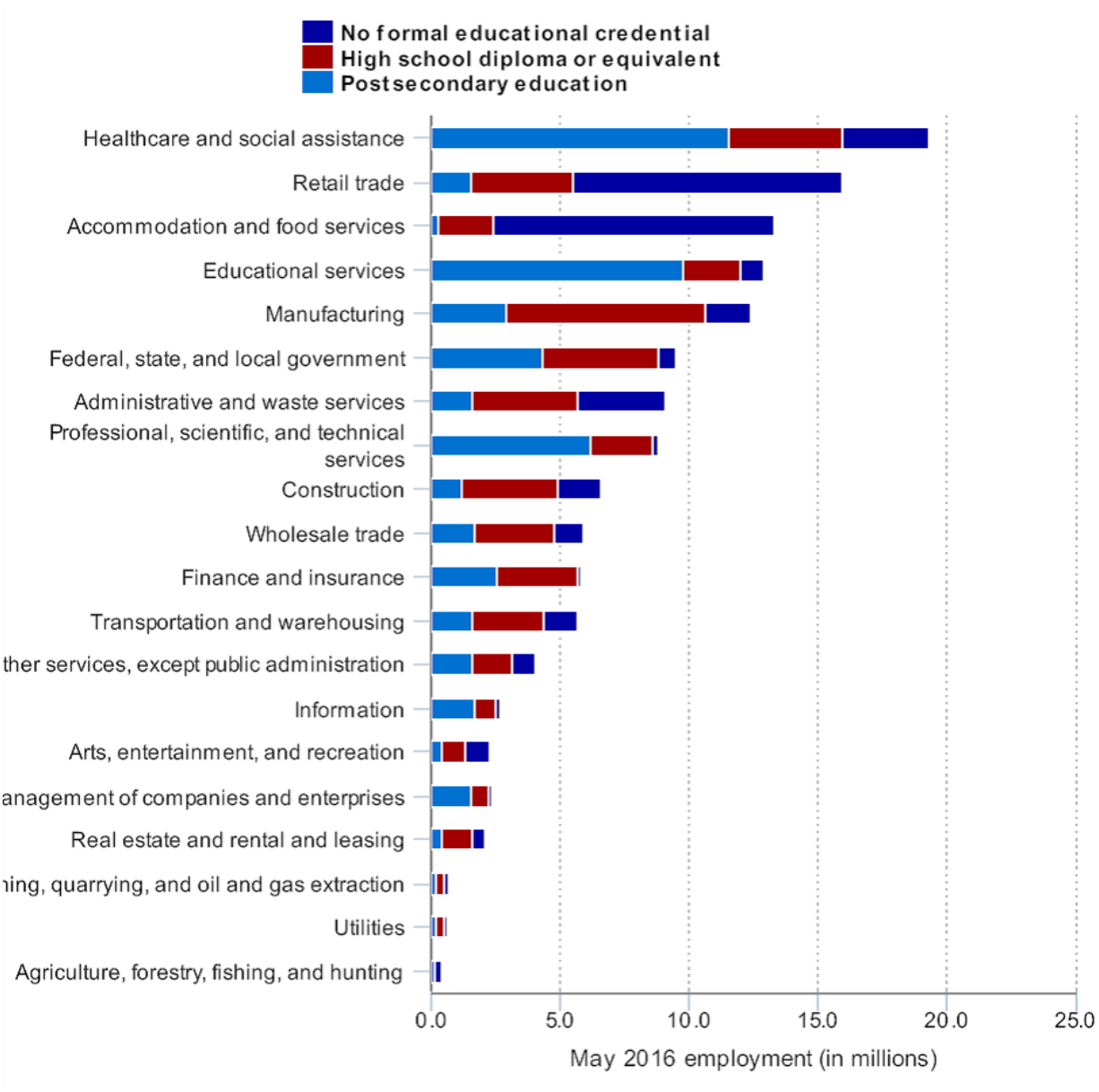

Figure 4: Employment by Industry Sector and Entry Education (May 2016). Adapted from Occupational Employment Statistics Program, U S Bureau of Labor Statistics (2016).

Changing Pattern of Employment Sector

Employment pattern is always dynamic. There are different factors which affect the pattern of employment. Some of the key elements are technology, demography, economic development, education, lifestyle and globalization. According to the study report (Economic Forum, 2016), artificial intelligence is considered as not influential drivers for employment up to 2020 in spite of widespread creation of technologies such as Big Data analytics, mobile internet, the Internet of Things and robotics due to the Industrial Revolution 4.0.

The biggest expected drivers of employment creation are demographic and socio-economic in nature. More specifically, the opportunities offered by young demographics and rising middle classes in emerging markets and the rising economic power and aspiration of women. The details of employment effects of driver of change, all job types are presented in Figure 5 below.

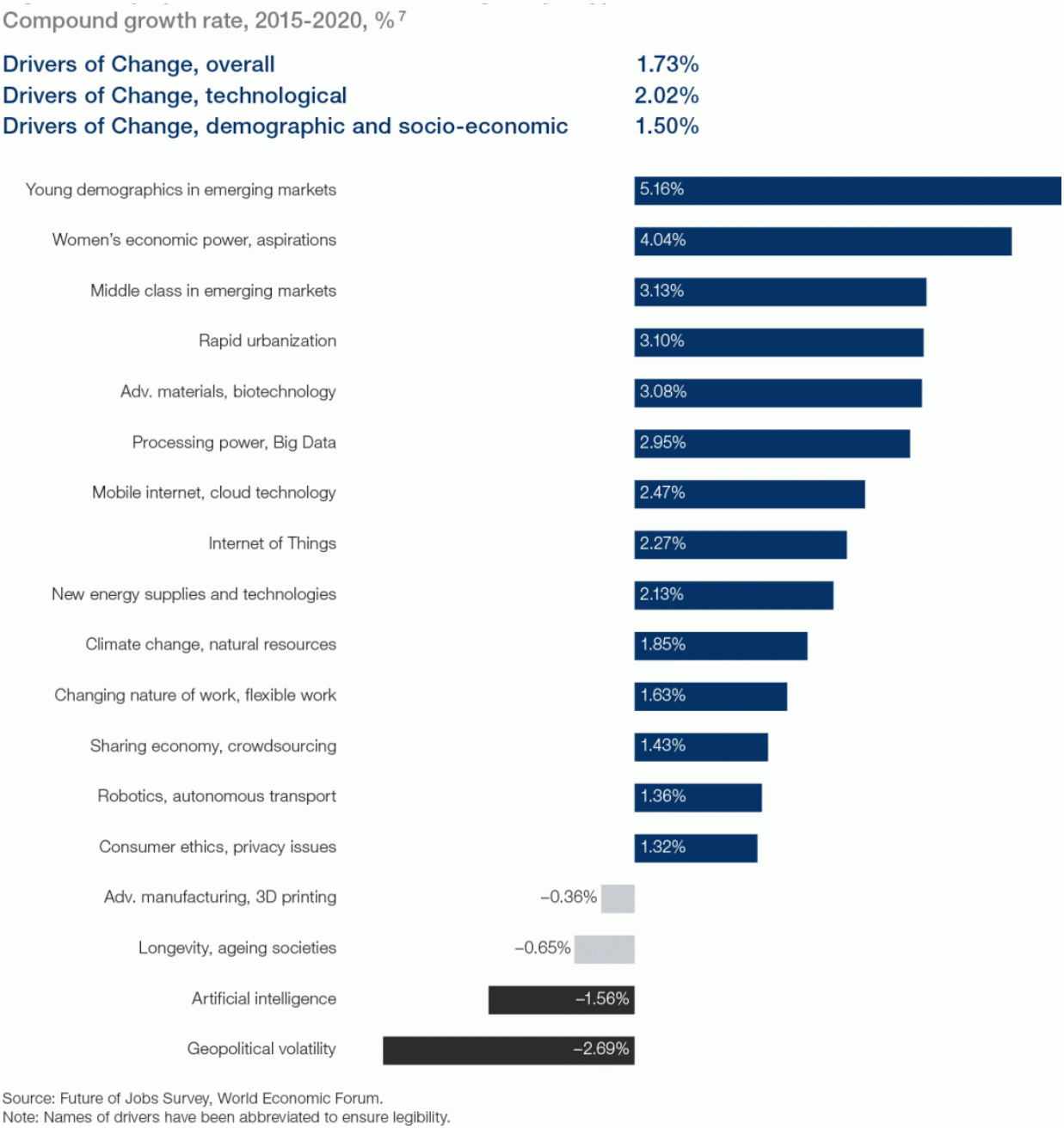

Figure 5: Employment Effect of Drivers of Change, All Jobs Types. Adapted from the Future of Jobs Survey, World Economic Forum (2016).

Based on job family, computers and mathematics, architecture and engineering, management, business and financial operation, and sales-related jobs have positive growth rate, while office and administration, manufacturing and production, arts, design, entertainment, media and sports, construction and extraction, installation and maintenance-related jobs have negative employment growth rate. The details of employment effect of drivers of change, by job family is presented in Table 1 below.

Table 1: Employment Effect of Drivers of Change, by Job Family (2015-2020). Adapted from Future of Job Survey, World Economic Forum, 2016

Job Family	Employment Compound Growth Rate percent
Computers & Mathematics	3.21
Architecture and Engineering	2.71
Management	0.97
Business and Financial Operations	0.70
Sales and Related	0.46
Installation & Maintenance	(0.15)
Construction and Extractions	(0.93)
Arts, Design, Entertainment, Media and Sports	(1.03)
Manufacturing and Production	(1.63)
Office and Administration	(4.91)

Based on industry, information and communication technology has shown significant employment growth by 2020, and professional services, and media, entertainment and information follow as prominent sectors for employment growth. Similarly, consumer service sector, mobility or transportation, energy, financial services, and basic and infrastructure-related industries will have positive employment growth. Demand of health care is increasing, but employment opportunities are reducing due to technology. The employment effect of drivers of change, by industry (2015-2020) is presented in Table 2 below.

Table 2: Employment Effect of Drivers of Change, by Industry (2015-2020). Adapted from Future of Job Survey, World Economic Forum, 2016

Industry	Employment Compound Growth Rate percent
Information and Communication Technology	2.91
Professional Services	2.45
Media, Entertainment, and Information	2.31
Consumer	1.72
Mobility	1.61
Energy	1.54
Financial Services and Investors	1.54
Basic and Infrastructure	0.61
Health Care	(0.37)

The changing pattern of the labor market is very fast. There are various reasons such as change in technology, demography, lifestyle, access in education, and global environment. It has gradually shifted from manufacturing to service and innovation and information technology. According to ADB (2015), the major elements that change the shape of labor market demand and supply are doubling the labor force participation in the economy, expansion of the education access, economic and industrial transformation, technological advancement, globalization and regional integration and demographic shifts. Some of the figures showed by ADB report are as follows in Figures 6 & 7.

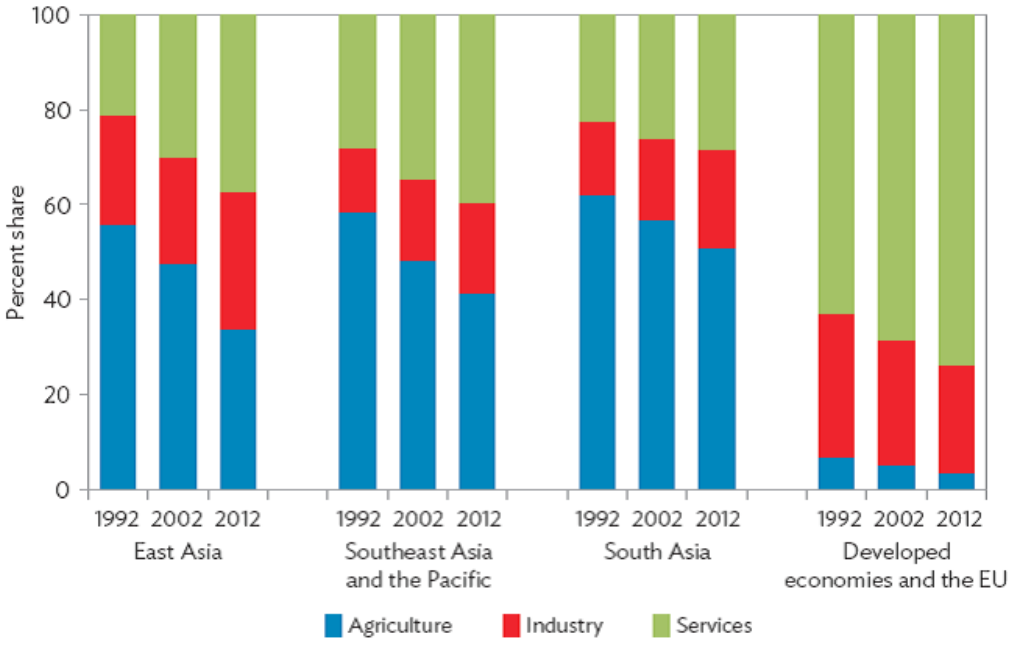

Figure 6. Changing Economic Structure by Share of Employment.). Adapted from Future of Job Survey, World Economic Forum, 2016

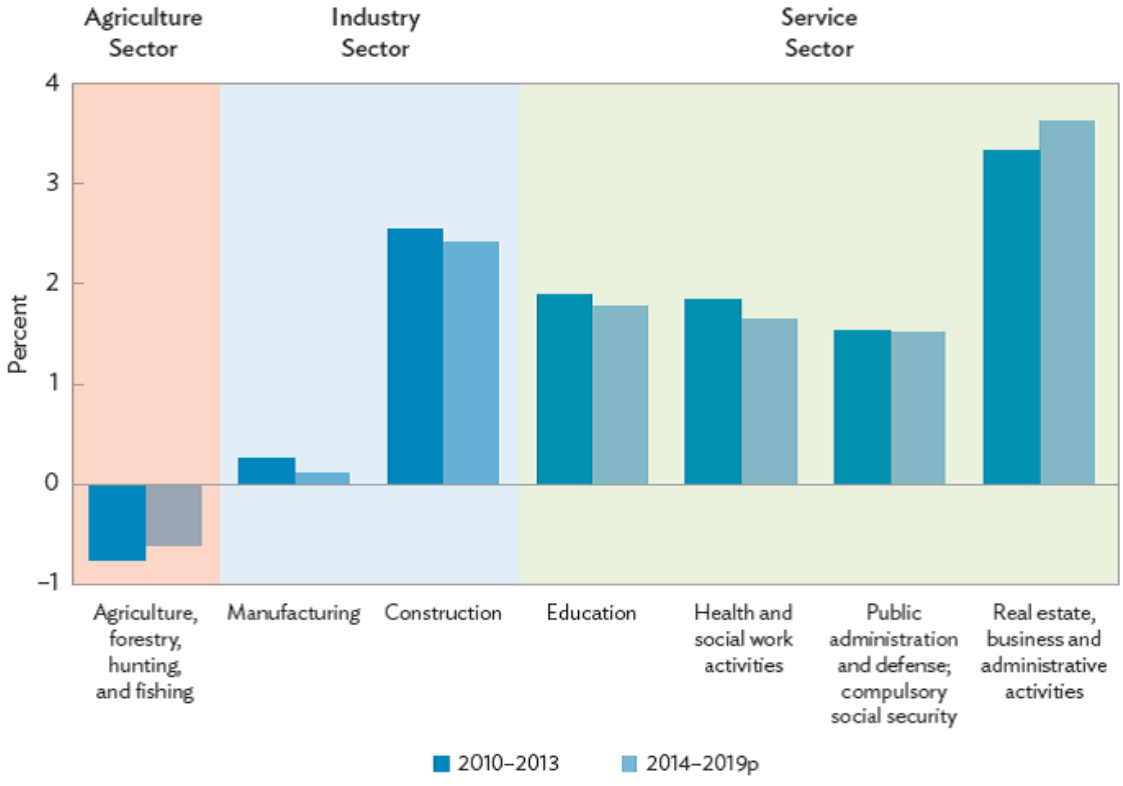

Figure 7. Global Sectoral Employment Growth in Selected Industries, 2010-2013 and 2014-201.). Adapted from Future of Job Survey, World Economic Forum, 2016

According to the report of the Mckinsey Global Institute (2018), automation and artificial intelligence (AI) are changing the nature of work. The study was focused on USA and five European countries with focus on five sectors: banking and insurance, energy and mining, healthcare, manufacturing, and retail. Key findings were as follows.

- Automation will accelerate the shift in required workforce skills that was observed over the past 15 years. The research study finds that the strongest growth in demand will be for technological skills, which will rise by 55 percent. By 2030, it will represent 17 percent of hours worked, which is 11 percent higher than it was in 2016. This surge will affect the demand for basic digital skills as well as advanced technological skills, such as programming. The demand for social and emotional skills, such as leadership and managing others will rise by 24 percent to 22 percent of hours worked. The demand for higher cognitive skills will grow moderately, but will rise sharply for some of these skills, especially creativity.
- Some skill categories will be less in demand. Basic cognitive skills, which include basic data input and processing, will decline by 15 percent, falling to 14 percent of hours worked from 18 percent. Demand for physical and manual skills, which include general equipment operation, will also drop by 14 percent, but will remain the largest category of workforce skills in 2030 in many countries, accounting for 25 percent of the total hours worked. Skill shifts will play out differently across sectors. Healthcare, for example, will see a rising need for physical skills, even as demand for them declines in manufacturing and other sectors.
- Companies will need to make significant organizational changes, addressing these skill shifts to stay competitive. A survey of more than 3,000 business leaders in seven countries highlights a new emphasis on continuous learning for workers and a shift to more cross-functional and team-based work. As tasks change, jobs will need to be redefined and companies say they will need to become more agile. Independent work will likely grow. Leadership and human resources will also need to adapt: almost 20 percent of companies say their executive team lacks sufficient knowledge to lead adoption of automation and artificial intelligence. Almost one in three firms are concerned that lacking the skills they need for automation adoption will hurt their future financial performance.
- Competition for high-skilled workers will increase, while displacement will be concentrated mainly on low-skilled workers, continuing a trend that has exacerbated income inequality and reduced middle-wage jobs. Companies say that high-skilled workers are most likely to be hired and retrained, and raise in wages. Firms in the forefront of automation adoption expect to attract the talent they need, but slower adopters fear their options will be more limited.
- Almost half of the companies in the survey say they expect to take the lead in building the workforce of the future, but all stakeholders will need to work together to manage the large-scale retraining and other transition challenges ahead. Firms can collaborate with educators to reshape school and college curricula. Industry associations can help build talent pipelines, while labor unions can help with cross-sector mobility. Governments will need to strengthen safeguards for workers in transition and encourage mobility, including a shift to portable benefits, as ways of working and the workplace itself are transformed in the new era. Figures 8 and 9 illustrate how automation and AI will change the skills demand in the workforce and how workforce skills will shift respectively.

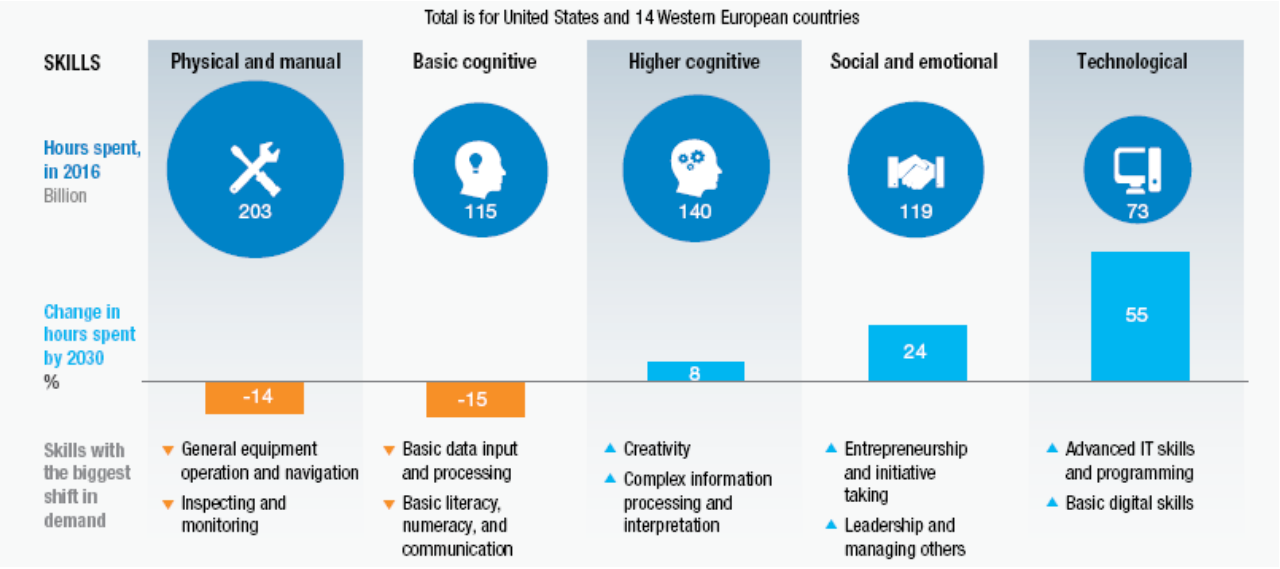

Figure 8: Effect of Automation and AI to the Skills Need in the Workforce. Adapted from LABORSTA (2016) LABORSTA (2016)

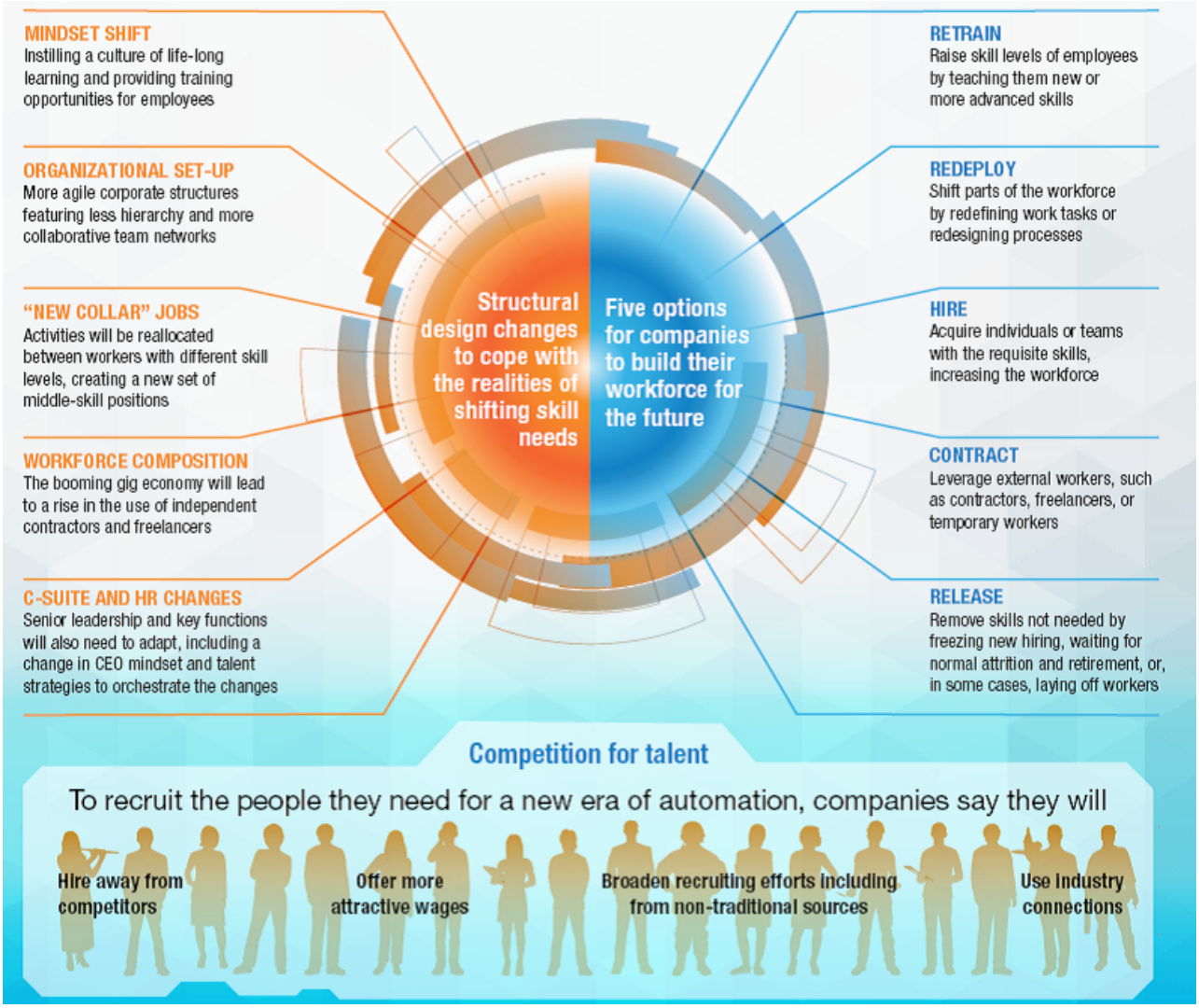

Figure 9: Shifting requirements and demand for employers in the knowledge era. Adapted from LABORSTA (2016) LABORSTA (2016)

GLOBAL TREND OF SUPPLY OF SKILLS WORKFORCE

Industries are equipped with latest equipment and technologies, but most of the skills training institutes are with old equipment and technologies. Considering the context of the skills training institute in the Asia-Pacific Region, majority of them are in either TVET 1.0 or 2.0. Few of them have TVET 3.0 level laboratories and workshops (APACC, 2018).

According to the labor market study report (World Bank, 2010), skill gaps are documented through difficulties to find the right skills to fill skilled vacancies, as illustrated by employers' perceptions in Figure 10. There was also an analysis on the process of filling skilled vacancies - the number of weeks to fill professional positions is on the high side in the region, comparable to numbers for China, Malaysia and Thailand as seen in Figure 11. Difficulties to find the right skills for the job are equally visible in the service and manufacturing sectors and particularly evident in the export sector and sub-sectors such as chemicals, trade and finance. Causes for emerging skill gaps are multiple, including reasons related to overall skill supply (quantity-quality) and labor market. Quality and relevance of education and training is the most preeminent constraint across the board, much more than overall quantity constraints

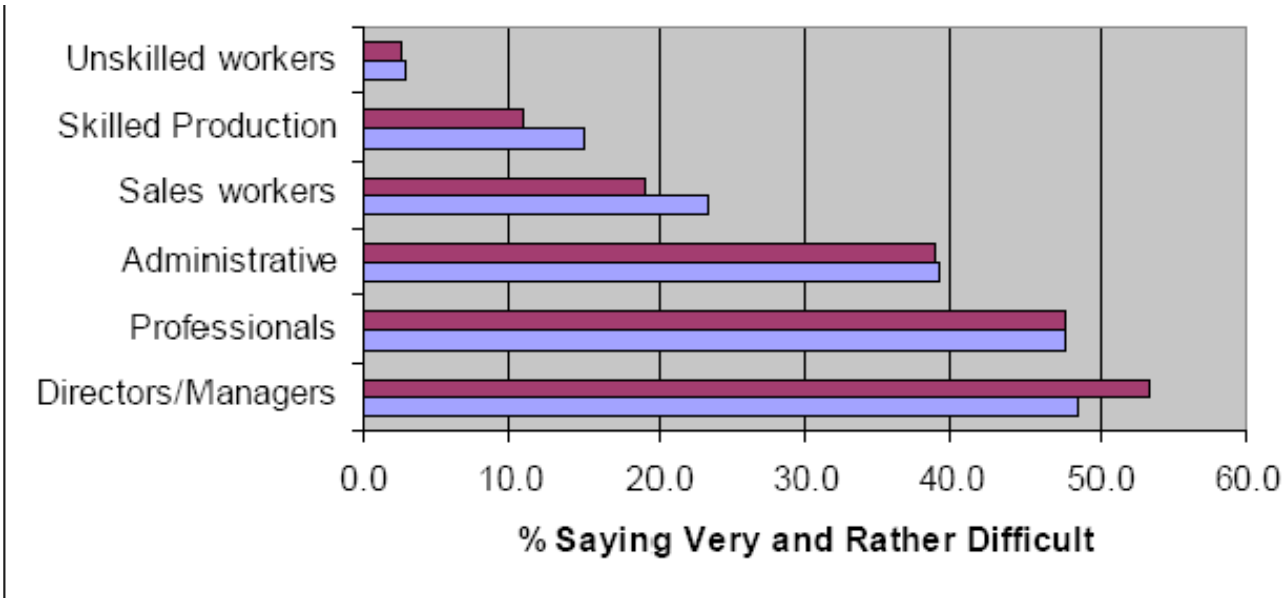

Figure 10: Difficulty Finding Right Skills-Sector and Occupation. Adapted from World Bank (2010).

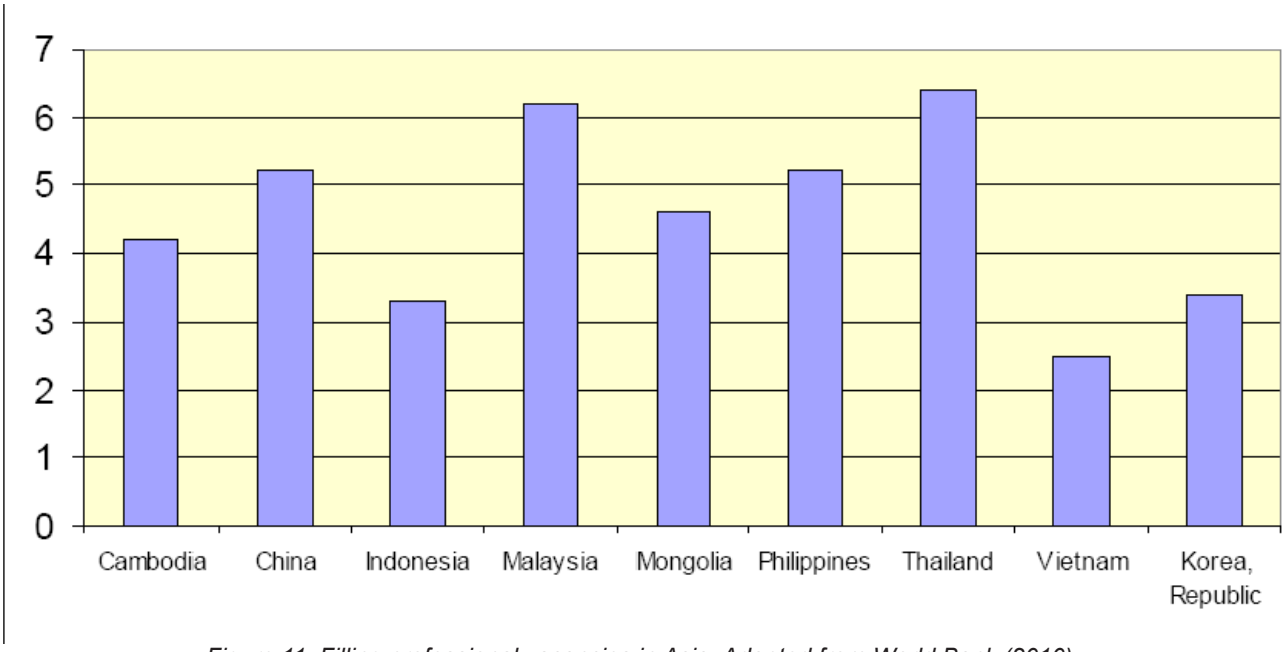

Figure 11: Filling professional vacancies in Asia. Adapted from World Bank (2010).

A study conducted in Ethiopia highlighted that there are three key reasons for mismatch between demand and supply of skilled workforce in garment industries (Yamada, Otchia, & Taniguchi, 2018). First reason is industries focused on competencies and the competencies provided by training institutes differ. Second, level of education and lack of work experience of teachers in industries themselves affect the imparting skills and assessment. Third reason is lack of interaction between training providers and industries.

CONCLUSION

Based on the above discussion regarding labor market demand of skills workforce and the situation of the supply side of skills workforce, it is safe to say that there are big gaps. Manufacturing Industries are more focused on artificial intelligence (AI) and automation. Similarly, other sectors also lean towards digital technology and modernization of technology. Therefore, there is a strong presence of Industry 4.0 in the demand side. Majority of the jobs or occupations except basic physical types and manual work are shifting to acquire people with higher level education than before. Due to ICT and digital technology, requirement of education level increased. Pattern of jobs are gradually shifting from agriculture to service, real state and business sectors. Manufacturing industries are focusing towards robot technology than human resource in the production line.

In regard to supply side, it is still far behind than the expectations of the demand side (Employers). Weak linkages between institutes and industries especially in course development and implementation are evident. Live interaction between them are not in place. As a result, the standard and quality of equipment do not match with the industries. Competencies requirement of industries are also not fulfilled by training providers. Majority of instructors do not have industrial experience. Therefore, they fail to teach competencies as required by industries.

In general, most of the industries are already geared towards industrial revolution 3.0 and 4.0, but TVET providers are still operating with the standards of industrial revolution 1.0 and 2.0. Furthermore, very few institutions have the facilities to cope with industrial revolution 3.0.

RECOMMENDATIONS

Linkages between industry and institute is vital to minimize the gaps between demand and supply of the workforce. The following are recommendations to TVET institutions:

- Institution has to conduct regular market needs assessment (preferably annual if not bi-annual) to address the competencies requirement of industries.
- Institute has to form Enterprise Advisory Committee (EAC) to get regular advice from employers.
- Level of TVET should match with the stages of industrial revolution (IR) e.g. if there is IR 4.0 in Health Care Services, there should be TVET 4.0 for relevant competencies.
- Institution has to develop new strategic management system to address the need of IR.
- Institute has to initiate recruitment or development of instructors with industrial experiences.
- Per sector requirement, institute has to do partnership with industries to establish or improve workshops/laboratories in the institution.
- There should be practical partnership with industries in all three stages i.e. pre-, during and post-training to ensure match between demand and supply.

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NEED FOR TVET QUALITY ASSURANCE SYSTEM AND QUALIFICATION STANDARDS (TEACHER-TRAINER-ASSESSOR) IN THE MARITIME INDUSTRY

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Richard Teo
Vadm Eduardo Ma R. Santos

ABSTRACT

This paper provides a brief overview of the maritime industry with focus on the seafarers being a number one choice in the global maritime arena as evidenced by the number of deployment of seafarers. However, there are more ratings than officers and problems on quality (insufficient skills) and quantity (shortage of officers and unemployment of youth) in the labor market has been identified. It emphasized the need for a TVET quality assurance and a TVET Trainer/Assessors Qualification Standards in the Maritime Industry to ensure the success of the programs because the continuous training of human resources is the key to success. The TVET policy framework and TVET qualification levels have been analyzed to serve as a reference to MARINA in expanding them to come up w general MET teachers' standards by incorporating the needed competencies (outcomes) and performance criteria for each qualification level.

Keywords: TVET, Quality assurance, Qualification levels, Standards Assessment

OVERVIEW OF THE PROBLEMS & ISSUES

According to POEA, the Philippines is the world's leading supplier of seafarers since 1987 and is the manning capital of the world. Filipino seafarers account for more than 30% of the world's seafarers. The International Chamber of Shipping (ICS) reported over 50,000 merchant ships registered in over 150 nations and manned by over a million seafarers of virtually every nationality. The Philippines and India are very significant maritime labor supply nations, with many seafarers from these countries enjoying employment opportunities on foreign flag ships operated by international shipping companies (ICS, 2015). Also, in the Deloitte survey of companies and practitioners, it was reported that the Philippines and India supply more officers to the world fleet than any other country. Explicitly, the report stated that only the Philippines remains the largest market for crewing, advantaged by the fact that these people communicate very well in English. The maritime profession is desirable in the Philippines due to numerous factors including the country's geographical position consisting of approximately 7,100 islands, high unemployment rate, and population growth rate. Over the years, there has been a consistent growth in the number of Overseas Filipino Workers (OFWs), supported by increasing globalization and Filipino workers preference for a job abroad because of higher wages and better employment opportunities.

Ratings are more numerous, comprising about 38% of the seafarers in 2013. More rating officers are employed as traditionally; the distribution of workers is composed of about 65% rating officers and

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35% officers. However, even if there is a massive demand for rating workers, there is currently an oversupply of rating seafarers in the Philippines, as other countries are also supplying this category. At the same time, officer positions require long-term investments from the workers, regarding time and education, due to higher licensure and training requirements.

Identified Problems

The first problem identified in the Philippines is gaps in skills in the labor market. The Fisher report (2013) found gaps or deficiencies in the STCW Convention and the manner in which MET was delivered across borders. Skills have become the bottleneck of economic growth in the country, which means that trainees are not equipped with the necessary skills that employers need. This issue of insufficient skills is evidenced in this research that was initiated by GlobalMET through the Asian Development Bank. Since 2014, GlobalMET provided continuing professional development, CPD in Manila for its members and interested persons, in the MET industry. The CPD delivered standard competencies for personnel in "standards-based" curriculum development, teaching, training, instruction, and assessments of maritime personnel following the STCW Convention 1978 as amended. In the pursuance of excellence in MET, National Standards and International Standards have together been identified with the critical elements and descriptors (criterion-referenced) incorporated into the standards following national requirements for outcomes-based Education (OBE) and competency-based education, training and assessments (CBETA). These standards will now become the standards by which every MET institution will practice under the supervision of the MARINA. Courses of training and certification will be accredited through the authority of MARINA.

The second problem in the Philippines' labor market is the high rate of youth unemployment. This high level of youth unemployment stems from a lack of adequate experiences that meet company requirements, and more specifically, a lack of relevant skills and qualifications to be employed in the labor market. Therefore, to reduce the skill gaps, there was a consensus among stakeholders about reforming the TVET provision to provide necessary skills, particularly to youth, to increase employability.

Accordingly, the government developed the quality assurance system that includes the standardization of skills and training programs as well as an assessment/certification system. The industry establishes standards, and TVET programs are designed to meet these standards. By mandatory registration, providers are required to comply with the rules instituted by the government. Then, graduates are assessed based upon these standards and their certifications indicate their acquisition of competency-based skills that employers need. In this way, the TVET system is expected to become more responsive to the needs of the maritime labor market.

The Philippine Educational and Training System

The education system in the Philippines is composed of three sub-sectors: primary education (elementary and secondary levels); post-secondary technical-vocational education and training, and tertiary education in community colleges, universities, and specialized colleges, which are managed by the Department of Education (DepEd); the Technical Education and Skills Development Authority (TESDA); and the Commission on of Higher Education (CHED), respectively.

The Commission on Higher Education (CHED), in accordance with the pertinent provisions of Republic Act #7722 otherwise known as Higher Education Act of 1994, is mandated to set the minimum standards for Higher Education programs without abridgement of curriculum freedom of universities and colleges except for minimum requirements and specific professional courses as may be stipulated by various licensing entities. CHED had revised policies, standards and guidelines

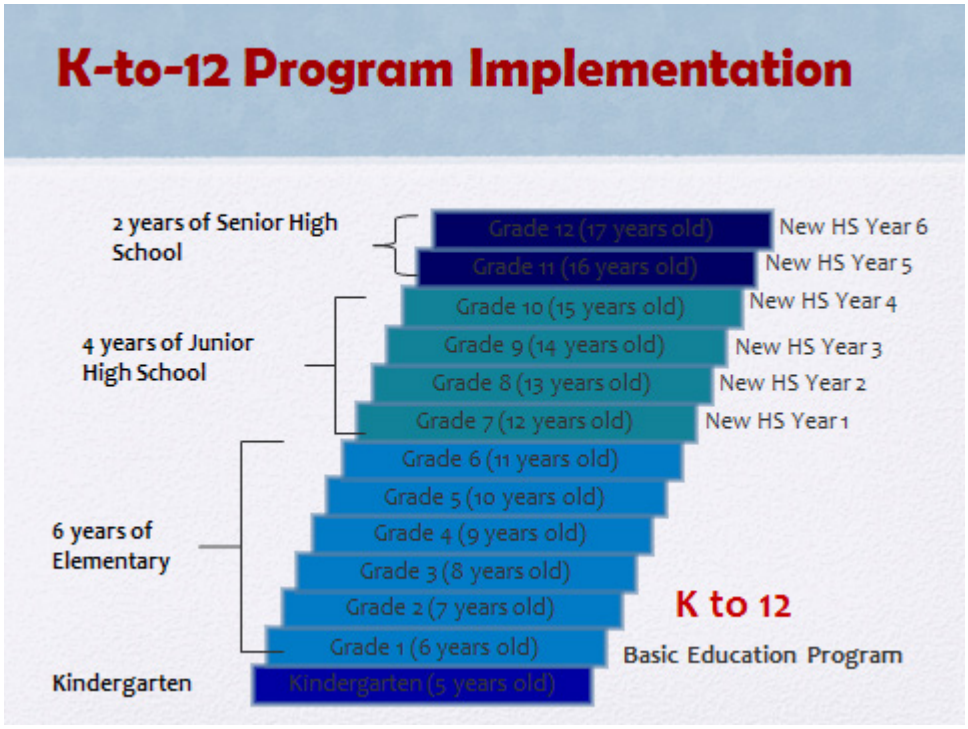
for the Bachelor of Science in Marine Transportation and Bachelor of Science in Marine Engineering Programs. The Policy-Standard to Enhance Quality Assurance (QA) in Philippine Higher Education is through an Outcomes-Based and Typology-Based as shown in Figure 1. From AY2009-2010 to AY2013-2014, the country has an average of 127,078 annual enrollees and an average of 19,440 graduates in the maritime program from pre-baccalaureate to doctorate. The increase in the number of maritime enrollees and graduates is relevant as this is one of the government's priority courses geared towards global employment. While the CHED data provides information on the status of maritime graduates, the data integration from all maritime programs limits the information on the specific graduates of Bachelor of Science in Marine Transportation (BSMT) and Bachelor of Science in Marine Engineering (BSMarE).

The Technical Education and Skills Development Authority (TESDA) provides national leadership for the TVET system by implementing competency-based curriculum standards, training regulations, and assessment and certification processes to ensure a high-quality TVET development and delivery throughout the country. Hence, TESDA initiated a TVET qualification assurance and qualifications standards for the teachers-trainees –assessors to ensure continuous development of the Filipino maritime workforce with world-class competence and positive work values.

According to Republic Act (RA) No. 10533 or the Enhanced Basic Education Act of 2013, the Department of Education (DepEd) started the nationwide implementation of the Senior High School (SHS) Program with Grade 11 in School Year 2016-2017 followed by Grade 12 in School Year 2017-2018. The first batch of K to 12 graduates will be from the Sr. HS students in SY 2017-2018. The DepEd acknowledges and sees the increasing demand for seafarers in the international and local maritime industry; hence, in 2017, it has collaborated with MARINA to offer maritime specializations in Senior High School.

Under Republic Act No. 10635, the MARINA serves as the single Maritime Administration responsible for the implementation and enforcement of the 1978 International Convention on Standards of Training, Certification, and Watchkeeping (STCW), for Seafarers, as amended and international agreements or covenants related to it (7). The monitoring of the SHS maritime specializations is being conducted jointly by the DepEd and MARINA. Two Senior High School (SHS) Maritime Specializations were developed, a Technical-Vocational Livelihood (TVL) Maritime specialization and a Pre-baccalaureate Maritime specialization. The 1978 STCW Convention, as amended, was used as the basis for developing the curriculum for the TVL Maritime Specialization.

With the Philippines's recent shift to K-12 compulsory education, TVET education is integrated into senior maritime high school to produce high school maritime graduates with employability skills. The government's education department accredited 56 schools throughout the country to entirely offer Maritime Senior High Schools curriculum that shall be responsible in preparing students for Maritime degree. Those students, who do not choose to enter higher maritime education after high school, often select TVET (TVL Maritime specialization). However, they have to take the assessment for Certification of Ratings Forming Part of a Watch (Deck and Engine) to qualify them for career opportunities in the maritime industry upon graduation and evaluation. A National Certificate (NC) from TESDA is a well- recognized as national employment credentials but is not applied or transferable to higher education. Technical and Vocational Education and Training (TVET) in the postsecondary education sector, provides noncredit, technical middle-level skills training to produce skilled workers required for them to be recruited in both local and international maritime workforce.



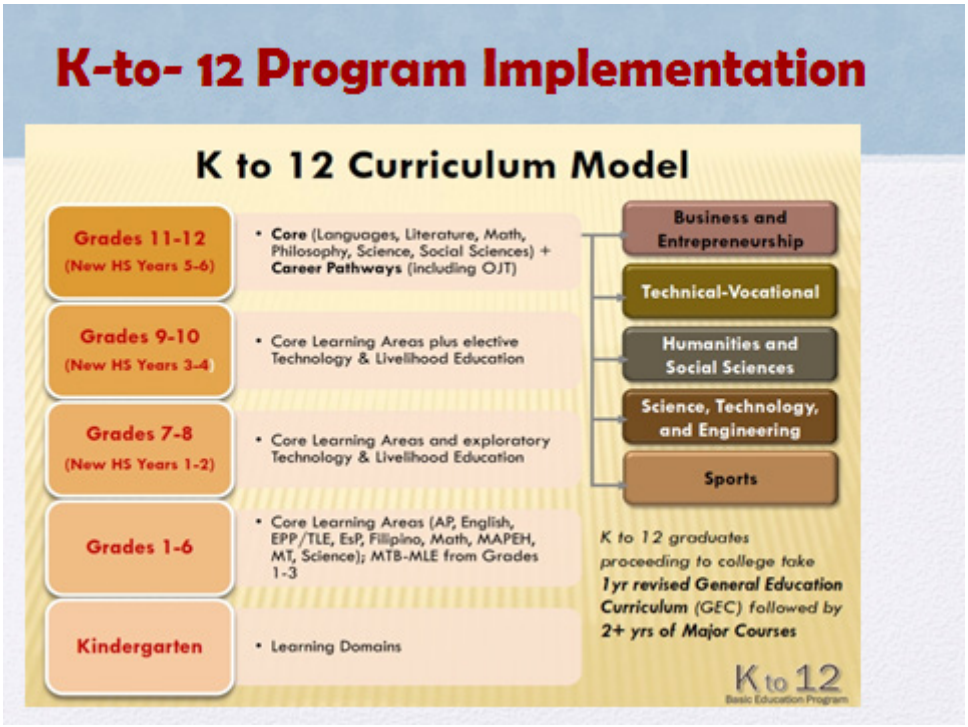


Figure 1 and 2: Implementation of K-12 in the Philippines. Adapted from the Commission of Higher Education, 2018.

Under Executive Order (EO) No. 75 signed by President Aquino on April 30, 2012, MARINA under the Department of Transportation and Communication (DOTC) is designated, as the Single Maritime Administration in the Philippines responsible for the oversight in the implementation of the 1978 Standards of Training, Certification and Watchkeeping (STCW) Convention (8).

MARINA now manages the training aspect of the maritime industry formerly being handled by TESDA. After the implementation of EO No. 75, MARINA Advisory No. 2013-10 series of 2013 was issued to all shipping companies, seafarers, manning agencies, and MARINA Regional Offices. The subject of which is the assumption by MARINA of TESDA functions in the conduct of assessment and certification of seafarers in the rating category. Hence, TESDA's assessment and certification functions for Deck and Engine Ratings were transferred to MARINA.

Likewise on March 13, 2014, thru Republic Act 10635, MARINAassumed all powers and functions of the Professional Regulation Commission (PRC), the Commission on Higher Education (CHED), TESDA, the Department of Health (DOH) and the National Telecommunications Commission (NTC). MARINA is the lead agency responsible for the issuance, validation, verification, correction, revocation or cancellation of certificates of competency, endorsement, proficiency and documentary evidence required of all seafarers and all such other matters on the implementation of the STCW Convention (9).

Such move was in response to retaining the Philippines in the White List. The White List distinguishes the nations that have displayed and established a plan of full. The primary purpose of the Convention is to promote the safety of life and property at sea and the protection of the marine environment by establishing in universal agreement international standards of training, certification, and Watchkeeping for seafarers. - International Maritime Organization (10).

QUALITY ASSURANCE AND QUALIFICATION LEVELS OR STANDARDS

Philippines TVET Trainers Assessors Qualification Program (NITAQP)

The Framework consists of four levels corresponding to the different roles assumed by trainers. These are Trainer Qualification Level I for Trainer/Assessors; Trainer Qualification Level II for Training Designers/Developers; Trainer Qualification Level III for Training Supervisors and Mentors; and, Training Level IV for Master Trainer.

Table 1: The TVET Trainers- Assessors qualification levels that need to be expanded by MARINA. Adapted from the Technical Education and Skills Development Authority (2006).

Qualification Levels	Trainer Qualification I: Trainer/ Assessor	Trainer Qualification II: Training Designer/ Developer	Trainer Qualification III: Training Mentor	Trainer Qualification IV: Master Trainer
Definition	Conducts technical training and competency assessments	Designs and develops curriculum, courses and instructional materials	Supervises develops and mentors professional trainers	Extends the body of knowledge in the field of technical vocational education and training.

Qualification Levels	Trainer Qualification I: Trainer/ Assessor	Trainer Qualification II: Training Designer/ Developer	Trainer Qualification III: Training Mentor	Trainer Qualification IV: Master Trainer
Entry Requirements	• BS Graduate or Equivalent • Certified in NC Level that will be handled	• BS Graduate or Equivalent • Certified in the NC Level that will be handled • With a portfolio of relevant actual work outputs	• BS Graduate or Equivalent • Endorsed in the highest available NC Level in the Training Regulation • With a collection of relevant actual work outputs	• MS Graduate or Equivalent • Certified highest available NC Level in the Training Regulation • With a portfolio of relevant actual work outputs
Basic Competency Requirements **For example :** **1. Apply employability skills in MET teaching roles** **2. Lead and manage Effective Communications** **3. Apply OBE and CBETA in MET in an adult learning environment**	1. Communication 2. Apply math and science principles in technical training 3. Apply environmental tenets and advocate conservation 4. Utilize and apply IT and digital innovations in conducting and delivery of Training 5. Lead and Work in teams 6. Apply work ethics, values, and quality principles 7. Work effectively in vocational education and training 8. Foster and promote a learning culture 9. Ensure a healthy and safe learning environment 10. Maintain and enhance professional practice 11. Appreciate cost-benefits of technical training 12. Understand and analyze global labor markets			
Core Competency Requirements	1. Plan and deliver Training Sessions 2. Facilitate learning Sessions 3. Supervise Work-Based Learning 4. Conduct Competency Assessment	1. Facilitate Development of competency standards 2. Conduct Training Needs Analysis 3. Develop training curriculum 4. Develop learning materials	1. Facilitate development and review of training policies and procedures 2. Develop and execute training plans 3. Prepare and manage training budgets	1. Institutionalize TVET systems and processes institutions/ enterprises 2. Conduct research on TVET 3. Promote, advocate and strengthen industry and TVET linkages

Qualification Levels	Trainer Qualification I: Trainer/ Assessor	Trainer Qualification II: Training Designer/ Developer	Trainer Qualification III: Training Mentor	Trainer Qualification IV: Master Trainer
	5. Maintain Training Facilities 6. Utilize electronic / digital media in facilitating training	5. Develop assessment tools 6. Design and Develop maintenance system of training facilities 7. Develop Learning Materials for teaching and learning including e-learning and digital / synthetic learning	4. Nurture and capacitate trainers/ assessors 5. Evaluate trainers/ assessors performance 6. Lead and Coordinate training/ assessment evaluation 7. Facilitate assessment moderation 8. Lead and coordinate training/ assessment 9. Lead and manage validation	4. Provide professional development to TVET experts
Trainer's Curriculum	Course on Training Methodologies and Assessment	Course on Training Design and Development	Course on Supervision and Development of Trainers	Continuing Professional Education

Those being certified in Levels I and II must be specialists in the areas of competencies they will facilitate while those being certified in Levels III and IV must be both specialists and generalists. The trainer curriculum specified in this program is an enabler and is intended to facilitate trainer development through the various qualification levels. Taking the different courses under the curriculum is not a strict requirement as the trainer may acquire the required competencies through other means like formal and non-formal training, exposure or experiences because learning is a lifelong process.

While there is an implied progression in the qualification levels, any trainer who feels competent and qualified for a particular level may, without necessarily being certified in the previous levels, apply for assessment and certification for that level, provided that the level's entry requirements for accreditation have been satisfied. Formal education has its equivalence concerning both non-formal education and personal experiences, which can be measured and validated regarding acquired competencies. The educational requirement as an entry requirement for certification may be waived through demonstration of the following equivalent competencies

- Bachelor's Degree: Oral and written English communication; Quantitative and Qualitative Analysis and Verbal Reasoning
- Master Degree: Leadership and Research Project

Why are quality and qualification standards needed in the Maritime Industry?

The maritime Industry is composed of human resources or people. People connected in an organization or institutions as its workplace must continuously learn and be trained. Learning outcomes are therefore measurable and can be assessed against established standards. The ability to achieve consistent learning outcomes is indicative of training effectiveness. The workplace and environmental need must all be aligned with the workers' capability, and performance needs to accomplish the overall organizational needs and objectives.

Facilitators of adult learners must be well-versed in the appropriate (Knowles,1968) learning concepts, principles and theories to be able to apply the proper methodologies that will be effective in various learning situations and learner profile and to ensure consistent delivery of learning outcomes that enable performance improvements.

The training cycle consists of: training needs analysis; training design and development; training delivery (training administration, facilitation, and continuous assessments); and, training programme evaluation. All these training functions, including the management of these functions, contribute to training effectiveness. Trainers need to perform various roles and be competent in the capacity of such positions. Their employability skills (Mayer 1992 and Allen 2008) are the keys to successful training delivery.

There are three domains of learning: cognitive, affective and psychomotor skills (Anderson and Krathwohl, 2002). To be effective, the learning interventions must consider these three domains as the goals of the training process and as the basis for assessing learning outcomes. Trainers must be a specialist in the area of skill being facilitated to ensure students acquisition of competencies effectively. However, as the trainer assumes broader responsibilities, mainly through the exercise of management responsibilities, there is a need for the said trainer to be a specialist and a generalist at the same time. An individual does not always facilitate learning. Team teaching enables holistic development through the pooled expertise of two or more facilitators. Team teaching likewise allows trainer development as the junior trainers learn from the more senior trainers. The delivery of training should adhere to the design of the curriculum.

For example Trainers Methodology Level I: The Trainers Methodology Level I consists of competencies a TVL Maritime Specialization trainer or assessor must achieve, such as plan training sessions, facilitate learning sessions, supervise work-based learning, conduct competency assessment, maintain training facilities and utilize electronic media in promoting training. A person who has achieved this qualification is competent to be a TVET Trainer / Technical Trainer, Training Facilitator / Coordinator and Competency Assessor.

- o Plan Training Session – this covers competence required to plan a training session, including identification of learner's requirements, preparation of session plan and instructional materials, and an organization of learning, teaching and assessment resources. This self-paced course is part of the cluster Trainers Methodology I - Deliver Training Session.
- o Facilitate Learning Session- this covers competence required to deliver Competency-Based Training Session, including preparation of training session, the conduct of pre-assessment, training session facilitation, conduct competency assessment and review delivery of training session. This self-paced course is part of the cluster Trainers Methodology I - Deliver Training Session.

- Utilize Electronic Media in Facilitating Training - this covers competence required in advance training environment using electronic media in facilitating training, including operation and maintenance of the equipment. This self-paced course is part of the cluster Trainers Methodology I - Deliver Training Session.

TESDA is responsible for post-secondary TVET that provides mid-level workforce in the Philippines. Its role is to provide an overall direction and policies of the TVET system, particularly in the area of setting standards and development for TVET systems. Additionally, TESDA retains both the registry of certified workers and accredited assessment centers. It is composed of the Board and the Secretariat. The TESDA Board is the highest TVET policy-making body composed of representatives from both the government and the industry. The Secretariat is a technical and administrative support arm. TESDA ensures that all TVET programs meet the national standards through its mandatory TVET program registration. TESDA also enforces a necessary assessment on all TVET graduates and confers certificates to all trainees who pass the evaluation. The following programs with training regulations may be looked into as reference for maritime instructors by MARINA.

- Trainer's Methodology Level 1 – 90-page training regulations
- Trainer's Methodology Level 2 – 94-page training regulations
- Trainer's Methodology Level 1 (In-company trainer) – 158-page training regulations

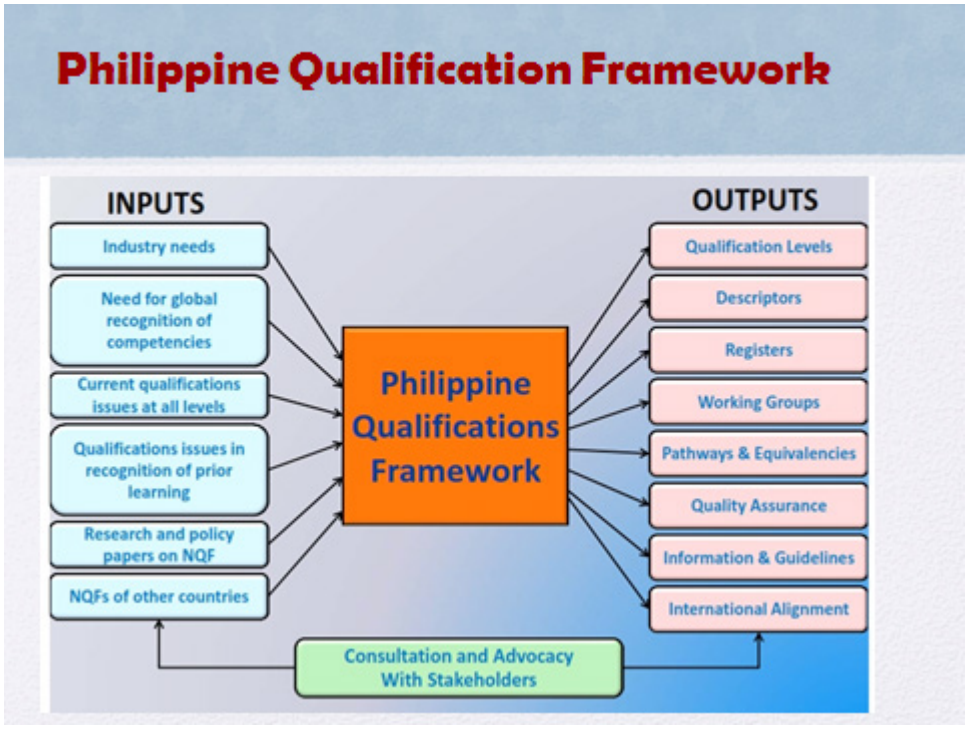
The Quality Assurance Policy Framework

The policy framework for the quality assurance system in the Philippines includes four components: the Philippine National Qualifications Framework (PNQF), Training Regulations (TRs), the Unified TVET Programs Registration and Accreditation System (UTPRAS), and the Assessment and Certification System.

The Philippine National Qualifications Framework (PNQF)

Qualification pertains to the package of competencies describing a particular function or job role existing in an economic sector. PQF is a national policy which defines the levels of educational qualifications and sets the standards for qualification outcomes. PQF is competency-based/ outcomes-based; labor market is driven and assessment-based qualification recognition PQF supports the development & maintenance of pathways and equivalencies which provide access to qualifications and assist people to move quickly and readily between the different E & T sectors & between these sectors & the labor market & to align the PQF with international qualifications framework.

PNQF integrates all levels of formal education from the high school diploma, certificates, to doctoral degrees. All qualifications included in the PNQF are assured, meaning that criteria fall well within the parameter of adequate skill standards and quality teaching. The Philippine National Qualifications are given to graduates who pass the assessment. Benefits of the PQF Implementation are as follows:



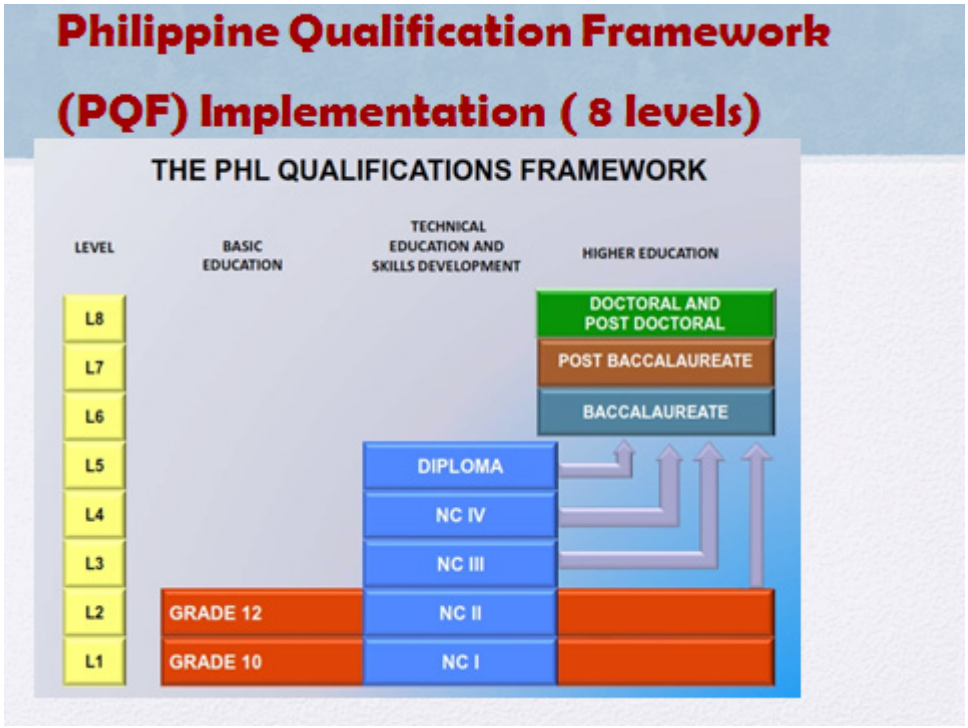


Figure 3 and 4: Implementation of the Philippine Qualifications Framework. Adapted from the Technical Skills Development Authority (TESDA).

- For the person: lifelong learning allowing the person to start at the level that suits the person and then build-up his qualifications as his needs and interests develop and change over time with the certificates and licenses recognized by the government
- For employers: standards and criteria are consistent to job requirements/demand and provide a shared understanding of standards, qualifications & levels
- For MET providers: transparency in training provision, conformance to standards & preciseness of accountability for learning outcomes; common knowledge of policies & guidelines
- For the authorities: standards, taxonomy, and typology of qualifications as bases for granting approvals to providers and stakeholders and; harmonized qualifications in MET across the Philippines.

Training Regulations (TRs)

TESDA-promulgated document serves as a basis for which the competency-based curriculum and instructional materials and competency assessment tools are developed. This document represents a specific qualification. It defines the competency standards for a national requirement and how much skill can be gained, assessed and be given recognition. It would be interesting to note the exact number of training regulations that were promulgated by the TESDA Board (TESDA), MARINA, DEPED, Maritime organizations for maritime. As of August 30, 2018, the following training regulations (TRs) are found on the website. However, the certification and assessment powers were transferred from TESDA to MARINA in 2014 hence only three training regulations were left for TESDA's management- Ship's Catering NC I with 49-page TR; Ship's Catering NC II with 132-page TR, and Marine Electricity NC II.

The rest are of the TRs are under the responsibility of MARINA to assessed and certify

- Able Seafarer for Deck NC II (STCW 11-5) – 72-page TR
- Able Seafarer for Engine NC II (STCW II_5) – 73-page TR
- Rating forming part of a Navigational Watch NC II (STCW 11-4)- 72-page TR
- Rating forming part of an Engineering Watch NC II (STCW 111-4)- 723-page TR

TRs are being developed in consultation with industry leaders and promulgated by the TESDA Board and MARINA. The TRs consist of the competency standards, training standards, and assessment and certification arrangements. They serve as the bases for the development of curriculum, instructional materials, and competency assessment packages for competency-based programs. TRs also prescribe which programs are qualified and registered. The development of TRs is based on four components of training delivery: curriculum; trainer qualification; tools and available equipment; and training facilities.

The Unified TVET Programs Registration and Accreditation System (UTPRAS)

The Unified TVET Programs Registration and Accreditation System (UTPRAS) is a regulatory mechanism in which TESDA assures TVET programs. All providers offering TVET programs are mandated to comply with the set of standards for TVET provision. This process involves:

- Compulsory registration of programs in compliance with the standards prescribed in TR and a competency-based system. For mandatory registration, it signifies agreement of the TVET program in curriculum design, trainer qualification, facilities, and tools and equipment. The

competency-based registration system prescribes the requirement of compliance with the minimum standards provided in the TRs. Compliance audits are conducted regularly by the field offices.

- Voluntary accreditation.

It would be interesting to note the number of registered TESDA Assessment Centers for Maritime. On the other hand, voluntary accreditation refers to the process of assessing and upgrading the quality of TVET programs through self-evaluation and external assessment by a TESDA-recognized accrediting body. The system provides multi-level accreditation status, public recognition, and conferment to ensure that a TVET program will meet and exceed the minimum requirements of program registration. It would also be interesting to note the number of institutions who voluntarily subjected itself for voluntary accreditation.

In maritime, 56 secondary schools have been recognized by DEPED and MARINA to offer Senior maritime High Schools with TVL Maritime Specializations. Also interesting to note the exact number of maritime training centers recognized or accredited by TESDA as TESDA Accredited Assessment Centers. For Ships' Catering NC III (Ships' Cooks), there are 25 maritime training centers authorized by TESDA as Assessment Centers. CHED and MARINA are responsible for Maritime accrediting schools.

Assessment and Certification System

The Assessment and Certification System is the process of evaluating the TVET graduates to determine if they have acquired the level of competence to perform jobs in the workplace. It provides evidence of whether compliance and competency have met standards and have been achieved.

The assessment and certification system involves the accreditation of assessors, the development of assessment tools, the qualification of TVET trainers as assessors, and the recognition/ accreditation of National Assessment Boards. All programs with TRs are provided with competency assessment tools. Regarding issuing certificates, the qualifications are aligned with specific skill levels as defined in the PNQF, which includes four certificate levels for TVET—National Certificate Levels I, II, III, and IV.

It would be interesting to note the statistics or exact numbers for these if any. It would be interesting to get the precise statistics for maritime issued with NC 11 both for able seafarer (Deck or Engine) and Rating watch keeping (Deck or Engine), be it TESDA or MARINA database and their employability status with the K to 12 implementations.

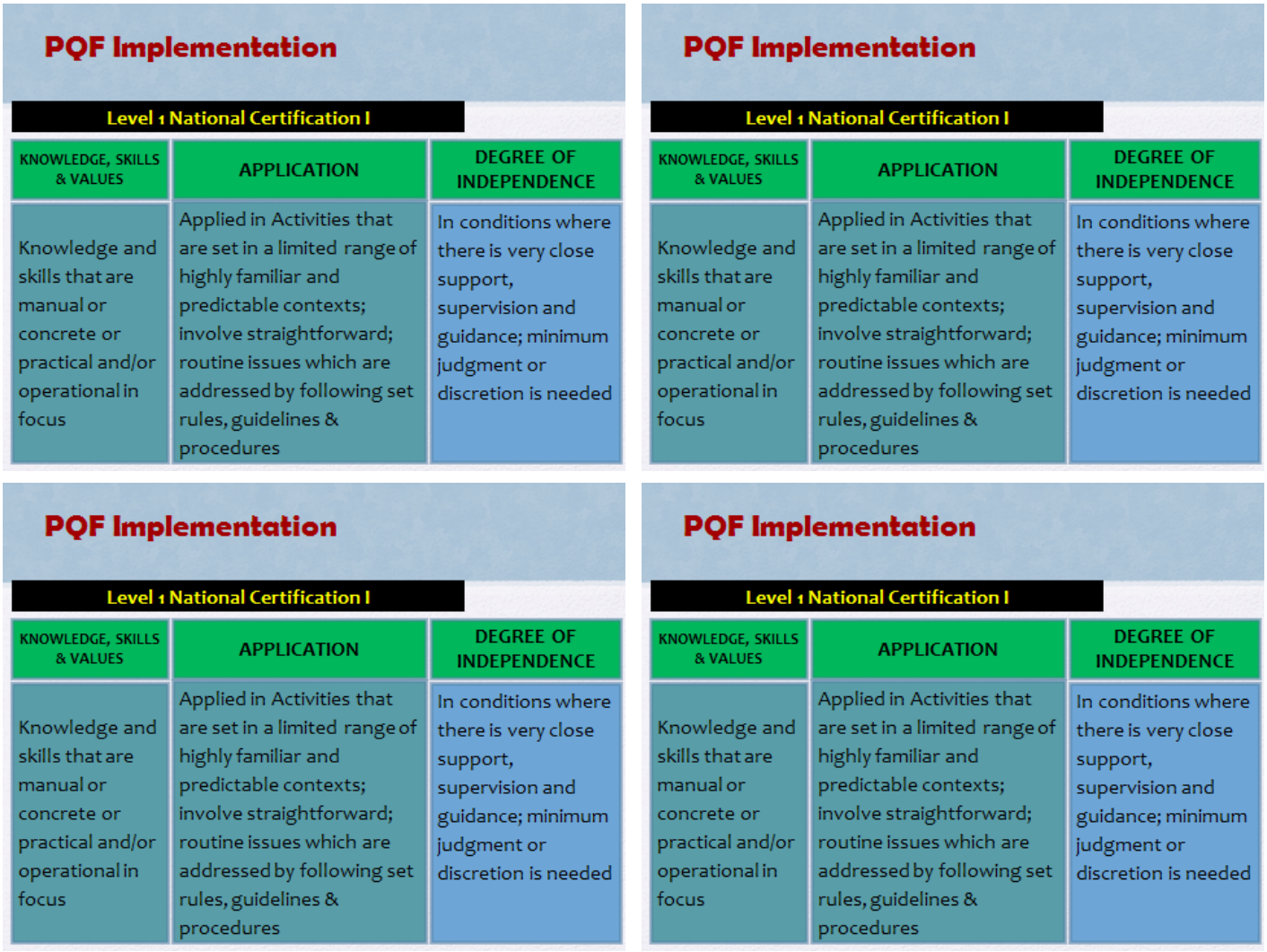


Figure 5: The PQF Implementation for Level 1-4 National Certifications (NC1- NC4). Adapted from the Technical Education Skills Development Authority

CONCLUSIONS

The ultimate goal of the quality assurance system is to increase the relevance of provision, which in turn, reduces gaps in skills and youth unemployment. To implement the assessment successfully, there should be well-trained assessors.

Training and accrediting assessors are still challenges in the Philippines. Besides, TVP maritime specialization trainers need to be equipped with the skills to conduct assessments of their trainees' competencies, but training trainers as assessors is a challenge.

To tackle the issue of skill gaps and reduce youth unemployment in the labor market, the government has emphasized increasing the relevance of TVET provision by developing the quality assurance system. TESDA in the Philippines had introduced the components and the procedure of assessment in the policy framework successfully. The Philippines National TVET Trainers and Assessors Qualification Program should be implemented in the maritime industry to ensure qualified and certified TVL maritime specialists and generalist. TVL maritime specialization trainers must at least be a TQ1 qualified to assess trainees.

- Since the K to 12 implementations started in 2016 nationwide, it would be interesting to note that from 2016 to date, how many TVL maritime trainers have been certified with at least a

Trainer Qualification 1 (TQ1). From there, the level of the TVET trainers may be raised from TQ1 to TQ2 and higher as a positive indicator of Maritime Teachers-Trainers- Assessors development program in the Philippines.

- The policy also explicitly prescribes that assessment tools should accompany the TRs at the implementation level. It would be interesting to know if all TRs have assessment tools.

However, at the service delivery level in the maritime industry, there seems to still lack assessment tools/ packages, lack of assessors, and no information on the test schedules. Also, well-trained skilled assessors require training and an accrediting system. Trainers should also be trained as assessors because in many cases, assessments are conducted at training institutions. If these supportive mechanisms at the service delivery level are not established, then, even if the policy framework on evaluation is well- designed, outcomes will not be favorable.

RECOMMENDATIONS

There is a reed for MARINA /TESDA to Qualify and Certify Maritime Teachers/Trainers/ Assessors

Teachers are trainers and assessors. Assessors are also teachers/trainers. There is a need to qualify and certify the instructors or teachers responsible in handling the TVL maritime specializations to professionalize the teacher responsible in enabling a learner or a group of learners to develop maritime competencies in performing a particular trade or technical work. An NC certification would qualify him/her to assume various roles namely: as training facilitator, competency assessor, training designer and developer and training supervisor. In line with the TESDA/ MARINA role in awarding NC to trainers/ assessors which include maritime workforce

- The competency standards of TVET maritime Trainers given different functions and qualification levels must be identified.
- A structure that will ensure the systematic and purposive development of TVET Trainers must be established
- The competence of TVET maritime Trainers at different roles and levels of technical training must also be demonstrated and certified.

There is a need for MARINA to expand the Philippine TVET Trainers Assessors Qualification Program to be used in the Maritime Industry for MET Teacher Standards or Qualifications

Given the number of Maritime Technical Training Institutions, TVET maritime Trainers and the diversity of maritime coverage and maritime qualifications, the 2006 Philippines TVET Trainers Assessors Qualification Program (NITAQP), may be used in the maritime industry to ensure consistent delivery of quality training services for the maritime TVL courses. However, there is a need to expand the TVET Trainers /Assessors Qualification Program to show the makeup of the qualifications with the requisite competencies (outcomes), and with performance criteria for each level. Each unit of competency must be identified, described; explaining the volume of knowledge and skills required for performing the various competencies under varying conditions (attitude-behavior). The TVET format can be further expanded to show how the Trainer 4 levels qualifications are packaged to enable delivery and assessment. TVET follows OBE ad CBETA and criteria must be of standard units of competences.

Important Notes:

- The augmentation of the MET TVET Trainers/Assessors Qualification Program for Maritime by MARINA supersedes the outdated IMO Model Course 6.09 and associated programmes.
- These IMO model courses do not meet the requirements for adult learning, OBE, Competency-Based Education and Assessments required by the STCW convention. Most of all they do not achieve the standards-based approach to attaining competencies as outcomes of learning in TVET.

There is a need for MARINA to provide that quality assurance and qualification standards of MET Providers in the Maritime Industry

- The service delivery level should be strengthened. The provider and assessment centers should be supervised and assessed on their compliance with the provision of TVET programs and conducting assessment/certification within the guidelines.
- The Quality or competency of trainers which is the key to delivering TVET programs should be improved. Various accredited training organizations like GlobalMET, Colombo Plan Staff College, and other APACC accredited training providers may assist MARINA
- The Assessment centers should also be monitored to ensure that assessment packages are well prepared, and assessors are well trained.
- The Competency-based standards must be designed with the maritime industry's input, so trainees could obtain skills that were required by employers.
- Programs should be accredited within the guidelines prescribed in TRs, and providers should also be registered. This is where the Asia Pacific Accreditation and Certification Commission (APACC) could come in to assist.

There is a need for a MET QA system, with the following in place:

- Philippine Quality Training Framework (PQTF) must contain the Risk-based component in support of the PQF. Risk Assessment Requirements, an instrument that sets out details of the financial viability risk assessment of registered and applicant training organizations. Data Provision Requirements, a tool that sets out the requirements for providers about the submission of data to TESDA upon request and to submit quality indicator data annually.
- Continuing (periodic surveillance) maintenance of registration. Audit training and certification for MET personnel and regulators must be issued to ensure standards are held on par.
- Purpose of the Standards: to describe the requirements that an organization must meet to be an accredited MET provider; to ensure that training delivered meets industry requirements (as set out in training packages and accredited courses) and has integrity for employment and further study; and to ensure that MET providers operate ethically and consider the needs of both MET students and the maritime industry.
- The structure of the Standards. Each Standard must consist of the Standard itself, which provides a broad statement about the required outcomes of that Standard; a context statement, which includes background information to aid understanding, but is not part of the Standard itself and does not describe any compliance requirements ; and that one or more clauses, which represent the outcomes a provider is required to achieve to comply with that Standard (for a MET Provider to comply with the Standard, it must fully comply with all of the clauses in the Standard).

There is a need to monitor and track TVET and MARINA statistics

As the latest TVET statistics report is from the year 2014-2016, it would be imperative to monitor the statistics pertaining the training successes and situations in the MET, maritime sector including the nationwide implementation of the K to 12 programs in 2016 to date for all NC that would be issued by TESDA and MARINA and to monitor the projected implications of quality assurance and qualification standards in the maritime industry. If accomplished by all concerned government agencies in the Philippines, these would also be an innovation in TVET for Socio-Economic Development.

PROJECTED IMPLICATIONS AND IMPACT OF QUALITY ASSURANCE AND QUALIFICATION STANDARDS IN THE MARITIME INDUSTRY

1. Increase in the skills Certification Issued - to improve the recognition of certifications/ qualifications among employers, the participation of employers in both designing and implementing quality assurance mechanisms should be emphasized. The identification of certifications among employers is also a critical factor in increasing the certification rate.
2. Increase Relevance Programs -The assumption is that certified trainees (TVL maritime specialization) who complete employer-designed competency-based programs can enter the labor market more efficiently.
3. Increase in Employment rate- It is also important to note if the employers value certification by hiring only workers with the necessary maritime accreditation. Certifications inform employers that trainees have acquired skills in line with competency-based qualifications and can perform their jobs successfully.
4. Increase in Passing Rate/Outcomes result - It would be interesting to note the outcomes of the employment rate of those who graduated from TVL Maritime specialization.
5. Increase in Employers recognition - The policy framework on quality assurance is rightfully designed to aim at increasing the employment rate; however, without employers' acceptance, the desired level cannot be achieved. Therefore, when implementing a particular policy, the acceptability and recognition of the system among stakeholders become a critical contributing factor to its success.

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QUALITY ASSURANCE THROUGH APACC ACCREDITATION IN THAILAND

Paiboon Saiyawongs, PhD[1]

ABSTRACT

The Office of the Vocational Education Commission (OVEC) started the Asia-Pacific Accreditation and Certification (APACC) in Thailand on February 9, 2015 and the first on-site visits were held early 2018. Currently, there are four colleges accredited and all awarded gold level. Nine colleges are in process of preparing for on-site visit. As incentives, OVEC proposes that gold awarded institutions will be exempted from the fourth round of ONESQA assessment. The institutions will be allowed to set up the criteria and keys performance index (KPI) for internal assessment themselves as "institution standards", with the minimum guidelines from OVEC. The APACC criteria cover all OVEC guidelines, therefore, the accredited institutions can apply APACC as "institution standards". The paper further elaborates on the quality assurance journey of the country and the benefits that APACC has imparted in further improving the quality of TVET in the institutions.

Keywords: APACC, Accreditation, OVEC

BACKGROUND

Under the present education system, various kinds and methods of learning are offered to children and adults regardless of their economic, social and cultural backgrounds. Education approaches are classified as formal, non-formal, and informal. All types of education can be provided by educational institutions as well as learning centers organized by individuals, families, communities, private groups, local administration organizations, professional bodies, religious institutions, welfare institutes, and other social agencies.

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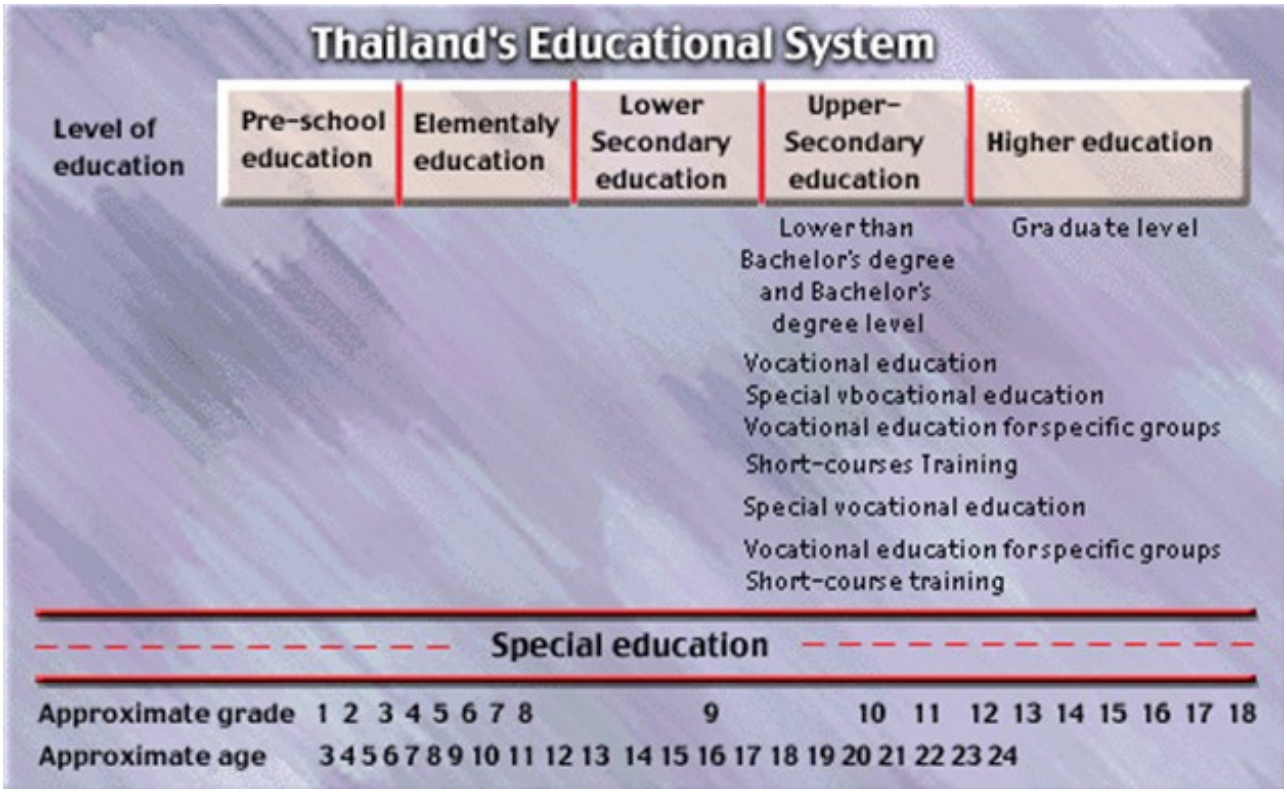

Figure 1: Thai Education Ssytem. Reprinted from Cleesuntorn, A. (2017), "Education in Thailand and the Challenging Issues" Graduate School of eLearning, Assumption University, Bangkok, Thailand.

Education in Thailand is provided mainly by the Thai government through the Ministry of Education from pre-school to senior high school. A free basic education of fifteen years is guaranteed by the Thai constitution. Thailand mandates nine years of "basic education" (six years of elementary school and three years of lower secondary school). Education at public schools is free until grade 9. The government provides, in addition, three years of free pre-school and three years of free upper-secondary education (vocational education at certificate level is included).

Pre-school (which is optional), is offered from age three with compulsory schooling at primary level (Prathom Suksa) from the age of six. After primary school, children move onto secondary education (Mathayom Suksa), which is split into a lower and higher level. The lower level, which covers students aged to about 15, is compulsory. Schools in the Thai public system are generally open for all students, but some more prestigious schools select students based on entrance exams, and can be fiercely competitive.

Primary school is in six years (six grades), the curriculum is broad, covering basic skills like Thai language and math, social studies, physical education and languages. Technology and some vocations skills may be covered, and English is taught from the first year. Theoretically, children can be held back a grade if they fail the end of year exams, but in practice this doesn't happen often, as students can retake the tests or attend a summer school to catch up.

Secondary education is six years long, but only the first three lower secondary years are mandatory. At the end of lower secondary education, students take exams which determine whether or not they can proceed to the higher secondary program. Entrance to the best schools at secondary level, even within the public system, is competitive. Entrance exams are used, with the more prestigious secondary schools seen as offering a better chance of a university. After completing the compulsory lower education program, students can also choose a vocational route, and attend a specialist

school. As well as following core subjects, qualifications are offered in fields such as business studies or engineering.

TECHNICAL VOCATIONAL EDUCATION AND TRAINING IN THAILAND

The purpose of technical and vocational education and training (TVET) is to provide knowledge and skills required in the world of work. TVET system in Thailand starts from senior high school. The secondary education is divided into two branches - General and Vocational Education. There are over 60% of students following general education. However, the government is taking efforts to balance the ratio between general and vocational studies.

In Thailand, the system of vocational education and training consists of two main different sectors. The first is formal vocational education, carried out as a fulltime school scheme. Graduates are awarded a certificate or higher certificate, which is on par with that of graduates of general upper secondary education. Therefore, only graduates of lower secondary education have access to this educational path. In formal vocational education system, DVT - the dual-vocational training program is also applied in almost every TVET institutions. Both public and private schools play a major role in the Dual Vocational Training, wherein students obtain knowledge at school and simultaneously can practically apply it in the industries. The other sector, non-formal vocational training, offers many social groups open access to the training programs; graduates are awarded internationally recognized certificates of skills development on different levels. The segmentation is based on regulatory policy. Occupational training is regarded as a task of the government and is, consequently, placed under the jurisdiction of certain government bodies. Primarily, it is the task of formal vocational education, which is under the jurisdiction of the Office of Vocational Education Commission (OVEC) in the Ministry of Education to produce qualified staff for public establishments, administration, and state enterprises, where personnel are classified for grade and pay scales according to educational qualifications. The vocational training of staff for private companies and of workers to be sent abroad under the scheme of bilateral labor exchange is the responsibility of the Department of Skills Development in the Ministry of Labor.

Office of the Vocational Education Commission (OVEC)

Thailand educational reform in 1999 was a result of the Asian economic crisis and political reforms as the October 1997 Constitution mandated educational reform and decentralization. The Administration of Ministry of Education Regulatory Act has been promulgated on July 7, 2003, amalgamating the Ministry of Education with the Ministry of University Affairs. The administrative structure of the Ministry of Education is as follow:

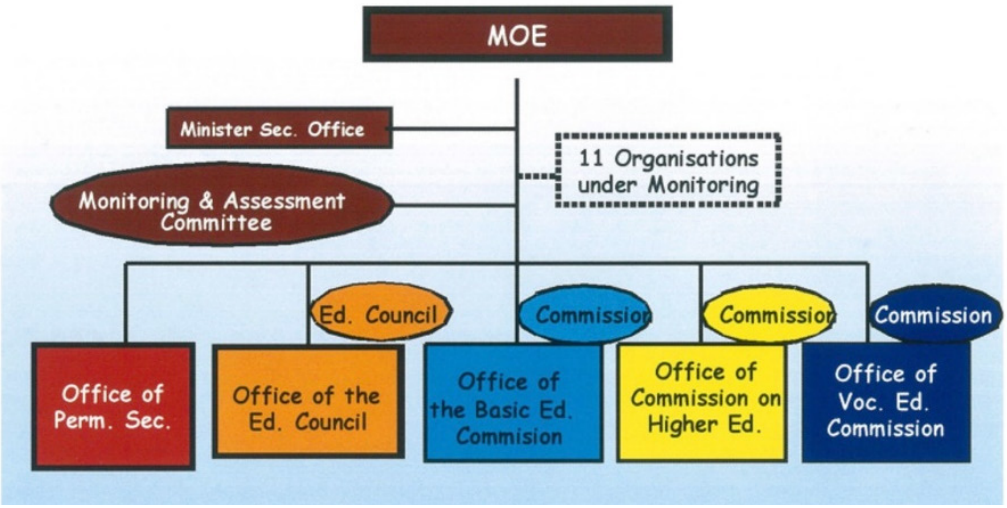

Figure 2: Organizational Structure of the Ministry of Education. Adapted from the Office of Vocational Education Commission (2018). OVEC in Brief.

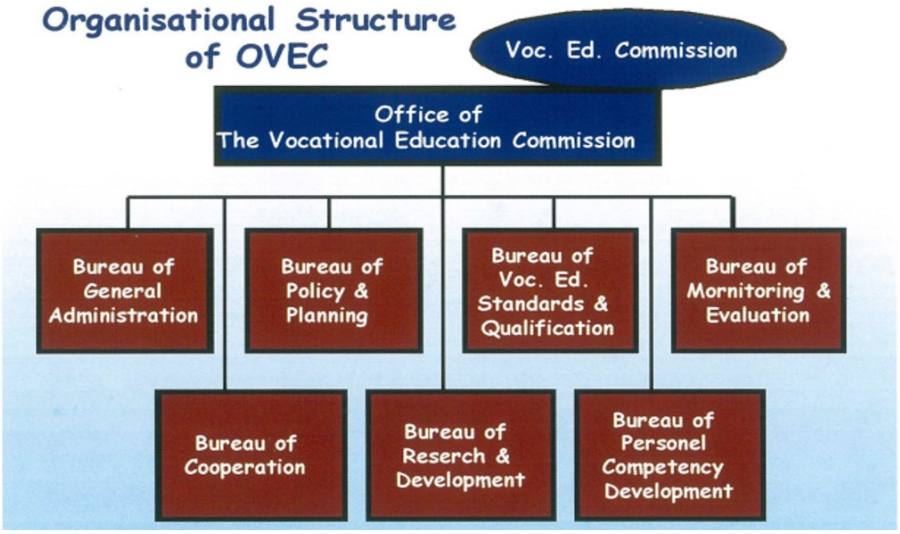

Figure 3: Organizational Structure of the Office of Vocational Education. Adapted from the Office of Vocational Education Commission (2018). OVEC in Brief.

Authority and responsibility of Office of the Vocational Education Commission

1. Respond the work of OVEC Secretary General (National Education Act of B.E. 2542, section 35 and Ministry of Education Regulatory Act of B.E. 2546, section 17)
2. Manage and promote vocational and professional training which takes into account quality and professional excellence.
    - 2.1. Prepare proposals, policy development and standard of vocational courses at all levels
    - 2.2. Coordinate with vocational and professional standards
    - 2.3. Prepare rules and procedures for budgeting and resource support
    - 2.4. Develop vocational teachers and personnel
    - 2.5. Promote public and private sectors' coordination and set the rules and structure to be a joint venture in collaboration with other government agencies and enterprises
    - 2.6. Monitor, evaluate, and report the management of vocational education in both public and private colleges
    - 2.7. Organize, promote, and coordinate information networks, information technology, and communications for use in vocational education and professional training
    - 2.8. Action on the Secretary of the Board of Education and implemented by the Board of Education Commission
    - 2.9. Perform other tasks as required by law to be the powers, duties, and responsibilities of the Office of Vocational Education Commission or by the Minister or The Cabinet assigned

Program of TVET in Thailand

System of TVET program offered by OVEC is composed of:

1. Vocational certificate - a curriculum provided for those who graduate from lower secondary school. This curriculum aims to produce and develop skills of manpower.
2. Diploma Certificate - a curriculum provided for those who graduate from vocational certificate level or high school. This curriculum aims to produce and develop the professional skills of manpower.
3. Higher Diploma in Technical Education equivalent to Bachelor's Degree for those who finish the diploma in vocational education. This aims to produce professional teacher.
4. Bachelor's degree in Technology or Operation - a curriculum designed for those who finish the diploma in vocational education and continue the study further for 2 years.
5. Career development and special training – a curriculum provided to learners of all education levels. The course take 6-225 hours while the 108 Careers curriculum takes 1-4 hours, open occasionally.

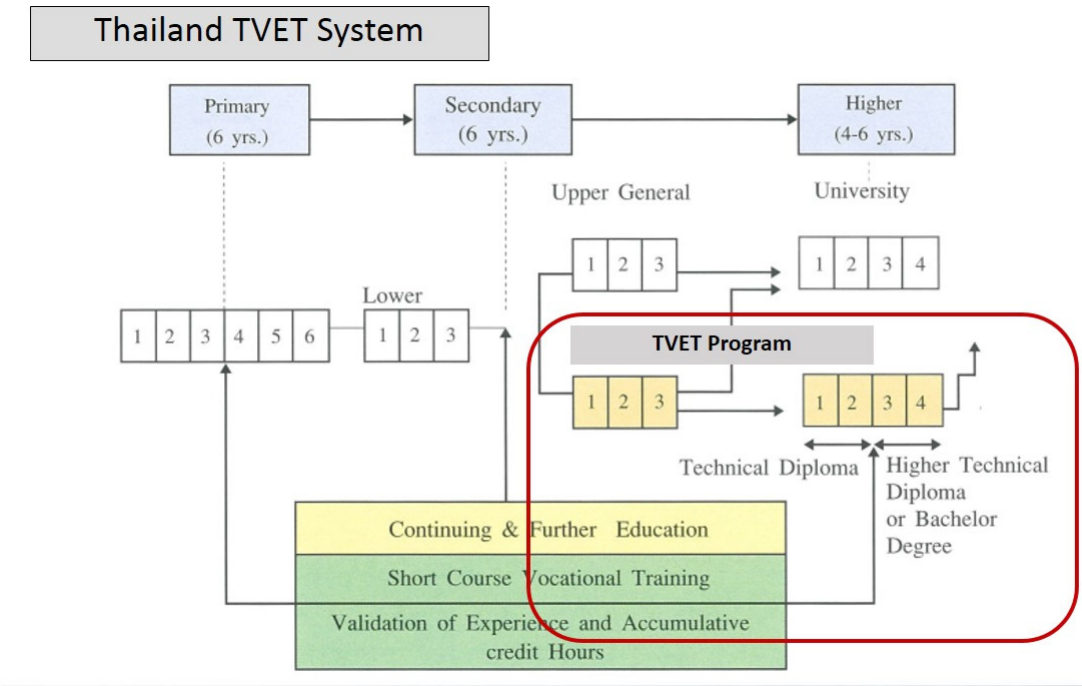

Figure 4: Thai TVET System. Adapted from the Office of Vocational Education Commission (2018). OVEC in Brief.

TVET Institutions

There are 428 TVET institutions under OVEC supervision all over the country for producing and developing professional manpower with vocational certificate, diploma in technical education, and Bachelor's degree in various fields of technology and operation. There are nine programs comprising more than 350 subject areas. The Management Centers have been established in five regions to promote academic work and develop vocational education in 77 Thailand provinces. The management of vocational education colleges at provincial level is linked together. Types of institutions are as follows:

Table 1: Total Number of Thai TVET Institutes. Adapted from: Quality Assurance Section, Bureau of Vocational Education Standards, OVEC

No	Type of TVET institution	Number
1	Technical Colleges	124
2	Industrial and Community Colleges	139
3	Business Administration and Tourism Colleges	4
4	Commercial Colleges	5
5	Arts and Crafts Colleges	2
6	Polytechnic Colleges	52
7	Vocational Colleges	39
8	Technology and Management Colleges	11
9	Agricultural and Technological Colleges	43
10	Royal Goldsmith College	1
11	Industrial and Ship Building Technological Colleges	3
12	Fishery Colleges	4
13	College of Sugar Cane-Sugar Industry	1
Total		**428**

Private TVET Institutions

In addition to the public vocational institutions under supervision of OVEC, the Federation of Private Colleges of Technology and Vocational Education of Thailand under the Patronage of Her Royal Highness Princess Maha Chakri Sirindhorn was established in 1984 to promote Thailand's private vocational education. There are 486 private TVET institutional members. Formerly, the private TVET institutions were supervised by the Office of Private Education Commission. On February 12, 2016, there was a declaration statement of National Council for Peace and Order to transfer private TVET institutions under the supervision of OVEC. Therefore, the total number of TVET institutions both public and private under OVEC is 914. The core curriculum and program of study used in public and private TVET institutions are from OVEC; private institutions are not allowed to develop their own curriculum.

Types of Courses Offered in Thai TVET System

There are nine major courses offered in TVET institutions, they are:

1. Industry,
2. Commerce / Business Administration,
3. Arts,
4. Home Economics,
5. Agriculture,
6. Fishery,
7. Tourism and Hospitality,
8. Textile, and
9. Information and Communication Technology

QUALITY ASSURANCE SYSTEM IN THAILAND

Quality assurance involves the systematic review of educational programs and processes to maintain and improve their quality, equity and efficiency. While the design of quality assurance mechanisms (tools, processes and actors) varies across national contexts, their common objective is to improve teaching and learning – with the ultimate goal to support the best outcomes for learners.

In 1999, Thailand reformed its educational system with the passing of the National Education Act 1999 disseminated as the first law of Thailand addressing the needs, importance, and demand for a Quality Assurance (QA) system at all levels of education including TVET. OVEC was responsible to carry out the government's vision of quality TVET.

The TVET QA system started in the year 2000 and continued until 2015 and was operated on a 5-year cycle. 2000-2005 was the first round, followed by 2006-2010, and 2011- 2015 respectively. Each cycle of the TVET QA system required TVET colleges to undergo an assessment known as an "external assessment" conducted by the Office for National Educational Standards and Quality Assurance (ONESQA) once within each 5 years period. Furthermore, the colleges must partake in another assessment once within every 3 years called "internal assessment" that was conducted by the OVEC. Following its inception, the implementation of the TVET QA system in 2000 was designed with the expectation of improving TVET to better develop the manpower of Thailand.

The internal TVET QA system was managed by OVEC and the external TVET QA system was managed by ONESQA and has been performed since the enactment of the national education act in 2000. The mechanism for the internal and external assessments were expected for the development of TVET quality.

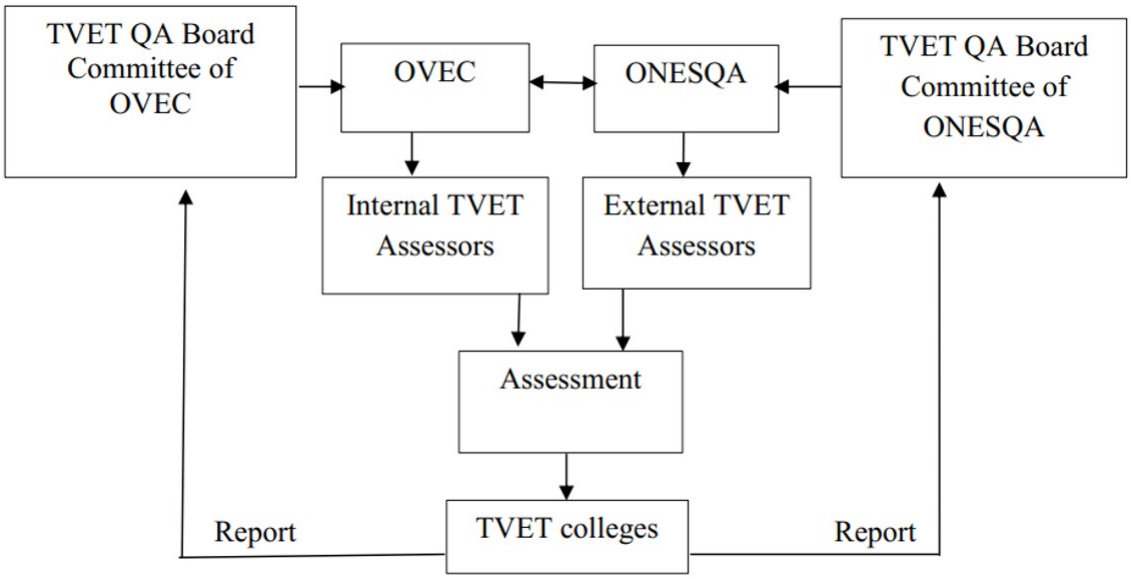

Figure 5: Channel of Communication for TVET QA System and TVET Assessment. Adapted from: Thepmondri, R. (2016). Actors and Networking on TVET QA System of Thailand: A Study on the Implementation and Its Problems, Hua Shih College Education, National Dong Hwa University, Hualien, Taiwan.

APACC IN THAILAND TVET SYSTEM

The Asia Pacific Accreditation Commission and Certification or (APACC) was initiated by Colombo Plan Staff College (CPSC) in December 2004 in Seoul, Republic of Korea with experts and representatives from 17 member governments signified their commitment to establish a regional body for accreditation and certification of TVET institutions. The establishment of APACC is in response to the significant priorities set in the CPSC Corporate Plan 2003-2008. The core principle of the APACC Accreditation and Certification initiative is to harmonize the quality of TVET, standardize skills taught in TVET institutions in the region, and facilitate greater mobility of workforce in Asia and the Pacific region.

With this very purpose, the APACC Team, in tandem with the participants of the Inter-Governmental Workshop on Regional Accreditation Modeling and Accrediting the Accreditors, the sequel to APACC 2004, and the Experts' Meeting on Competence Building in APACC Accreditation (APACC 2007) refined and updated the APACC foundation documents, including the APACC Accreditation Manual. The latest update was the revision of the Self Study Guide (SSG) in August 2018.

Characteristics of APACC Accreditation

APACC Accreditation is characterized in the following manner:

1. It is voluntary on the part of the TVET institution that may want to be accredited.
2. It adopts the APACC accreditation criteria.
3. It is a partnership endeavor between APACC and the applying institution.
4. It is governed by openness and transparency.
5. It is a form of regional regulation as a value-added dimension to augment self-regulation and/or national government regulations.
6. It is aimed at continual improvement leading to excellence.
7. It conducts external evaluations through APACC accreditors

APACC Criteria for Evaluation

The Criteria are the key standards upon which the TVET institution under review will be evaluated. Under each Criterion are key Indicators and there are Sub-Indicators within each Indicator. There are seven (7) Criteria identified in the APACC accreditation system. To arrive at the final evaluation, the Accreditors have to look for evidence to validate the claims in the Self-Study Report and/or search for additional information to cover any other areas that are not in earlier reports or documents. The seven criteria and points are:

Table 2: APACC Criteria and Points System

No	Criteria	Allocated Points
1	Governance and Management	46
2	Teaching and Learning	120
3	Human Resources	74
4	Research and Development	50
5	Image and Sustainability	50
6	Other Resources	110
7	Support to Students	50
Total		**500**

The status awarded to accredited institutions is classified into five levels, they are:

Total Points	Award
301 to 350	Bronze
351 to 400	Bronze+
401 to 450	Silver
451 to 490	Gold
491 to 500	Platinum

Benefits of APACC Accreditation

APACC accreditation is an internationally recognized sign of quality. Accredited institutions and stakeholders enjoy the following benefits:

1. Greater workforce mobility and mutual recognition of qualifications in Asia and the Pacific region;
2. Quality and employable workforce in member countries through APACC coordination among its network of institutions, agencies and other stakeholders;
3. Employer confidence on the selection of employees coming from accredited institutions. Accreditation status is important to employers when evaluating credentials of job applicants and when deciding to provide support for current employees seeking further education;
4. International recognition of the institutions' quality, accountability, and public trust;
5. Eligibility and reliability of TVET institutions for funding support from donors and other lending agencies;
6. Part of a regional network of quality institutions that expand schooling and learning opportunities for students; and
7. Transferability of credits earned by a student among educational institutions. Receiving institutions take note of whether or not the credits a student needs to transfer have been earned from an accredited institution.

The Association of APACC Accreditees (AAA)

APACC initiated the Association of APACC Accreditees or AAA in 2015. The main goal of AAA is to establish cooperation and strengthen regional ties among APACC accredited institutions by expanding cross-border education services and cooperation. The specific AAA objectives are to:

1. Facilitate regional mobility through staff and student exchange,
2. Expand learning opportunities,
3. Ease sharing of learning resources,
4. Improve quality of the delivery of TVET programs, and
5. Strengthen operations of TVET institutions to realize the full benefits of APACC accreditation.

Implementation of APACC Accreditation in Thailand

A Memorandum of Agreement between APACC and OVEC was signed on February 22, 2010. The key points of the MOA indicated that OVEC will participate in these areas:

- Promote the objectives and goals of APACC as mechanism for undergoing self-evaluation;
- Identify TVET institutions to apply for accreditation and certification by APACC; and
- Tap qualified local accreditors, in addition to National Coordinator for Accreditation (NCA), for training on APACC accreditation procedures.

The APACC activities were introduced to OVEC on July 4, 2014 when the APACC President visited the OVEC Secretary General to invite OVEC to send vocational and technical colleges for accreditation. Aside from OVEC, the APACC President also visited the President of Association of Private Technological and Vocational Education Colleges of Thailand under the Patronage of Her Royal Highness Princess Maha Chakri Sirindhorn, to introduce and invite private TVET colleges to subscribe to APACC Accreditation.

OVEC started the launching program on APACC accreditation on February 9, 2015 by forming an advisory committee and a working group for planning and implementation. APACC Accreditation was set as one of the major agenda at the quarterly meeting of all 421 directors of vocational and technical colleges under OVEC Supervision and the exhibition of APACC process was set up during the meeting on May 27 to 29, 2015. Several workshops were conducted in order to help faculty and staff members in understanding the criteria, indicators and elements, and in collecting data sources for the preparation of the Self Study Report, or SSR. The processes and activities OVEC set up and conducted during the past three years are as follows:

1. Setting up of Steering Committee and Working Team
2. Present “APACC: What & Why” to 428 Directors’ Quarterly Meeting
3. Present “APACC: What & Why” to requested colleges
4. Translation of Criteria and Manual to Thai language
5. Distribute translated manual to potential colleges
6. Benchmarking visit to Polytechnic Institutions in Malaysia
7. Open for application and selection
8. Propose and allocate budget to the target colleges
9. Setting up Supporting Committee and working group
10. Conduct workshops on documentation and presentation
11. Conduct mock audit
12. On site visit

Budgeting for APACC

OVEC has allocated huge amount of budget for the implementation of APACC; majority of budget was on conducting workshop on translation of all APACC documents into Thai language, workshop on SSR preparation and presentation, mock audit and development of facilities and environment. The budget allocated to the APACC activities since 2015 to 2018 are shown in the table.

Table 3: Alloted Budget of OVEC for APACC. Adapted from the Budget Report, Quality Assurance Section, Bureau of Vocational Education Standards, OVEC

Fiscal year	Amount (US$)
2015	156,843.75
2016	147,187.50
2017	208,937.50
2018	187,500.00
Total	**700,500.75**

THE CURRENT STATUS OF APACC ACCREDITATION IN THAILAND

After long-time and careful studying and preparation since middle of 2015, the first batch of TVET colleges were ready to undergo the on-site visit which is the final stage of the APACC accreditation process. The first accreditation in Thailand for the first batch was held in the beginning of 2018.

On-Site Visit Date	Institution name	Result
Jan 22-24, 2018	Siam Business Technological College (Private College)	Gold Award
Jan 24-27, 2018	Songkhla Vocational College (OVEC College)	Gold Award
Mar 02-04, 2018	Khonkaen Vocational College (OVEC College)	Gold Award
Mar 22-24, 2018	Siam Business Technological College Nonthaburi (Private College)	Gold Award
Sept 17-19, 2018	Ubonratchathani Vocational College (OVEC College)	N/A

The second batch, composed of nine OVEC colleges and a private college, are in preparation process. Different types of colleges including Technical College, Vocational College, and Agricultural and Technology College are in the second batch. The on-site visit activities are expected to be conducted from November 2018 to March 2019.

Realizations and Lessons Learned from APACC Accreditation

After completion of the first batch of on-site visits, several realizations and lessons could be gleaned from the whole process, which are the following:

1. Enhancement of English language and communication skills of those involved in the process is essential. Although the translation of all APACC documents have been done, the perception and interpretation of the working team on gathering evidences and documentation were not correct to the point.
2. In setting up of working group, the criterion working group leader and presenter is not the same person. All information were prepared in Thai, then transferred to English teachers for translation, preparation of presentation, and actual presentation. Without enough background, the presenter could not answer many questions.
3. Thai TVET QA system required TVET colleges to have an external assessment conducted by the Office for National Educational Standards and Quality Assurance (ONESQA). Colleges' QA team, therefore, always apply the system of ONESQA into APACC context.

4. TVET colleges have to follow internal and external assessments which require routine preparations. Many faculties and staffs considered APACC, a voluntary accreditation, as an additional burden.
5. Some APACC standards are higher and do not correspond to Thai TVET context.

Impact of APACC to the Accredited Institutions

Four Thai TVET Colleges just received Gold award in the last six months, therefore, the impact of getting the award cannot be felt at present. However, the rewards and benefits of APACC Accreditation to the gold-awarded institutions, as shared by the OVEC Deputy Secretary General, Directors and APACC coordinators are as follows:

1. OVEC proposes that the Gold awarded institutions will be exempted from the fourth round of ONESQA assessment. This issue is in process of discussion between OVEC and ONESQA.
2. The institutions were allowed to set up the criteria and keys performance index (KPI) for internal assessment themselves as "institution standards", with the minimum guidelines from OVEC. The APACC criteria cover all OVEC guidelines, therefore, the accredited institutions can apply APACC as "institution standards".
3. The executives of both OVEC and institutions were able to realize the institutions' standing, the strengths as well as the weaknesses, compared to the international standards through the on-site visit report.
4. Additional annual budget will be allocated for maintaining APACC standards.
5. Awareness on English communication skills of faculties and staffs.
6. Awareness on faculty and staff development.
7. Awareness on conducting research and development following complete process and implementation of research results.
8. APACC standards system will be used as guideline for colleges' strategic plan formulation for continuous improvement.
9. Institution's image increased from community perception.
10. Graduates, present students and stakeholders are proud.

CONCLUSION

APACC was introduced to Thailand in July 2014 and preparation process was started in mid-2015. The first batch of on-site visits were held in January and March 2018. It took two and a half years for preparation with US$700,500 total budget allocated. Four vocational colleges were accredited and awarded Gold Level; another 10 TVET colleges are preparing to undergo the process and are expected to be ready for accreditation within 2019. With the huge amount of budget invested in the first batch to promote Thai TVET institutions to meet the international standard, the lessons learnt and benefits observed will be the great examples and incentives to the 900 TVET colleges in Thailand to develop themselves to reach the regional standards.

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TVET AND INDUSTRIAL REVOLUTION 4.0 (IR4.0): CHALLENGES AND OPPORTUNITIES

Prof. Noraini bt. Kaprawi, PhD[1]
Prof. Affero bin Ismail

ABSTRACT

Industrial Revolution 4.0 (IR4.0) will fundamentally alter the way we live, work and relate to one another. How it will unfold is still unclear; the response to it must be integrated and comprehensive, involving all stakeholders of the global policy, from the public and private sectors to academia and society. Since education sector is the key factor to create the awareness and provide full support for the IR4.0, the government is formulating the policy or framework to identify challenges, analyse existing gaps and propose action to be taken accordingly in facing IR4.0. This includes transforming the TVET the main route in providing highly-skilled human resources in line with IR4.0. Therefore, this paper will discuss the challenges and opportunities of IR4.0 that nurture the professional landscape of higher education, industry and socio-economic nationally and globally.

Keywords: IR4.0; challenges; opportunities; TVET.

INTRODUCTION

The recent emergence of the concept of Industrial Revolution 4.0 (IR 4.0) has given a new impetus to the thinking on TVET transformation. Lately, there has been initiatives to drive TVET institutions to respond to the needs of IR 4.0. The skill sets predicted to be required by IR 4.0 are putting new demands on TVET providers. There is also major needs to increase the number of TVET-educated workforce and establish greater opportunities for job creation. Re-skilling and upskilling programmes that are knowledge- intensive are required to accommodate the transformational needs of I4.0. It is also imperative to cultivate creative human resources that could prime innovation in order to sustain growth and generate new value. Thus, several efforts are being highlighted by the governments, institutions, and industries in order to respond to TVET needs of IR 4.0. This is certainly a wise and timely move to elevate the country's economy effectively towards industrial revolution 4.0 through an effective TVET system. The combination of automated assembly line, the internet of things and artificial intelligence, requires highly-skilled workers highly proficient in ICT. It will also lessen our dependency on labour, especially migrant workers, while elevating our workers' competitiveness and earning powers.

INDUSTRIAL REVOLUTION 4.0

Industry 4.0 describes a future state of industry characterized by thorough digitization of economic and production flows. It requires horizontal integration at every step in the production process, in interaction with machines. In the globally interconnected world of Industry 4.0, machines also interact with one another. The Boston Consulting Group (2015) has identified Industry 4.0's nine technological pillars:

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Autonomous robots. Long used to tackle complex tasks, robots provide an ever wider range of services and are becoming more autonomous, flexible, and cooperative. They will interact with one another and work safely with humans (the term "cobotics" is used to describe robots helping operators perform their tasks). Eventually, they will be able to learn from humans.

Simulation. 3D simulation of product development, material development and production processes will become widespread. It will leverage real-time data to mirror the physical world in a virtual model that will include machines, products, and humans. Operators will be able, for example, to test and optimize the machine settings for the next product even before production starts, thereby reducing machine setup times and improving quality.

Horizontal and vertical system integration. Today, information systems are not fully integrated. Companies are rarely connected with their suppliers and customers. Engineering design departments are seldom linked directly to production within its own organization. But with Industry 4.0, the entire organization will be interconnected, and companies will be connected with one another.

The Industrial Internet of Things. Few machines are currently fitted with sensors and interconnected. With the Industrial Internet of Things, an ever greater number of products will incorporate intelligence and be connected using standard protocols. This will decentralize analytics and decision-making, enabling real-time responses.

Cybersecurity. The days of closed, unconnected operational management systems are over. Connectivity and communication protocols are becoming the norm. Protecting information systems and manufacturing lines from cybercrime threats is becoming a critical issue. Sophisticated identity and machine access management systems will be used to provide secure, reliable communications.

The Cloud. The operating processes of Industry 4.0 require more data sharing across sites and companies. The performance of cloud technologies will improve, achieving response times of mere milliseconds. This will foster the development of an ever greater number of Manufacturing Execution Systems (MESs) based on cloud-stored machine data.

Additive manufacturing. Companies have just begun to adopt 3D printing for prototyping and unit production. With Industry 4.0, these technologies will be chosen for their very high performance in producing small batches of customized products. Decentralized systems will reduce transportation and inventory management costs.

Augmented reality. Augmented-reality tools are still in their infancy, but they are paving the way for new services. For example, they will provide operators with the real-time information they need for faster decision-making and for improving work processes.

Big data and analytics. There are still massive sets of untapped data in the industrial world. Their analysis will optimize production quality, save energy, and improve services. Here as well, the goal is to allow real-time decision-making.

CHALLENGES IN FACING IR4.0

Higher Education institutions need to be competent in preparing their graduates; shifting from job filler to job creators, as well as complying the industry demands. The fact that TVET has become the utmost sought-after solution of many countries to answer their employment issue and poverty reduction to enhance their socio-economic, the significant involvement of various stakeholders is inevitable. As to aspire for higher TVET, the graduates need to be equipped with relevant inputs and important competencies. This includes:

i) developing talent and expertise to support the I4.0 initiatives

ii) establishing collaborative network with other advanced institutions to facilitate technology adoption in the country

iii) building close relationship with relevant technology provider in I4.0.

iv) linking with selected local SME as industrial partner to implement elements such as a 'learning factory'.

v) establishing working relation with ministries and government agencies like MOHE, MITI, MIDA and MDeC.

In the context of Malaysia Higher Education, there are four main challenges are being addressed which are:

Challenge 1: "their readiness in responding to the 4th IR, and questioned if universities are capable of managing the convergence, fluidity, power shifts, contingency and ethical issues that came along with the 4th IR. He emphasised that investment in emerging technologies and human connectivity, building digital resilience, as well as institutional capabilities in digital governance and accountability, are key strategies for survival; however, it is unclear whether the higher education community are doing enough to adapt". (Grant, C., 2017)

Challenge 2: "create an enabling environment for learners, academics and practitioners to break barriers, imagine, innovate, create, and collaborate; develop a 4.0-ready ecosystem fitting to institutional contexts; stimulate greater human connectivity through the exchange of students and staff, which is enabled through global and regional networks, and consortium of higher education institutions; incorporate spiritual values, ethics and morality, national identity and a sense of connection to the community, through curriculum delivery and technology transfer; and be mindful of the benefits and risks brought about by the 4th Industrial Revolution". (Omar W., 2017)

Challenge 3: Transforming Higher Education 4.0

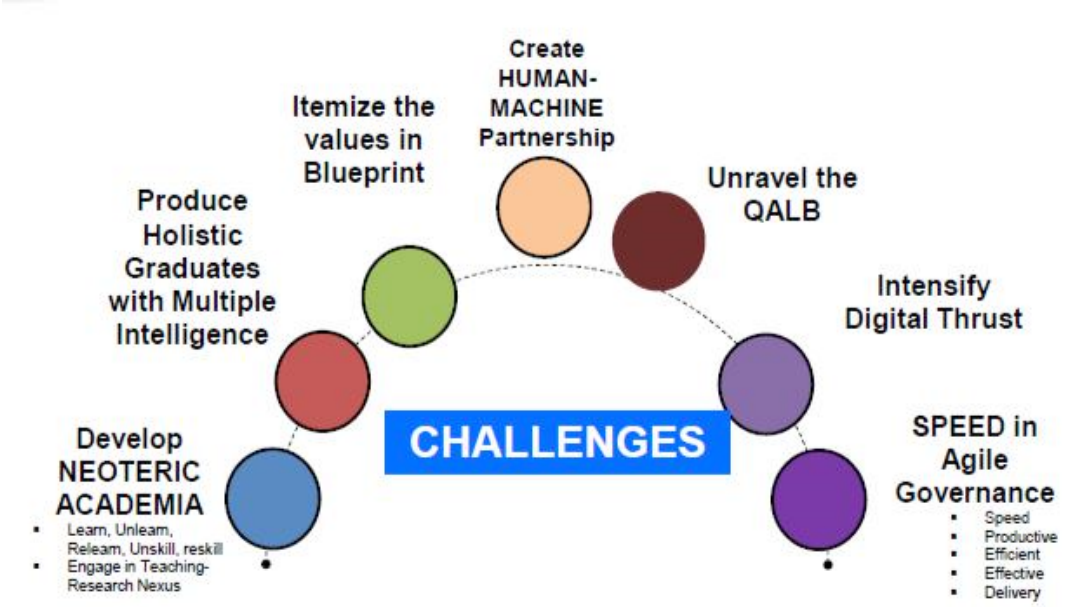

Figure 1: MyHE 4.0 Challenges. Adapted from Dr Hamisah Tapsir, University Presedential Forum 2017.

Challenge 4: Lack of digital culture and training

Figure 2: Challenges in Establishing a Digital Culture in Training. Adapted from 2016 Global Industry 4.0 Survey. Retrieved from: www.pwc.com/industry40

Malaysian higher institutions are also preparing several measures in keeping up to the impact of IR4.0. This includes:

i) Restructuring academic faculties according to the needs and scopes fitting to IR 4.0

ii) Introducing new courses such as data analytics, big data, cyber-physical system technologies such as artificial intelligence and robotic, digitized economy and techno-preneurship

iii) Emphasizing on-demand learning and multiple modes of education

iv) Introducing massive open online courses (MOOCs) to enable enrolment of global cohorts

v) Developing multidisciplinary curriculum combining science, engineering, ICT and social sciences

vi) Putting more emphasis on soft skills

Meanwhile, major challenges faced by industries in moving towards Industry 4.0 adoption include:

i. Lack of awareness on the concept of Industry 4.0 and its benefits;

ii. No clear comprehensive policy and coordination on Industry 4.0 in Malaysia;

iii. Infrastructure gaps particularly the digital infrastructure as well as ecosystem gaps;

iv. Lack of targeted incentives to incentivize more companies to move to Industry 4.0;

v. Mismatch skillsets and lack of right talent/human capital; and

vi. Lack of standards resulting in difficulty of integrating different systems and reliability issue.

There is also different challenges faced between MNCs and SMEs particularly where majority (40%) of SMEs believe that they do not need the internet to fulfill the expectations of their tasks. This survey was based on FMM's study on its SME members in 2016 done by Monash University.

Cyber security is key in achieving a truly digital nation and considered as one of the nine pillars of recognized technology drivers. The Malaysian Government through CyberSecurity Malaysia has instituted a broad range of innovation-led cyber security programmes and initiatives to fulfill its mandate accordingly. Malaysia is among the top scorers in the Technical Performance Index of the

Global Cybersecurity Index 2017. There is no one size fits all solution in moving towards Industry 4.0 at the firm level as it depends on the aim of each company. Any improvements either incremental or leap frogging towards Industry 4.0 will result in positive improvements at the firm level in terms of productivity and efficiency. Each company must decide what would beits end goal before finding out the technological options available for use.

More often companies would need to be convinced or test run solutions before they can run with its full implementation. They first need to be aware of where they are currently and to ensure that it has its value stream map/an overall mapping out of the whole production line from sourcing raw materials to production until products are shipped to the intended customers. There are various platforms showcasing possible solutions initiated by Malaysian including Penang Skills Development Centre (PSDC) and German Malaysia Institute (GMI) that can be a starting point for companies to see possible technological solutions currently available.

OPPORTUNITIES IN INDUSTRIAL REVOLUTION 4.0

As we move into the Fourth Industrial Revolution and the digital transformation of life, the potential benefits and opportunities of this new era are in ongoing discussion. It is predicted to be a massive engine driving productivity gains, economic growth, and business success. Digitalization of operation in terms of industry and human life, it is found that emerging digital equivalents that align with the technology which are:

a) Digital energy: combining smart power grids and smart meters into platforms that dynamically match energy generation and demand from both new and traditional sources.

b) Digital transport: moving people and goods across oceans, skies, and land autonomously.

c) Digital health: remotely enabling connected health care from anywhere.

d) Digital communication: connecting billions of people and things, allowing them to interact in new ways.

It will bring a paradigm shift, from centralized mass production to distributed, localized production, combining edge cloud computing and 3D printing to create goods in near real time. Industry should take the opportunity of this revolution in advancing their organization with the aid of latest technology in Industry 4.0 application. There are potential Industry 4.0 application for engineering transformation can be developed as in Table 1.

Table 1: Benefits of Industry 4.0. Adapted from the Deloitte University Press (2017). Retrieved from www.DUPress.com

Engineering impact	Potentaial IT/OT applications
Reduce idea-to-market time	Use rapid prototyping and production capabilities to design new products ans eliminate supply chain dependencies ; configure new software solutions through cloud-enabled development tools
Better link design to product intelligence	Use data to anticipate design flaws and correct for them; design products ans simulate usage based on total cost of ownership and supply implications' evaluate product design options based on manufacturability
Improved the overall effectiveness of engineering[32]	Design and test new products through virtual simulation software; allow open source sharing of intellectual property to spur or improve designs

The IR 4.0 has offers attractive opportunities for industrial companies. The key findings of the PWC study in 2018 regarding the Global Digital Operations were summarized into ten key points:

1. The industrial internet transforms the entire company and must be part of the CEO agenda.
2. By 2020, European industrial companies should invest €140 billion annually in Industrial internet applications.
3. In five years, more than 80% of companies should have digitized their value chains.
4. The industrial Internet increases productivity and resource efficiency – an 18% increase in efficiency within five years.
5. The integrated analysis and use of data are the key capabilities for the Industrial internet.
6. Digitization of the product and service portfolio is the key to sustainable corporate success.
7. Digitized product and services generate approximately €110 billion of additional revenues per year for the European industry.
8. The industrial internet paves the way for new, often disruptive digital business modes.
9. Horizontal co-operation allows for improved satisfaction of customer needs.
10. The industrial internet holds various challenges – policy makers and industrial associations can help.

The outcome from the PWC studies may be used as a benchmark in planning the strategy for the industry to foster the economy of the country. By calculating when these digital technologies could reach their tipping points and by applying historical formulas, it could add a massive amount of income to the economy.

CONCLUSION

Many countries have made large investments into the TVET sector especially in facing IR 4.0. The Government is committed to move away from low-skilled/foreign workers dependency particularly for the manufacturing sector. Adopting new technology to ensure companies be more efficient and productive will be in tandem with global trends. The adoption of Industry 4.0 in this type of organization will increase efficiency and promote zero-defect outputs. In formulating quality TVET, more effort need to be taken. Although education is the key to face the challenges and changes brought about by IR 4.0, the pinnacle agenda for is much emphasized on developing and nurturing a future generation with culture and core values. It hopes to establish a blueprint for the future of learning i.e lifelong learning- from childhood schooling to continuous learning in the workplace and most important, learning to play a better role in society. Thus the revitalization of IR 4.0 in would ultimately benefit humanity and protects the nation's interest in the long run.

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REFORMING TVET TOWARDS THE NEEDS OF NEW ECONOMY THE PRACTICE IN CHINA

Prof. Chandler Huang (Huang Chunlin)[1]

ABSTRACT

After several decades of boom, the e-commerce, e-payment and other internet plus new economy have changed the economic status of China. Five new major changes in industries including online business, convenient e-payment, cross-border e-commerce, sharing economy and express logistics have influenced the development of TVET. To meet the needs of those Socio-Economic Transformation, TVET implemented its reform in majors, curriculum, work-based learning, entrepreneurship and internationalization.

Keywords: e-commerce, new economy, TVET Reform

INTRODUCTION

Four industrial revolutions have already taken place in the course of human history. Circa 1800, the advent of mechanical production powered by water and steam power brought a new era of civilization. This is believed to be the indicator of the 1st industrial revolution. Circa 1900, electricity-enabling mass production and division of labor influenced the ways of social, political, cultural and daily life styles. Experts named it as 2nd industrial revolution. Circa 1970, electronic and IT leading to automation renewed the concept of productivity. This revolution was the 3rd of industrial revolution in world. Coming to the new millennium, circa 2000, algorithms for integrated smart solutions released great potentials of development. It caused more and deeper reforms of industry. This is the 4th industrial revolution. If we observe and analyze the evolution of industry from 1800 to 2000, we can see the competencies are growing from low skill to high skill.

1st industrial revolution	2nd industrial revolution	3rd industrial revolution	4th industrial revolution
circa 1800	circa 1900	circa 1970	circa 2000
advent of mechanical production powered by water and steamed power	electricity enabling mass production and division of labour	electronic and ICT leading to automation	algorithms and integrated smart solutions

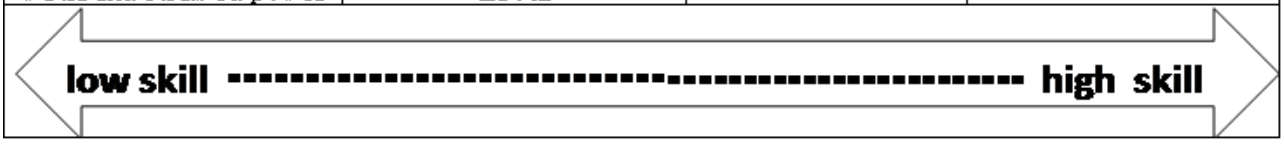

Figure1: Revolution of industry. Adapted from R. Mclean (2018).

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With the evolution of industry, the organization of employment arrangements is also changing dramatically. Traditionally, it was formed by bureaucratic career system from the bottom to the top. Within this system, the skills were driven by its needs. In today's digital era, it is becoming a network architecture of work allocation, with skilled experts at the core. Such a system is so unique that skills were driven by the self "serial master".

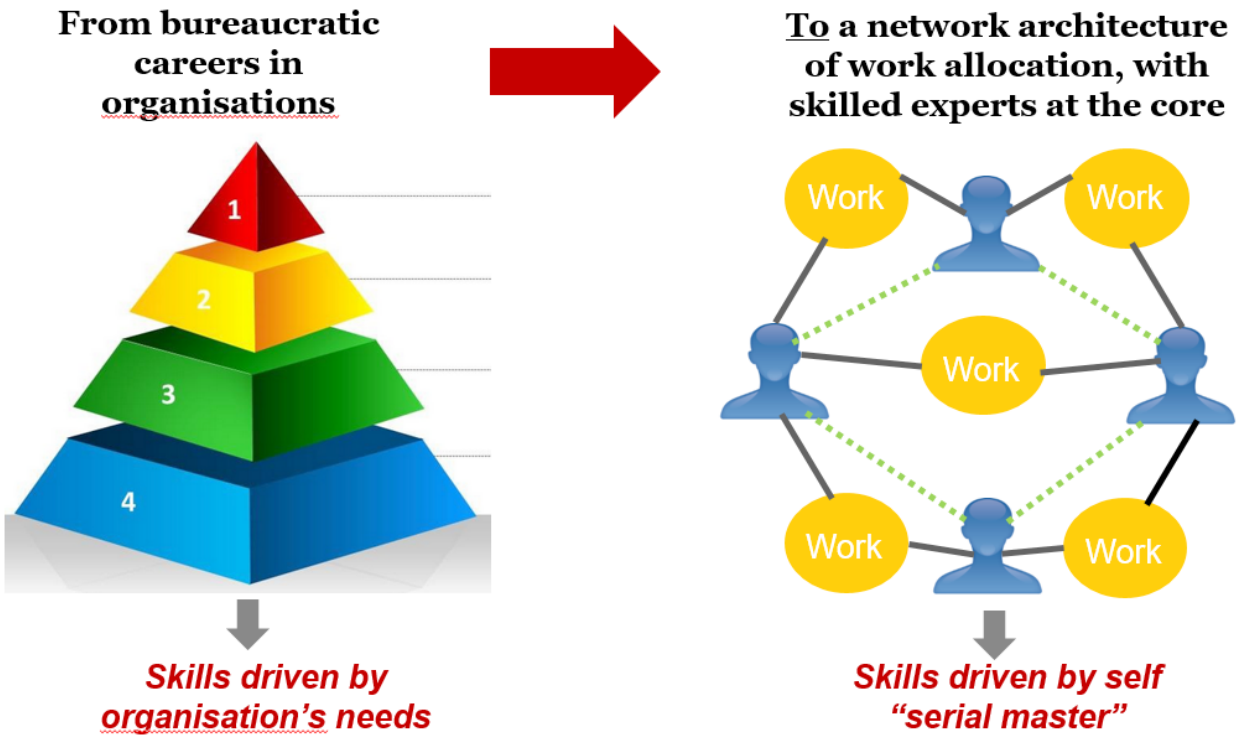

Figure 2: Evolving organization system from. Adapted from R. Mclean (2018).

THE DEVELOPMENT OF NEW ECONOMY IN CHINA TODAY

To some extent, the rapid development of China in new century relies on the development of new economy. The new economy that I am referring to is an economy that is based on high-technology. Generally, we are talking about internet plus economy. With the development of internet and its application, the impacts are holistic. In this paper, we select five typical sectors including Online business, E-payment, Cross-border e-commerce, Sharing economy and Express logistic as the most popular examples of this evolution in the Chinese economy.

Online business

China has one of the biggest population of netizens in the world. By the end of 2017, the Chinese netizens are 772 million. (See Figure 3) Based on the market, the growth of online business is always faster than the traditional sales ways.

From Feb 2015 to Feb 2018, the growth rate of total retail sales of social consumer

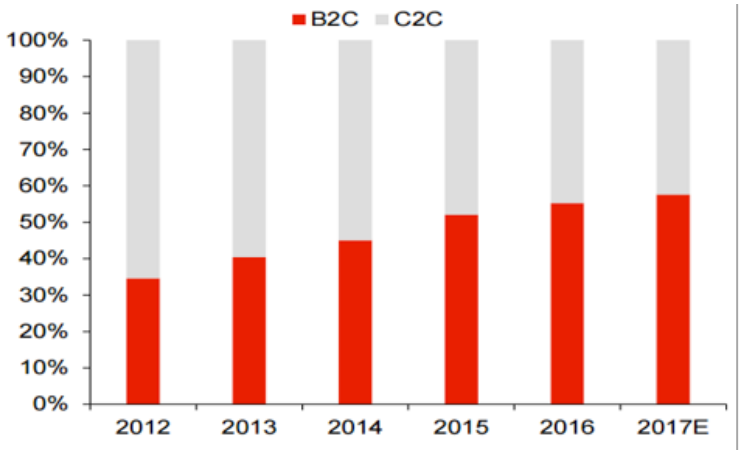

Figure 3: Number of Chinese Netizens from 2012-2018. Reprinted from Statistical Report on Internet Development in China (2018) by the China Internet Network Information Center

goods hovered to around 10%. However, the growth rate of physical goods online sales was much higher than that. From Feb 2015 to Feb 2018, the highest point reached 47%. The lowest point is still 25% and currently, it is about 35%.

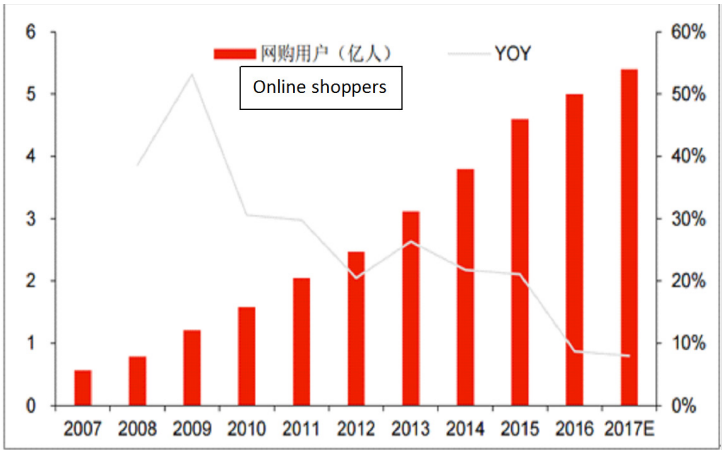

Figure 4: Portion of E-business classification. Reprinted from Statistical Report on Internet Development in China (2018) by the China Internet Network Information Center

In the sector of E-business, Business to consumer (B2C) platforms keeps on growing. In 2012, the growth rate of B2C is approximately 35%, and by the end of 2017, it became almost 55%. At the same time, the proportion C2C is shrinking.

It was observed that population of online consumers, from 2007 to 2017, it is consecutive growing from around 50 million to around 500 million. More importantly, the online consumers are likely to shop more than offline consumer due to the convenience and mobility of the goods being traded, exchanged or brought.

Looking at the scale of online companies in China, Alibaba-based Tmall shared the biggest proportion of online consumers in Sri Lanka, or around 60.9%. The second is Jingdon with 25.6% expressing their use of the app. Internationally popular companies such as Amazon (China) had a share of only 0.7% of the total online shopping market.

e-payment

By December 2017, China's online payment users had reached 531 million, an increase of 56.61 million over the end of 2016, an annual growth rate of 11.9% and a utilization rate of 68.8%. Among them, the number of mobile payment users increased rapidly, reaching 527 million, or an increase of 57.83 million over the end of 2016, with an annual growth rate of 12.3% and a usage rate of 70.0%.

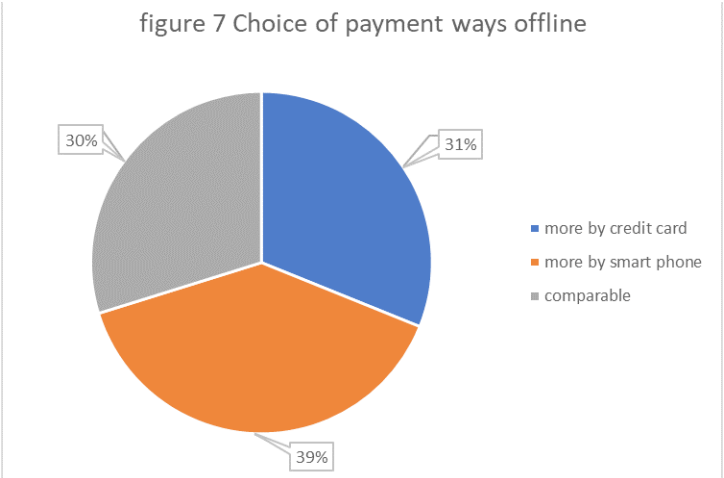

Figure 5: Online/Smartphone payment scale and usage rate. Reprinted from Statistical Report on Internet Development in China (2018) by the China Internet Network Information Center

In 2017, the scale of China's mobile payment users continues to expand, and users' usage habits are further consolidated. According to the survey, the proportion of Internet users who use mobile phones online for offline consumption has increased from 50.3 percent at the end of 2016 to 65.5 percent, with 72.3 percent in urban areas and 47.1 percent in rural areas. Using mobile phones in offline consumer users of online payment, more cell phone use online payment 39.1% (towns, rural proportion is 41.3%, 33.0% respectively), more use of cash, bank card to pay 31.1% of the traditional way, using two ways of similar proportion is 29.8%.

The development of online payment application in 2017 has three characteristics: first, mobile payment is deeply bound to personal life. From taking a taxi, take-away, shopping and other personal consumption to the public services, mobile payment is already embedded to our daily life as much as water, electricity, etc. E-payment gradually extended into aspects such as public transport, high speed road charge, medical and other fields; Second, online payment has accelerated its penetration into rural and elderly Internet users.

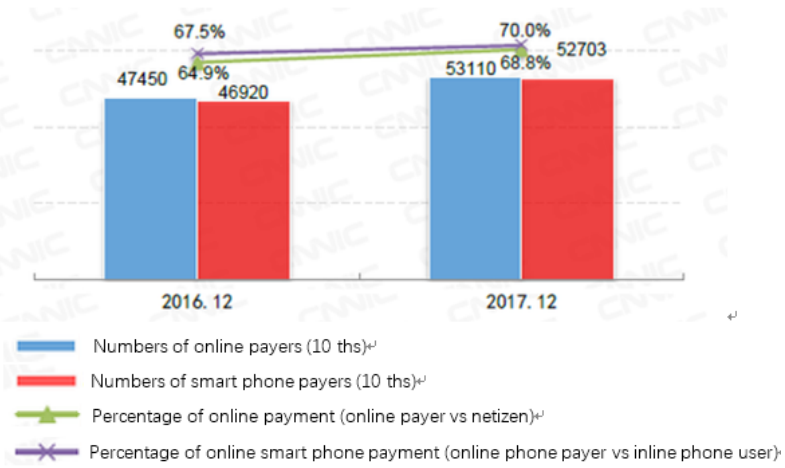

Figure 6: Percentage of consumers paying through online and smartphone means. Reprinted from Statistical Report on Internet Development in China (2018) by the China Internet Network Information Center

According to the survey (see Figure 6), the proportion of Internet users in rural areas using online payment has increased from 31.7% at the end of 2016 to 47.1% at the end of 2017. The utilization rate of Internet users over 50 increased from 14.8% (2016) to 32.1% (2017). Third, technology further improves the security and convenience of mobile payments. Biometrics are becoming more sophisticated, fingerprint recognition has been used on a large scale and facial recognition has been preliminarily commercialized.

Cross-border e-commerce

Since 2013, the online import and export in China have experienced a leap in growth. It is call cross-border e-commerce (CBE) in China. In 2013, the total scale of import & export was 25.83 trillion yuan, while CBE is valued 2.9 trillion yuan or 11% of the total import and export value. This has grown in 2017, in which CBE was valued 7.6 trillion yuan, or 27% of the total import and export value of 27.79 trillion yuan. Given the current trend, it is expected that in 2020, the value of imports & exports will be 31.9 trillion, with the value of CBE to be worth 12 trillion yuan, or 37.6% of the total.

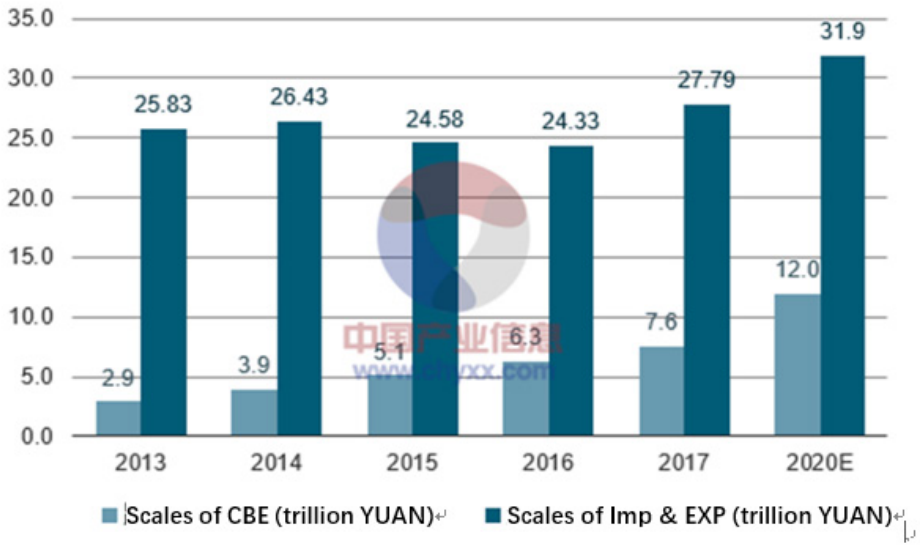

Figure 7: Import and Export Value of Cross-Border e-commerce from 2013-2020 (projected). Reprinted from Statistical Report on Internet Development in China (2018) by the China Internet Network Information Center

Looking at the structure of CBE illustrated in the figures 8 and 9, we can see an increasing proportion of import e-commerce transactions increasing over time. It is projected that a fourth of the proportion of the imported transactions come from e-commerce activities, if the current trend will still hold. This is due to a vigorous economic structure that encourages the digitization, efficiency and faster exchange of information through the internet, which also includes doing transactions online.

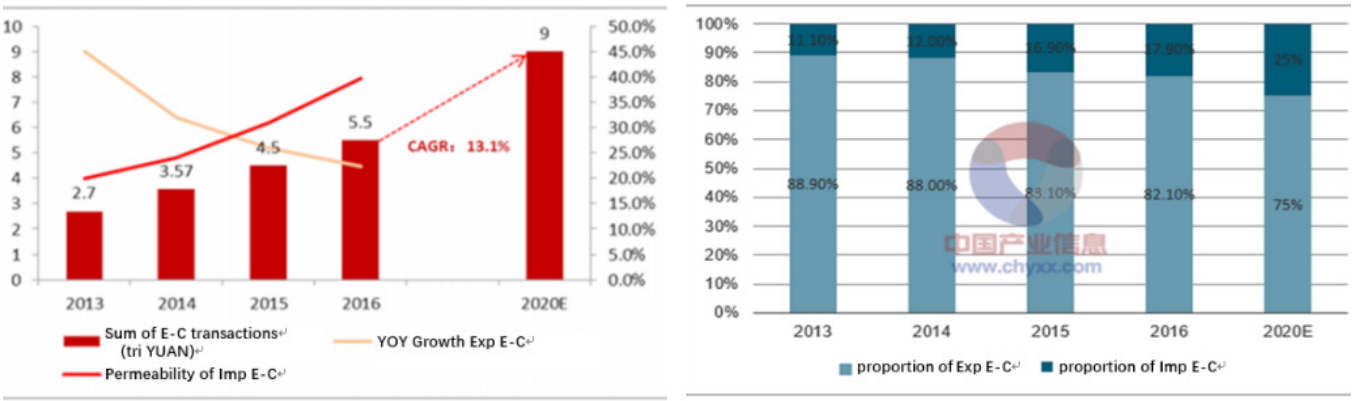

Figure 8 & 9: Value and performance of e-commerce transactions Reprinted from Statistical Report on Internet Development in China (2018) by the China Internet Network Information Center

Sharing economy

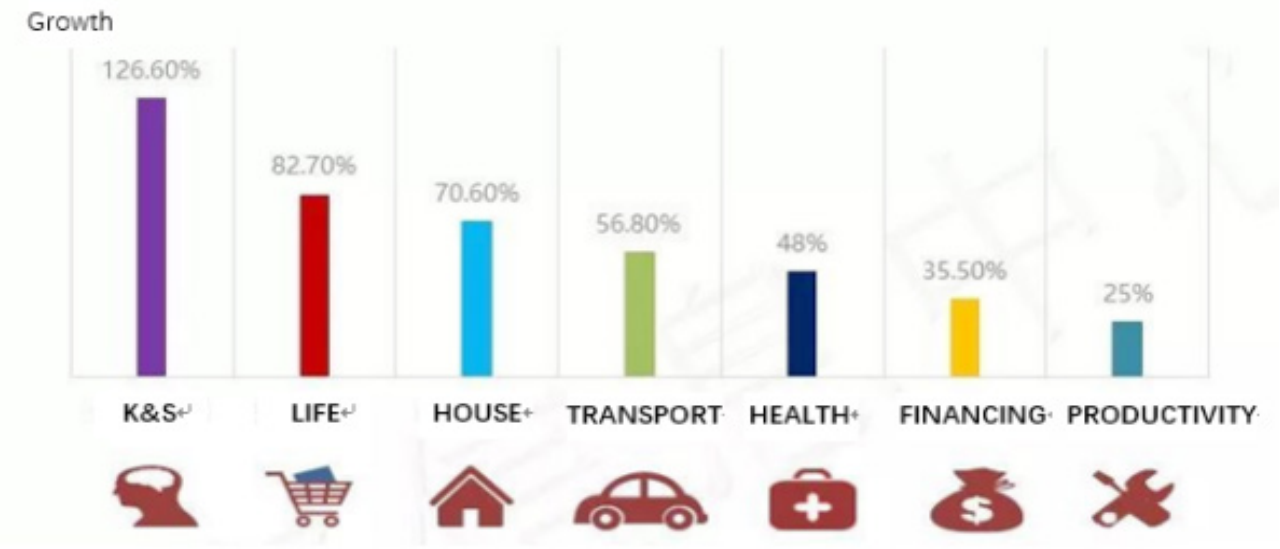

Figure 10: Growth rate of transactions done through e-commerce, as sorted through sector. Reprinted from Statistical Report on Internet Development in China (2018) by the China Internet Network Information Center

Sharing economy is an umbrella term with a range of meanings, often used to describe economic activity involving online transactions. (Taeihagh, 2017) Recent years, the sharing economy has developed rapidly in China and now includes many sectors of industry. In 2017, the sector with the fastest e-commerce growth is knowledge and skill, growth rate, with 126.6%. Second is life service (82.7%) and third one is real estate (70.6%), year-on-year.

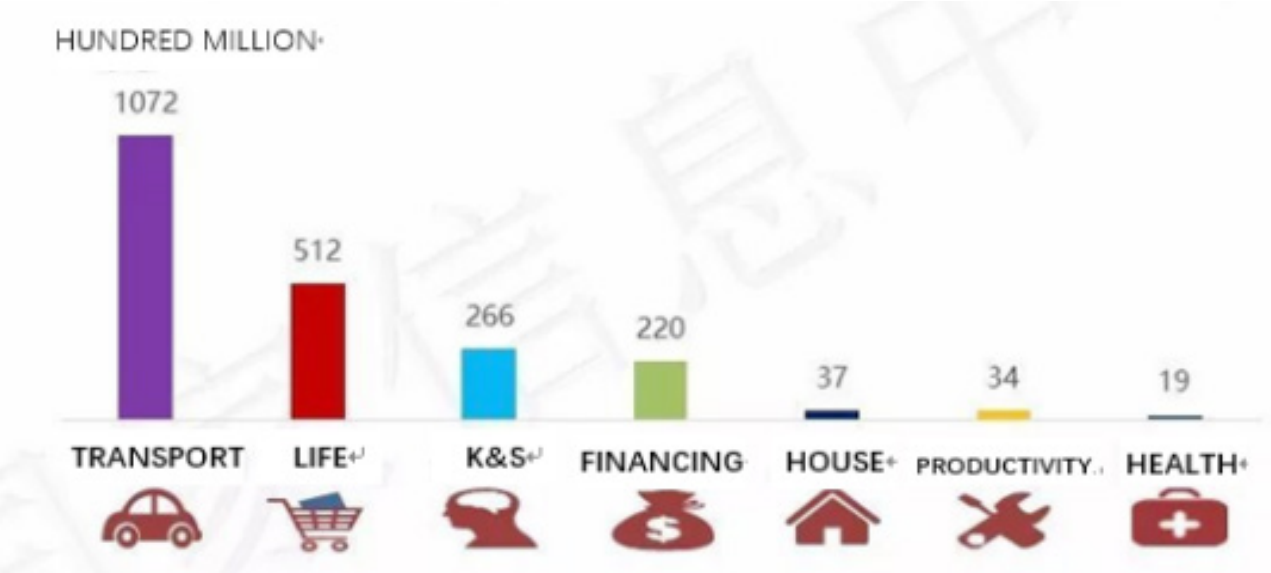

Figure 11: Financing in the sharing economy, per sector (2017). Reprinted from Statistical Report on Internet Development in China (2018) by the China Internet Network Information Center.

biggest financing for sharing economy appeared in the sector of transportation, which reached 107 billion yuan. The second is life service, which is around 51.2 billion. The third one is knowledge and skill sector, 26.6 billion.

A good example of a huge financing in the sharing economy is the sharing bicycle (see Figure 12). It has a quantity of 23 million units through 304 cities in more than 20 countries, which caters to the demands of approximately 400 million commuters. The supportive factories are 74 and the Financing scale is more than 20 billion RMB. This led to the ubiquitous presence of these bicycles in every street in China.

Figure 12: Structure of sharing bicycle. Reprinted from Statistical Report on Internet Development in China (2018) by the China Internet Network Information Center

Express logistic

The express logistic industry is the very important support of e-commerce. In 2017, the volume of business was 40 billion packs, with a 28% year-on-year growth Business incomes during that year also reached 496 billion yuan and year-on-year growth of 23.1%. More than 60% express logistic business is served for e-business. The cross-border business is getting higher than domestic as well as city-wide. The price of packs between different cities are dropping, city-wide price is stable.

In summary, the internet based new economy is the important engine of China's development. Many new sectors brought new environment of socio-economic development. Those changes request the change of TVET.

TVET IN CHINA TODAY

System

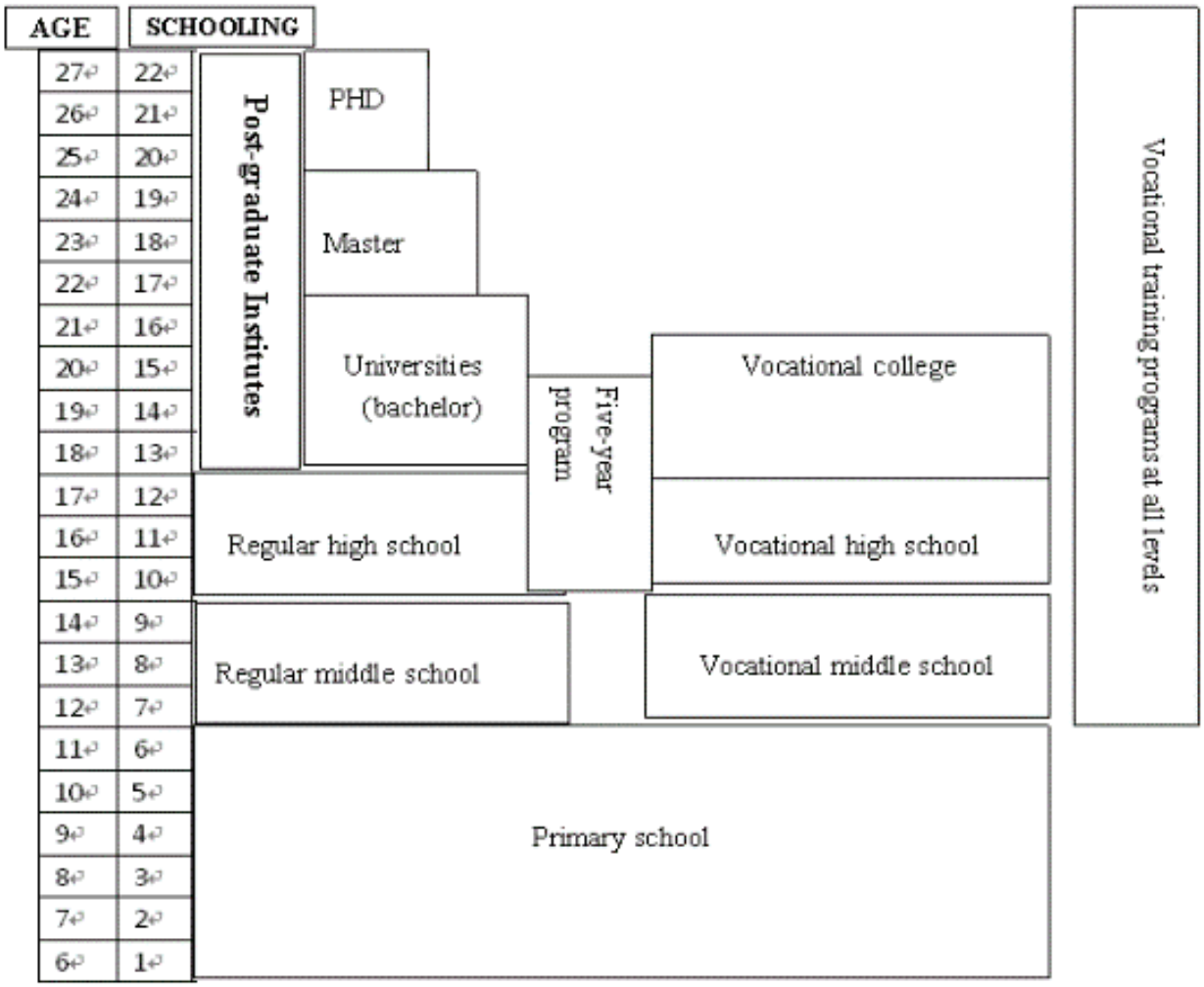

Figure 13: Education System of China

China has a vast education system that caters the needs of its billion citizens. There are pre-school education, primary education, secondary education and higher education. Pre-school education is provided by kindergartens for ages 3 to 6. Primary education, starting at the age of 6 or 7, is provided by primary schools. In some primary schools, the education lasts five years, and others lasts six years. Secondary education is composed of three-year junior middle school education and three-year senior high school education. Junior middle schools, comprising regular schools and vocational schools, are attended by graduates from primary schools. Senior high schools, comprising regular schools and vocational schools, are attended by graduates from junior middle school. Some of the vocational high schools provide four-year programs to their students. Institutions of higher learning, comprising of regular universities and vocational universities, are attended by graduates from high schools. Universities provide programs of varied lengths at different levels of higher education, including 4-5 years' bachelor degree program, 2-3 years' master's degree program and 3 years' doctoral degree program. The vocational programs are primarily 3 years.

China provides nine-year compulsory education in primary and junior middle schools. Since 2011, China has accomplished the goal of providing 9-year tuition-free compulsory education to all urban and rural students. In China, the right to education of the disabled is protected by the government. Pre-school education, primary education, secondary education and higher education that are geared to the disabled are provided. The public and private institutions also provide vocational training in various forms open to all members of the society.

Table 1: Educational Stages: ISCED 2011 vs China

ISCED 2011 Levels	China
Level 0	Pre-school education--Kindergartens
Level 1	Primary education--Primary schools
Level 2	Secondary education—Middle schools(regular & vocational)
Level 3	Secondary education--High schools(regular & vocational)
Level 4	Secondary education--High schools(regular & vocational)
Level 5	Higher education--Vocational universities
Level 6	Higher education--Universities(bachelor's degree)
Level 7	Higher education--Universities(master's degree)
Level 8	Higher education--Universities(doctoral degree)

The system of vocational education consists of education in vocational schools and vocational training. It is provided at three levels: junior secondary, senior secondary and tertiary.

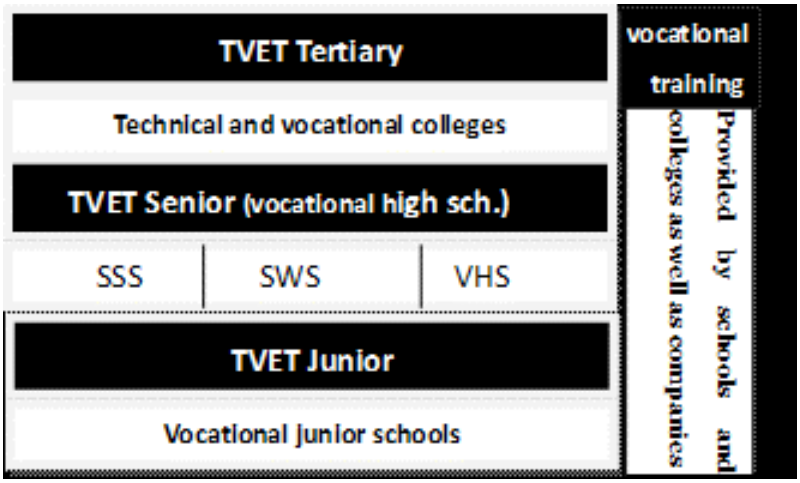

Figure 14: TVET System in China

Junior vocational education in vocational middle school refers to the vocational and technical education after primary school education and is a part of the 9-year compulsory education. The students in this stage should be graduates from primary school or youths with equivalent knowledge. The duration of which lasts 3 to 4 years. To meet the needs of labor market for the development of rural economy, junior vocational schools are mainly located in rural areas where the economy is less developed.

The secondary level mainly refers to the vocational education in vocational high school stage. Named as specialized secondary schools (SSS), skill workers schools (SWS)and vocational high schools(VHS), and as the mainstay of vocational education in China, secondary vocational education plays a guiding role in training workforce with practical skills at primary and secondary levels of various types. By the end of 2017, there are 10700 secondary vocational schools in China.

The postsecondary education system in China is huge and complicated. For secondary school leavers, they can pursue 4-year universities or colleges through college entrance examination (CEE) to complete their academic education, or go to 3 or 2 - year colleges to complete their TVET.

For adults, there are some adult colleges which provide diploma teaching in part-time. Self-learning examination and television -university are also favorable ways to the learners, especially to adults. Comparing with adult colleges, self-learning examination and TV-university, full time universities and colleges have a bigger proportion in both school number and student number. The schooling of TVET in tertiary level is the 3-year colleges which provide diploma for secondary school leavers in full-time. By the end of 2017, there had been 1388 tertiary TVET colleges in China.

A unique pathway for connecting the secondary and tertiary technical and vocational education directly is 5-year program. The program is completed in vocational school and vocational college, separately by 3plus 2 years through negotiation. These programs build a non-stop path from secondary to tertiary vocational education for meeting the demand of employment in some high-skilled positions.

Vocational training of various forms has been playing an important role in TVET system. It comprises of pre-service training, training to facilitate change of occupations; apprentice training, on-the-job training, job-transfer training and other categories of vocational training (disabled, migrants etc.). At present, vocational training is mainly conducted and managed by the departments of education and labor, but private sectors are encouraged to be vocational training providers.

At the state policy level, TVET in China has been recognized as the very important engine of its modernization. The Chinese government has issued “National Outline for Medium and Long-term Education Reform and Development (2010-2020)” (UNESCO, 2018), identifying the development objectives and policies on TVET in aspects. It puts the development of TVET at a more outstanding strategic position.

China is undergoing unprecedented industrialization and urbanization and is also dedicated to accelerating the transformation of economic growth pattern. It is only with large amount of high-quality skilled talents that the country can upgrade the manufacturing industry, encourage independent innovation and provide the best products and services. It is encouraged that TVET be prioritized as a basic task for industrial upgrade, regional economic growth, cultural prosperity and livelihood improvement. A promotion of the professional culture that respects laboring, honesty and integrity, and produce sufficient qualified talents for social and economic development.

Secondly, a comprehensive TVET’s role is in serving social and economic development. China plans to build a world-class modern TVET system that is relevant, connected and multi-dimensional which is consistent with the concept of scientific development and lifelong education. It will further connect TVET with modern industrial system and public service system, further integrate TVET with industrialization, urbanization and agricultural modernization, further coordinate TVET with the people’s diversified education demands, support the sustainable social and economic development and lay a solid foundation for stable employment and decent working as well.

Thirdly, it takes the improvement of TVET quality as the major content for deepening the reform of TVET. TVET should be service-and-employment-oriented which can train more workers with practical skills so that they can serve society. The government plans to reform the traditional talent cultivation mode with school and classroom as the core, reinforce the practical training and professional ethics education, and comprehensively improve the hands-on ability and the ability to adapt to their posts. It is also planned that the TVET sector should provide more opportunities so that secondary vocational school graduates can directly receive higher education. Efforts on training teachers for both teacher’s qualification certificate and technological qualification certificate, developing training centers with high-tech equipment, improving infrastructure of TVET will be adopted.

A school-running mechanism with the linkage between industry and education which the government leads, industry guides and enterprises participate is being considered. The linkage between industry

and education, cooperation between school and enterprise should be a major development in terms of reforming TVET in order to promote a good interaction between government, industry, enterprises and trainees. Enterprises should be encouraged to establish vocational schools for better match between workers and enterprises. Government authorities and industry associations should play an important role in terms of pooling talents, designing courses, assessing teaching results and promoting school-enterprise cooperation so as to strengthen linkages between education and industry, discipline and profession. The vocational schools can be motivated to form groups in order to share and pool quality education resources together. There are more than 500 vocational school groups in China in which more than 5,600 enterprises from 43 industries participate.

Lastly there is a need for the government to elevate its responsibility and capability to promote and guarantee the development of TVET. In 2016, the government spending on TVET is valued at 308.9 billion yuan, with additional budget to be pledged in the coming years. A diversion non-government resources to enrich TVET may be explored to diversify the funding source to various channels aside from the government. Promoting equality is also a very important policy orientation. Funding must reach rural remote and poverty-stricken and ethnic minority areas. A higher financial aid to students from poor families may be given to improve the attractiveness of TVET. In this way, all the children from rural and urban areas will enjoy the sunshine of knowledge.

Majors

Majors are the key products of TVET institutions for the needs of students and industries. In TVET, the majors have some common points with general education, but the differences are quite clear. TVET majors are more likely to be matched with the needs of job market rather than the academic system. After many turns of adjustments, China's authority of TVET have released the TVET categories in secondary and tertiary institutes. For secondary level, there are 19 macro clusters, 321 majors and 920 major branches. It will also provide the list of 1185 relevant positions, linkages with 720 qualification credentials, 554 further learning selections.

For the tertiary level, there are 19 Macro-major clusters, 99 major clusters, 747 Majors and 749 major branches. It also provides the list of 291 relevant occupations, transfer from 306 secondary majors, 344 transfer to bachelors.

For the admission of majors, there are 4 ways to access to post-secondary institutions

1. College Entrance Examination (CEE) GAOKAO
2. Authorized recommendation by the leader of excellent secondary school (the candidates are limited by the university)
3. Practical-based examination for Secondary vocational school leavers. They can access vocational colleges or vocational-oriented majors in university
4. Self-controlled admission by the universities for very special talented school leavers. Genius at Maths competition winner, for instant.

In addition, the self-learning examination is open to the public. Anyone who wants to get the degree or diploma can take such examination organized by MOE. When the student accumulate all certificates related to the major, an official conferment of the degree will take place.

Employment is the key indicator of majors. For the connection between graduates and companies smoothly, TVET institutions provide a lot of ways to assist the growth of employment rate.

1. *Career guidance.* In curriculum, the career guidance modules have been set up. It includes the knowledge and skills of documents' writing for job seeker, interviewing preparation and policies of job market. The modules may be allocated in different semesters rather than intensive delivery at the graduation semester.
2. *Job fair.* Job fair in China can be divided into two types. One is the permanent market which is usually organized by government. They provider 365 days' service for companies and job-seekers every year. Students can seek the internship and jobs here. Another one is mobile market targeting to school-leavers.
3. *HR Company.* It is usually responsible in providing the service for job-seekers. The TVET graduates are also encouraged to send their resumes to an HR company. Since they have broader resources of recruitment, this is also treated as a short-cut, with a corresponding fee.
4. *Industry-school linkage.* The employers from industry sometimes sign an agreement with TVET institutions and students. They want to incorporate the company values, cultures, special qualifications to the curriculum and employ the students who learned such company modules when they graduate. The advantage of such ways is the closely connected with industry. Companies can directly learn the potential employees, vice versa. Tailor-made employment is also thought as the effective cooperation between school and industry.
5. *Online job service.* Recent years, many internet based companies provide job service. It is very convenient for seeker and employer. Since it is easy to access, it is also of low successful rate. It gives the seekers and employers more information. But generally, it is very hard to reach effectively.
6. *Alumni.* Alumni are very effective resources to school. They understand the school and majors. They also understand the company. They will be very effective in assisting graduates for their employment. They can also often provide some updated information on the needs of job-position in the company. Such information can also assist TVET majors to adjust their curriculum to meet the needs of industry.

Teachers and Masters

In China, teachers in TVET have the equal qualification with general education teacher. For secondary level, they need a bachelor degree or higher in relevant major, with the necessary pedagogies required. For tertiary level, a master's degree or higher degree in relevant major is necessary. In addition, TVET teachers need some other competences to meet the special needs of TVET.

First the knowledge acquired will be matched with the needs of the labor force. Second is the incorporation of relevant experiences into the real work. Third is the encouragement of dual-credentials in academic and industrial sector for the professionals.

In the duration of teaching, the expertise from industry plays an important role. Masters often take the responsibility of practical guidance. The academic background is not so important for them, but the experience from workplace is crucial. Sometimes, the educational institutions will provide the training of pedagogies to the masters. In addition, the duty of masters is career guidance for the students based on their experiences. The work ethic is also educated by masters.

ICT in teaching and learning

To meet the needs of new millennium generation of students, ICT has been used largely in teaching and learning. More than 10 years ago, the excellent courses were encouraged to combine with

video clips. Since then, a large amount of online-based resource has been uploaded. It is more convenient for people coming in the poor areas to gain the advanced resource.

The government invested many funding to the resource building especially in the ICT capability, yet the usage of the online resource has a low efficiency. The student and teacher are always used to face to face teaching and learning. For amending such situation, many of TVET schools tried to use blended learning.

The blended learning focused on the restructuring of courses. It needs four aspects to be reorganized.

- The design of courses. Reorganize the course toward the distinguishing from online and offline. Depending on the classification of knowledge and skill, the theoretical and informational modules have been designed to the cluster of online resource. The practical and discussable contents have been arranged to the offline learning-classroom delivering.
- Resources. It is accumulated for many years. But to match with the need of new design, it is needed to sort of some relevant resource to use. Sometimes new resources will be updated for the efficient use of blended learning.
- Policy. This is a very important motivation to the teacher as well as student. The policy includes the investment to the development, the awards of role-models, the institutional rules. But more important, the policy should motivate the endogenous power.
- Capacity building. ICT is sometimes sophisticated to some teachers. ICT use cannot command to all of teacher “in the same melody”. The training of teachers to the skill of ICT is necessary. The training should emphasis on the use of the tools for delivery rather than introduction of software. The teachers can be improved by doing the tools into their courses.

Soft skills

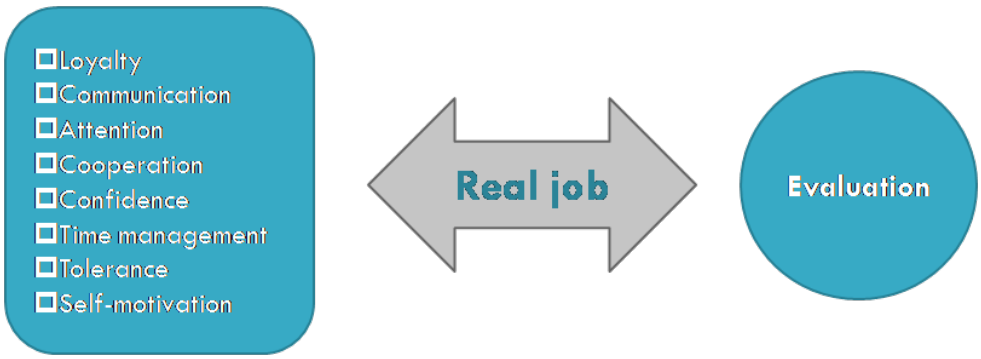

Figure 15: Soft Skill Structure

A survey on the needs of employers reveals that they often put some soft skills in front of the technical skills. For the TVET students in China now, almost all of them are the only child in the family, (One child policy from circa 1980 to circa 2010) so the soft skills are also crucial for them.

For the soft skills, we are talking about the eight aspects including:

- Loyalty. It reflects the respect to the work position and institutions.
- Communications. It teaches the youth to express their ideas correctly and politely.
- Attention. For the influence of cyber games, young people prefer more playing than focusing on academy. The term phubber (phone snub) is just the description of such phenomenon. So, drawing their attention to the learning and working is in high demand.

- Cooperation. It is the key factor of successful result for the work. As a sun in the family, young students need to learn to be the node of network.
- Confidence. This is also very crucial because the TVET students. Comparing with CEE university matriculates, they often feel losing psychologically. So, make them confident is so important.
- Time management. In the busy workplace and multi-combination of tasks, the young people need the regular management of work and time.
- Tolerance. Listening and accepting the other opinions must be a professional habit.
- Self-motivation. It is the need of sustainable work and learning for the new generation of Chinese students.

For the fostering and assessing the soft skills, the best way is to observe during doing and working. Classroom lecturing and paper exam is always useless.

TVET reforms for new economy

In order to meet the needs of the rapid development of e-commerce, the TVET has been reformed in many aspects. In TVET colleges, E-commerce major has been set up since 1999. By the end of 2017, there are 1093 institutes providing E-commerce majors, 78.7% of the total TVET colleges. For secondary TVET schools, there are 660 schools providing E-commerce learning.

124 thousand students currently study e-commerce in tertiary colleges and 145 thousand students in secondary schools. A major on e-commerce, which is a combination of technology and commerce, is being implemented in all schools.

At a different level, the curriculum focuses on different direction. In secondary level, practical skills are more emphasized than theory. The graduates from e-commerce in secondary schools are employed in the positions of online service, telemarketing and art-designers for e-commerce, etc. etc.

In tertiary level, the theory and practice are balanced and theory is emphasized in its application. The graduates from e-commerce in TVET colleges are employed in the positions of internet promotion, online store operation and analysis of business data, etc. etc.

Many E-commerce majors were involved in some branches like mobile commerce, cyber finance and cross border e-commerce. Those branches are based on the needs of real world of works.

Reforms on curriculum

In accordance with the development of industry, some up-to-date modules have been developed.

- Cyber marketing. Includes planning and promoting, organizing activities, advertisement injecting, analysis of sale performance, report writing, etc.
- Online store operation. Selects several popular e-commerce platforms, like Alibaba, Jingdon, to introduce the operation of online store on strategies, supply chain, data analysis, service, etc.
- Visual design. Uses the tools like photoshop, illustrator, to edit the Logo, commercials, flyers. Improving the aesthetic category of trends capturing, color scheme, etc.
- Online service. Includes the responding the demand of customers, dealing with the process of sales return, goods exchange. Selecting the opinions from outside and dealing with emergency events.

- Online entrepreneurship. Introduces the characteristics of online entrepreneurship. The modules identify the appropriate projects to start up. Understanding the policies for online entrepreneurship. Improving the abilities of facilitating and financing.

Reforms on work-based learning

Learning by doing is the distinctive characteristic of TVET. For the learning from works, the training forms have been reformed. For the equipment of the real experiences, the masters from industry are invited to teach as part-time lectures. In the classroom, they bring some real cases from industry. In the company, the guide the internship of the students. Their contributions cannot be replaced by the full-time teachers.

For the exercise in real environment, many schools provide the students' practice on the simulated online software. The software is of the function of real online business. It also provides the function of learning analysis. Teacher and student can get the shortages of learners and repeat the practice to amend them on the software. In some schools, company-oriented credentials are equipped to the students. For targeting the criteria of work position, the students can take the examinations of industrial credentials after finishing their learning in theory and practice. If they gain the credentials, it will be very helpful for their job-seeking.

Reforms on entrepreneurship

e-commerce is very close to entrepreneurship. TVET as the practical aspect education and training in which entrepreneurship is also advocated. Many schools provide the basic knowledge of start-up in the curriculum. More importantly, they provide a real battlefield of e-commerce business to the students. With the assistance of local government, many schools set up the incubator for students and less than 3 years' graduates. Within the incubator, many preferential policies like tax, real-estate fees are implemented. The guidance from teacher and master are often provided.

For the test of real experiences in e-commerce business, the students' competitions are also organized. Students are formed into different groups to compete each other. Generally, the competition is cyber-based and may last several months. The winners are the biggest money makers rather than the high score examinees.

Reforms on internationalization

China's e-commerce industry is playing a leading role in the world. In addition, the new economy is opening to the outside world. More international students are in high demand. To build the gap between foreign students and company employment, we are very interested in international TVET cooperation. The fundamental principles of international cooperation are:

- UNEVOC-based: It is very keen to work with the UNEVOC networking because the same vision and mission.
- INDUSTRY-driven. Does not plan to target a certificate for the students. We want to work together with our new economy industries to provider new opportunity to the international students in terms of employment and entrepreneurship.
- Student-centered. Values the needs of international students.

CONCLUSIONS

Given the following discussions, the following points are considered for the advancement of future plans

- Internet plus other indirect services and conveniences brought new thoughts of vision. We must embrace the opportunity and capitalize on the benefits.
- A new economy brings a new environment that should take into account the challenges of the future.
- Changing world of work brought new demand of employment and it calls for the change of our TVET.
- New students as native netizens brought new notions of education. We should need to look after their characteristics.
- International collaboration is crucial. Organizations must work together with the industry to provide the opportunity of employment and entrepreneurship for the international students.

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TACKLING YOUTH UNEMPLOYMENT THROUGH VOCATIONAL EDUCATION AND TRAINING (VET) IN NEPAL

Mr. Kushmakar Bhatta[1]

ABSTRACT

The present paper attempts to highlight the positive effects that played by the Vocational Education and Training (VET) programs in livelihood development of the large number of disadvantaged and unemployed population of Nepal. Primary data and information collected from the purposively sampled respondents 405 VET graduates who after training are employed in their occupational sector. Field observation also made for obtaining qualitative information to establish the relationship between vocational training and the gainful employment of the training graduates. The finding of this study revealed that VET plays positive role in employment and income growth. However, it concludes with the recommendation that post training support to the participants is must for functional VET and getting sustainable and decent employment in the labor market.

Key Words: Vocational Education and Training, Employment, Income, Poverty.

INTRODUCTION

Youth unemployment is a serious problem all over the world. Recent data of ILO (2016) showed that, there are 199.4 million jobless people in the world. The youth that faced the greatest problems were the early school leavers. As documented in a large body of research, early school leavers have experienced a much less successful transition to work compared to those that completed year 12. 21st century has brought profound and fundamental changes to economics, technology, politics, culture, morals, social values and ethics. As a driving force globalization has both expanded the opportunities and added challenges to individuals as well as to the organizations; some countries or some individuals benefitted from more competition and trade expansion and others have suffered increased unemployment and underemployment. (Uddin D. R., 2007). The economy becomes more productive, innovative and competitive both in quality and quantity through the existence of more human potential. (Stormback, 2010). Limited attention has given to the relation of labor market and VET through empirical researches, but in the labor economics, there is a study and estimation of casual effect of education on earning. Stromback further emphasizes to the relationship between education and earnings stating that it is the most intensively studied issue in labor economics.

Under developed countries like Nepal, where the poverty index is high (21.6%), In one side, more than 500 thousand active youths inter in to the Nepalese labor market each year and in other side the country has capacity hardly to train 100 thousand youth per year. The data shows that there is a large gap between demand and supply of labor force. The growth of skilled human resources and creation of employment is not satisfactory. More than 1,000 youths leave the country every day. Around 3.48 million youth working in foreign employment are categorized as 1.5 percent skilled, 23 percent Semi-skilled and 75.5 percent unskilled (GON, 2016). In this context, vocational education

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and training can be instrumental to socio-economic development. VET program is one of the most possible solutions of the unemployment of the huge mass of youth opening the doors of earnings through engaging in self, wage and foreign employment.

PURPOSE OF THE STUDY

TVET programs are in priority of the Government of Nepal. The constitution (2072) has declared education as a fundamental right; skill development is highly focused in 14th development plan, policies and strategic plans. In this regard, the role played by this education sub-sector is to be studied. The purpose of this paper is to examine the role of TVET in employment, earning and poverty alleviation. More specifically, the study sought to find out the answer of following question:

Are the vocational education and training programs supporting to Nepalese youth to create employment and earning for their living?

Its intention is to explore whether the VET has a considerable impact to the young population of Nepal on the employment and earning beside their low level of general education.

This paper will benefit to the government of Nepal; Council for Technical Education and Vocational Training (CTEVT) to focus on employment generation through a functional, TVET that emphasizes practical knowledge, skills and self-reliance for employability in the self, wage as gainful employment after completing a certain process of VET.

STUDY METHOD

The study employed survey for Vocational Education and Training (VET) graduates trained from different institutions purposively selected from the list of the VET graduates and interview questionnaires were send to them. A part from the questionnaire, some field survey was also administered for the qualitative data on role played by VET in employment, income and poverty alleviation.

FINDINGS

In support to the research statement, " VET Program Supporting to Nepalese Youth to create Employment and Earning for their Living", some supporting questionnaire were asked to the graduates for seeking information like their employment status, earning and income before to join VET, employment status after vocational training, income after graduation in vocational education and other indirect effect of education in the graduates like self esteem and support in children's education and health . All of the supportive components attempted to find out the relation between VET and poverty alleviation. Income and earnings level of the graduated for both prior to and after the training were examined.

Table 1: Graduates employment status before VET.

Gender	Status Before Joining VET Program					Total
	Study	Agriculture	Unemployment	The same work doing now	Others	
Female	25 (18.4%)	24 (17.8%)	78 (57.8%)	8 (5.9%)	0 (0%)	135 (100.0%)
Male	64 (23.9%)	82 (30.6%)	88 (32,8%)	18 (6,7%)	16 (6.0%)	268 (100.0%)
Third Gender	0 (0.0%)	2 (100%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (100.0%)
Total	**89 (22.0%)**	**108 (26.7%)**	**166 (41.0%)**	**26 (6.4%)**	**16 (4.0%)**	**405 (100.0%)**

The table above clearly depicts the graduate's employment situation before they join the vocational education and training programs. Data indicated that, most of the youth were unemployed or were partially employed before to join the VET. Data presented above indicates that about 91 percent of the respondents were unemployed or under employed prior to the skill training which supports that the VET programs in Nepal are targeting and contributing to the unemployed people.

The study also attempted to identify the income/earning of the youth before they join to the VET in order to find their economic situation and further support to indicate whether these graduates came from poor family. In order to examine that the participants were asked to mention their income before joining the training. The table below showed their income before to join the VET program.

Table 2: Earning and income before to join VET

Gender	Earning/Income Range Before to Join VET				Total
	Less than 3000	3001---6000	6001-9000	More than 9001	
Female	10 (5.61%)	18 (10.11%)	0 (0.0%)	4 (2.24%)	32 (17.98%)
Male	29 (16.29%)	66 (37.07%)	33 (18.53%)	16 (8.99%)	144 (80.9%)
Third Gender	2 (1.12%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (1.12%)
Total	**41 (23.02%)**	**84 (47.18%)**	**33 (18.53%)**	**20 (11.23%)**	**178 (100%)**

As presented in above table, more than 70 percent of the respondents had their income less than 6000 before they complete vocational training which indicated that, poor youth having very little family income have mainly participated in the vocational training. After getting the vocational training they got employment and increased their earning.

Employment status of the VET graduates is one of the most important predictor of the effectiveness of the program. Most of the male as well as female graduates were found engaged in temporary and part-time engagement in wage and self-employment.

Table 2: Earning and income before to join VET

Gender	Never Employed	Self-employment	Business	wage employment	Others	Total
Female	19 (4.9%)	36 (9.1%)	25 (6.4%)	52 (12.9%)	2 (0.5%)	135 (33.3%)
Male	23 (5.9%)	61 (15.1%)	38 (9.6%)	144 (35.6%)	12 (3.0%)	268 (66.2%)
Third Gender	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (0.5%)	0 (0.0%)	2 (0.5%)
Total	**44 (10.9%)**	**98 (24.2%)**	**65 (16.0%)**	**198 (48.9%)**	**14 (3.5%)**	**405 (100.0%)**

Employment status of the VET graduates is one of the most important predictor of the effectiveness of the program. The participant graduates were asked to mention their income/earning status after they completed training. Out of the 405, 341 graduate respondents' respond this question. The table below presents the earning/income status of the graduates after they took the vocational training.

Table 4: Earning/Income after completing VET

Gender	Earning/ Income Range After Completing VET Program				Total
	5000-8000	8001-11000	11001-14000	More than 14000	
Female	51(47.7%)	50 (46.7%)	4 (3.7%)	2 (1.9%)	107 (100%)
Male	119 (51.3%)	84 (36.2%)	27 (11.6%)	2 (0.75%)	232 (100%)
Third Gender	2 (100%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (100%)
Total	**172 (50.4%)**	**134 (39.3%)**	**31 (9.1%)**	**4 (1.2%)**	**341 (100%)**

According to the table above (income after VET) and comparing it with table 2 (Income before training), monthly income of the graduates after completing the training has substantially improved. A noticeable point is that both male and female equally have fallen in this income range. Therefore, the data above indicates that VET programs substantially increased the income level of the graduates equally to male and female.

Similarly, the qualitative information received from the educationist, employers and graduates also has argued that the VET has contributed highly in getting job. As indicated by the data the major effects of the VET are that it had brought changes in the graduates live through increasing in health awareness, self-identity, self-esteem and further education.

DISCUSSION

Supporting to this study, there is longstanding evidence that the effects of education on productivity are much more marked when there is a dynamic, supportive environment surrounding schools. However, most of the developing countries have highly focused to education and training system as a solution to unemployment/under employment and poverty reduction (Palmer, 2011). Shirazi (1994), has investigated and showed that growth the income affects poverty negatively. In their study, income was found to grow for all segments of the population and, as a result, poverty incidence fell. The study of the Goh, Luo and Zhu (2009) has Quantifying the real contribution of education to economic growth (Mitch, 2005), concludes that, ‘’Education has always been considered a dominant tool for reducing poverty and inequality through productivity enhancement, which is also a key factor in sustainable development. Easterly and Levine (2000) described that although, total factor productivity relates to labor, land and capital, the role of labor productivity is more important than all other factors of production. Education and skill promotes labor productivity and consequently, labor productivity positively influences the productivity of other factors of production (Levine, 2000).

Vocational Education and Training (VET) programs are being run with the objective of achieving rapid development of the most of developing countries by making the maximum use of productive labor through the development of entrepreneurship while bringing changes in the traditional production system. Several schemes and provisions like free-training, scholarships, collateral-free periodical loans after training, were made to increase participation of the women and disadvantaged group in training and employment activities and fulfill the objective of poverty reduction (Uddin D. R., 2006).

CONCLUSION

Vocational Education and Training (VET) programs are in priority of the Government of Nepal. There are several VET projects running in financial assistance of the international agencies. The goal of all the projects is to strengthen the socio-economic status of unemployed youths, especially the women, Dalit and other Disadvantaged Group (DAG), who are deprived of higher education, by

providing vocational trainings and make them employable. Similarly, The programs run in the country in assistance of the international development organizations and the government's regular programs under the Council for Technical Education and Vocational training (CTEVT), are found success in fulfilling its objectives of upgrading the individual,, making best use of the human resources through skilling, providing employment, making available the required manpower to the industry increasing the productivity and contributing sustainable development activities.

As discussed earlier, education plays vital role in enhancing people's earning ability, increase self-esteem, contribute in improving family education, health and poverty alleviation. A robust quality assurance strategy will maintain quality in TVET, for which post training support services are to be focused. Study on market demand, industries -based curriculum, quality training, life-long learning would have additional positive effect on employment of the youth.

RECOMMENDATIONS

Skills and competence acquired through appropriate training found to be meaningful for both individual and society. If the individual is benefited from employment and earning, then the nation will be benefited through the increase in productivity, income and image. Thus, for the socio-economic prosperity of the country not only depend on the available natural resources but it also has appropriately trained human resources and efficiently utilizes them in the industrial and economic development process.

It is therefore suggested that the following measures if well articulated will mitigate the problems of the youth unemployment and help in poverty reduction.

i) Expansion of TVET programs both in geographically and occupational areas in access of the marginalized people based on market demand and self-employment opportunities.

ii) Focus on industry based training, apprenticeship model closely collaborate with academy and industries facilitated by the government.

iii) Encouragement to VET Graduates with functional post training supports to increase self-employment and job creation by assisting them with soft loans and/or micro-credit.

There is the need to enhance training quality changing the model of the trainings. Emphasis on the practical aspect of VET will help to produce productive youths of the nation' and labor force that will be self-reliant or employable in an industry or company.

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SKILLED WORKFORCE AND NEPALESE CONSTRUCTION INDUSTRY

Mr. Birendra R. Pandey[1]

ABSTRACT

The paper discusses the key challenges of the construction industry. Presently, there is a skill gap between the real need of the industry and the trainings provided in academic and vocational training institutions. Supply of trained skilled workforce is far less than the demand.

Private sector, specifically the industry organizations like FCAN should work together with training institutions and the government agencies to enhance the understanding of market need and demand of the skills and competences. Coordinated efforts are required to improve employability, productivity and efficiency of the trained manpower which in turn reduce investment of the private sector to re-train the graduates coming out of the institutions. The paper also discusses on the role that the industry should play at the policy level, implementation level and at the field helping institution by providing apprenticeships and on the job trainings.

Keywords: Construction Industry, Vocational Training, Workforce

BACKGROUND

Construction Industry is regarded as the backbone of nation building as more that 50% of the gross capital formation is contributed by this sector (World Bank, 1994). Since 1975 Nepal has spent less than 5% of the GDP in infrastructure. Global competitive report published by the World Economic Forum ranked Nepal at 88 out of 137 countries surveyed, but overall infrastructure is ranked 119. (Global Competitive Report 2017-18, 2017) This figure demonstrates Nepal's consistent underinvestment in infrastructure.

A World Bank estimate of the country's "infrastructure gap" pegs investment needs at between 8 and 12 percent of national income for this decade. In addition, the devastating earthquake of April 25, 2015 claimed 9000 lives and imposed an economic cost worth over US$7 billion. About 70% of the early needs assessed by the National Planning Commission will be towards the rehabilitation and reconstruction of resilient infrastructure and housing (NPC, 2015).

However, if we look at the recent trends, the investment in this sector has been increasing. Budgeted capital expenditure in the year 2015/16 was $1.3B which was increased to $ 3.11B next year. It was $3.35B last year and expected to cross $6B during the current year.

A recently conducted study by the Confederation of Nepalese Industries (CNI) on Infrastructure Investment Needs by 2030 estimates that there is an investment gap ranging somewhere between $ 81.51B to $126.55B for Transport, Energy, Urban Development and Water and Sanitation sectors alone. If we consider 20% labour component for urban development projects and 10% for other infrastructure projects, there will be a requirement of about one million workers only in these four sectors.

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We can clearly see two competing scenario in current state of investment in infrastructure. On the one hand, we have not been able to spend what we have allocated for in the public system consistently over the past years. Generally only about 70% of the planned capital expenditure is realized. Even the priority projects of national pride are far behind schedule. Only three out of 21 projects have reported satisfactory progress and only eight projects managed to achieve 80% progress last year (Republica, 2015). On the other hand, the allocation for capital expenditure is almost doubling every year.

Issues related to the availability of competent human resources is one of the key reasons for the Industry not being able to achieve the desired results. Current development in the Industry, with the adoption of latest construction materials and technologies, requires more qualified workers at their work places. This trend is going to go further with the passage of time. The TVET system should be able to adapt to this fast changing nature of workplace and impart the trainings accordingly so that the graduates are competent enough to deliver.

INDUSTRY'S CURRENT STATUS AND CHALLENGES

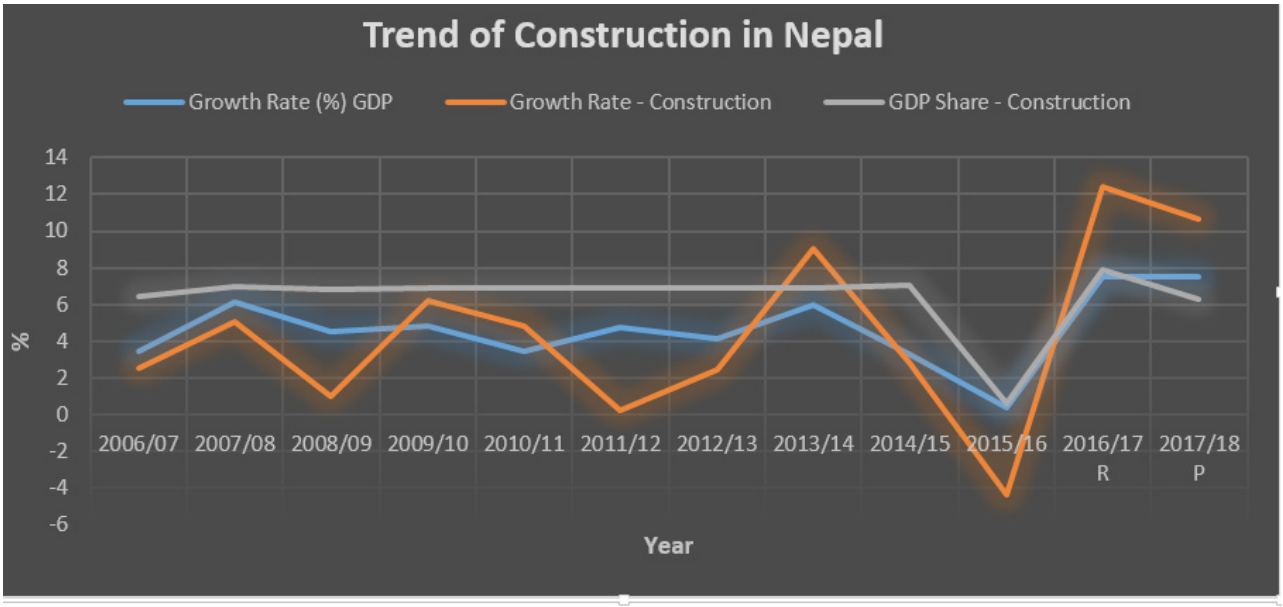

Figure 1: Trend of Construction in Nepal. Adapted from Central Bureau of Statistics (2017)

As indicated in the figure 1, the trend of construction industry growth has a positive correlation with the GDP growth rate. When the economy grows, construction grows with the higher rate of growth with the positive growth cycle and vice versa.

> A Survey of educations by the Mckinsey Center for Global Governance found that 72% of the institutions believed that their graduates were ready for work. However, only 42% of employers agreed
>
> Karina Veal, Partnering with Industry: Employer and Institute Linkages

The Industry is constantly confronted with the fact that the majority of the skilled and semi-skilled workers working in the industry are not suitably trained for minimum level of competencies that are required to accomplish their respective roles. Majority of them have learned their skills at work from their seniors and gained some level of experience over time. If this trend continues, industry is bound to suffer in several fronts. The cost associated to train a worker at the ongoing project site

is significantly high in terms of delays, rework, loss of productivity and inferior quality of the output. Eventually this causes delays and cost overruns for the project.

In addition, the Industry is facing severe shortage of the workers. Large number of workers trained by the training institutions and the Industry are leaving for overseas work, reaching almost 5 million.

CTEVT so far produced 54, 423 diploma graduates, 1, 77,680 TSLC graduates and tested the skills of 2, 74,400 people for all disciplines until 2073/74 (CTEVT, 2074). Out of these graduates, significant numbers are working abroad and other sectors. As compared to the Nepali working abroad and the domestic need in construction industry, these numbers are far from adequate.

Currently FCAN estimates that that there are about 1.5 million skilled, unskilled and seasonal workers working in construction industry. Looking at the need and the demand of capital investment in the country, the industry will require similar number of additional workforce to cater for the demand in the coming years.

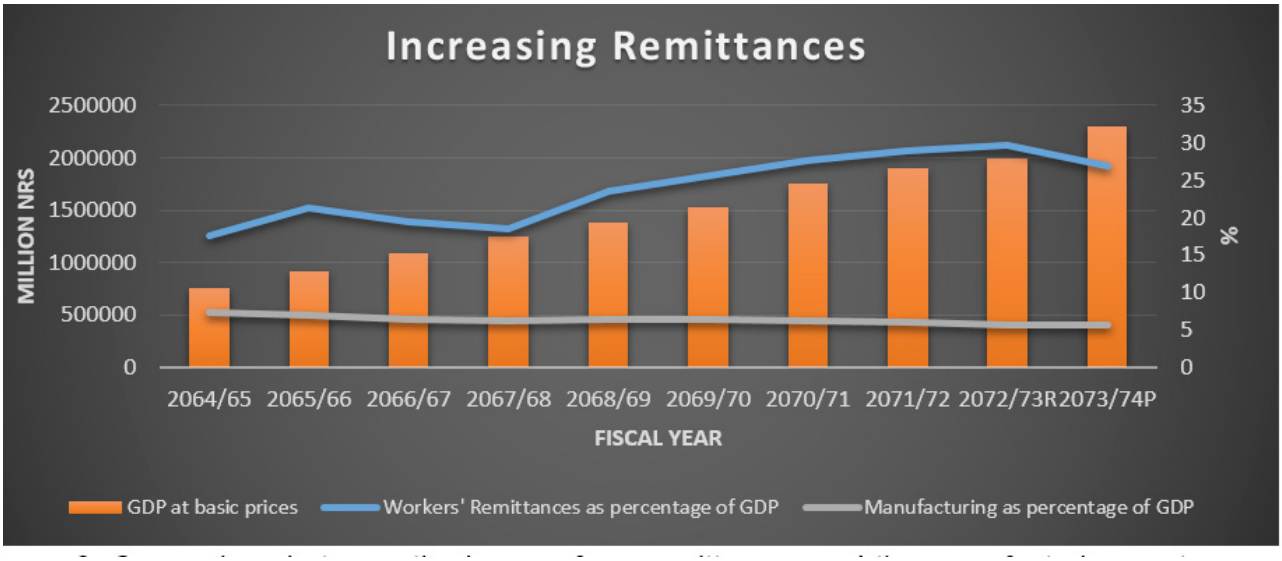

Figure 2: Trend of Construction in Nepal. Adapted from Central Bureau of Statistics (2017)

The data above shows that the trend of people leaving overseas for work is consistently increasing which is indicated by the increase in the remittances as percentage of GDP reaching almost 30%. On the other hand share of manufacturing industries has been consistently decreasing from 7.34% to 5.34% in the past ten years. People are still leaving overseas for work as there are little effort from the government trying to retain them at home. They are investing significant amount in preparing and attaining overseas work as compared to what they get. It is estimated that almost one year's income is what they invest while going abroad. In addition, there are other intangible social costs associated with this large number of youths working abroad for prolonged period of time.

People leaving abroad do not possess necessary skills and competencies for them to compete and excel in overseas working environment. They are often abused and exploited. Accident rates are also high and many of them are fatal. The reality is that the unemployed and semi employed youths are compelled to take up dirty, difficult and dangerous works abroad as unskilled labours.

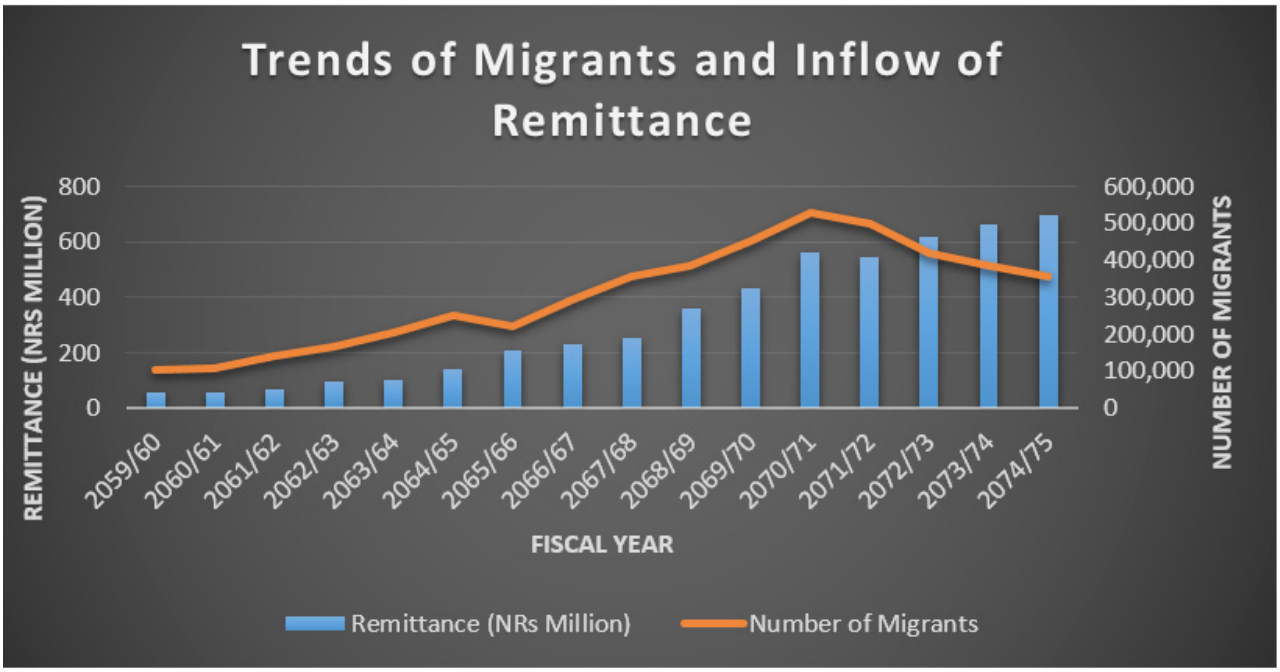

Figure 3: Trends of Migrations and inflow of Remittance. Adapted fromMinistry of Labour and Employment (2018)

Figure 3 shows that the number of migrant workers peaked at 2070/71. Although the number of people migrating for work is slightly declining, the amount of remittance is still in the increasing trend.

WAY FORWARD

It is quite clear that we need a radical shift in skill development with greater involvement of private sector in order to match the relevance of training to the need of the labour market. Industry would be willing to partner in the process of skill development if they see that they would be benefitted.

As it is demonstrated by various studies and researches that effectiveness of skill development programs increased when the soft skills, on the job training and apprenticeships with income earning opportunities are included in the conventional off the job technical trainings. Industries can play an important role in some of these areas.

At the policy level, employers can be engaged while developing and implementing the national strategies. There should be structured provisions of interaction between the industry and academia. This will enhance understanding of market need/demand of the skills and competences which ultimately will improve employability, productivity, efficiency and reduce investment of private sector to re-train their employees. This will also ensures the training organizations to track the performance of their graduates and get feedback for continuous improvement.

Industry can work together with the government to setup occupational standards that are required in the working environment and define level of competence to perform the designated tasks. They can also participate in sector specific skill development committees or similar body to add value to the training institutions' delivery.

It would be easier to engage employers at the implementation level. They can contribute in the industry specific soft skills training programs. In addition to the regular technical classroom training programs, on the job training program and apprenticeships can be included with the support of

the employers. Trainees will get benefitted by working in the real world of work with some level of income. Employers would be willing to participate as they can retain the talented trainees within their organization.

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ECUADOR CASE STUDY: THE DRIVERS FOR ENHANCING THE PUBLIC EMPLOYMENT SERVICE

Mr. Xavier Estupinan[1]

ABSTRACT

The Ecuadorian labor market has a dual segmentation concerning employment; the divide is mainly between formal and informal workers.

A well-orchestrated campaign of social security affiliation, the strengthening of labor inspection to enhance compliance on labor rights, and the creation of the public employment service "Red Socio Empleo" or RSE, have been essential factors conducive to improving working conditions and to facilitating access to employment opportunities.

The RSE developed a robust technological portal that brings online information about labor demand and skill requirements from different economic sectors. The report identified some key features that have been decisive for the results of the RSE over the last few years.

The robust technological platform of the RSE interconnects with other public institutions, which enables it to have quality information and provide practical solutions for job intermediation. It is also relevant for linking candidates with training courses that enhance the possibilities of employability.

Keywords: Labor Market, Red Socio Empleo (RED)

INTRODUCTION

Current labour market dynamics captured through the changing nature of jobs as well as the interaction taking place between demand and supply of labour are influenced by demographic shifts, technological development, the use of information, and public intervention, amongst other factors.

Employment services promote the efficient development, integration and use of the labour force (ILO, 2015a). So when the aforementioned services are provided to attend a public purpose in an articulated and planned manner, it may contribute to building active employment and labour market policy.

Depending on the scope and mandate of the public employment service, activities can include counselling, facilitating job matching, enhancing employability, addressing skill mismatches, enforcing of social assistance, and linking targeted groups of the population to employment and training programs.

Public employment services have become important channels for implementing employment and labour market policies. Job mismatch disparities can be shortened, through services which include access to labour market information, and through training and job intermediation.

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The Ecuadorian Government recognized the need to improve labour productivity and to focus on the supply of labour to meet the current and future demand of the employers. They devoted considerable efforts and resources to modernize the system of training and to create a national intermediation labour system.

This paper looks at the development of the public employment service in Ecuador since 2009 and identifies critical features within the system that have contributed to achieving better employment outcomes.

LABOR MARKET IN ECUADOR

At 4.1% in June 2018, Ecuador has one of the lowest unemployment rates in the region; however, time and wage-related underemployment, and the decent work deficit remain high at 19.4% and 56.4%, respectively, in June 2018 (INEC, 2018).

Main labour market indicators fluctuate due to changes in the supply and demand of labour. The unemployment rate has declined over the years (Figure 1), especially for the period between 2009 and 2014, registering the lowest figure for unemployment since the collection of data is available. Nevertheless, since 2014 the rate has increased slightly to 5.2% in 2016, and in the last two years, unemployment levels have not exceeded the 4.6% threshold.

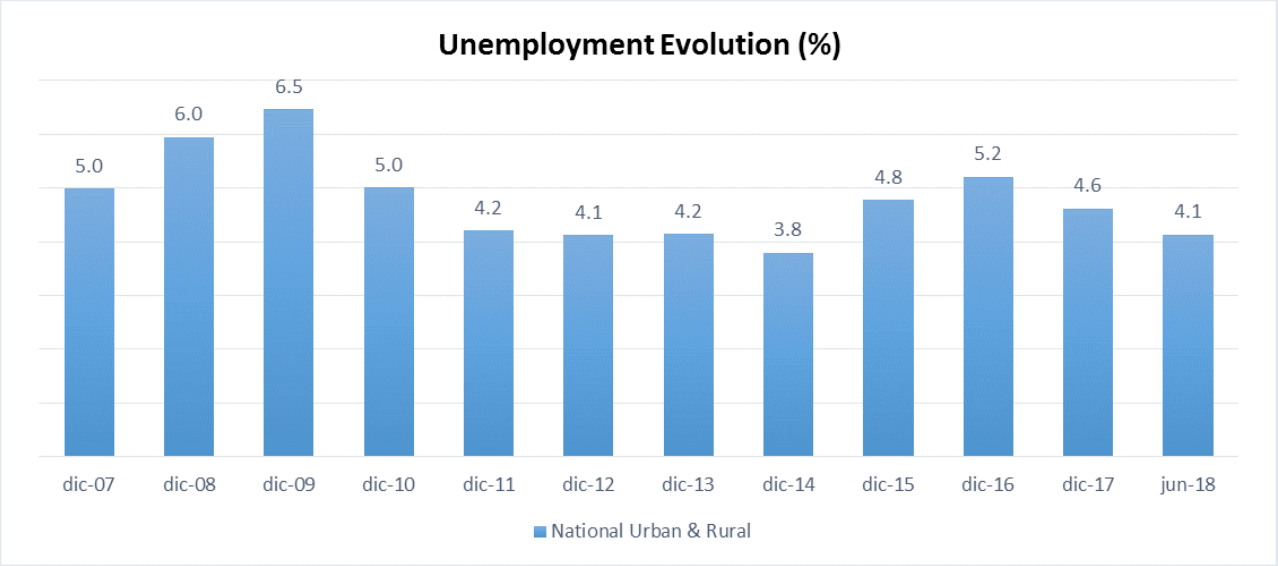

Figure 1. Evolution of Unemployment in Ecuador (in %). Adapted from INEC, Ecuador (2018).

High levels of informal employment and a surplus of labour supply turn our attention to the underemployment rate as a more relevant indicator of market dynamics that influence working conditions. The evolution of this indicator has been more sensitive to shocks in the labour market in the last ten years. The underemployment rate, similar to the unemployment rate, decreased from 18.2% to 9.0% between 2007 and 2012 (Figure 2). Since then, there has been an upward trend, and in June 2017 the rate reached its peak at 20.5% (INEC, 2018).

A relevant characteristic of the Ecuadorian labour market is the size of its informal sector. In 2016, the rate of employment in the informal sector was 43.7% of the total workers in the labour force (INEC, 2018).

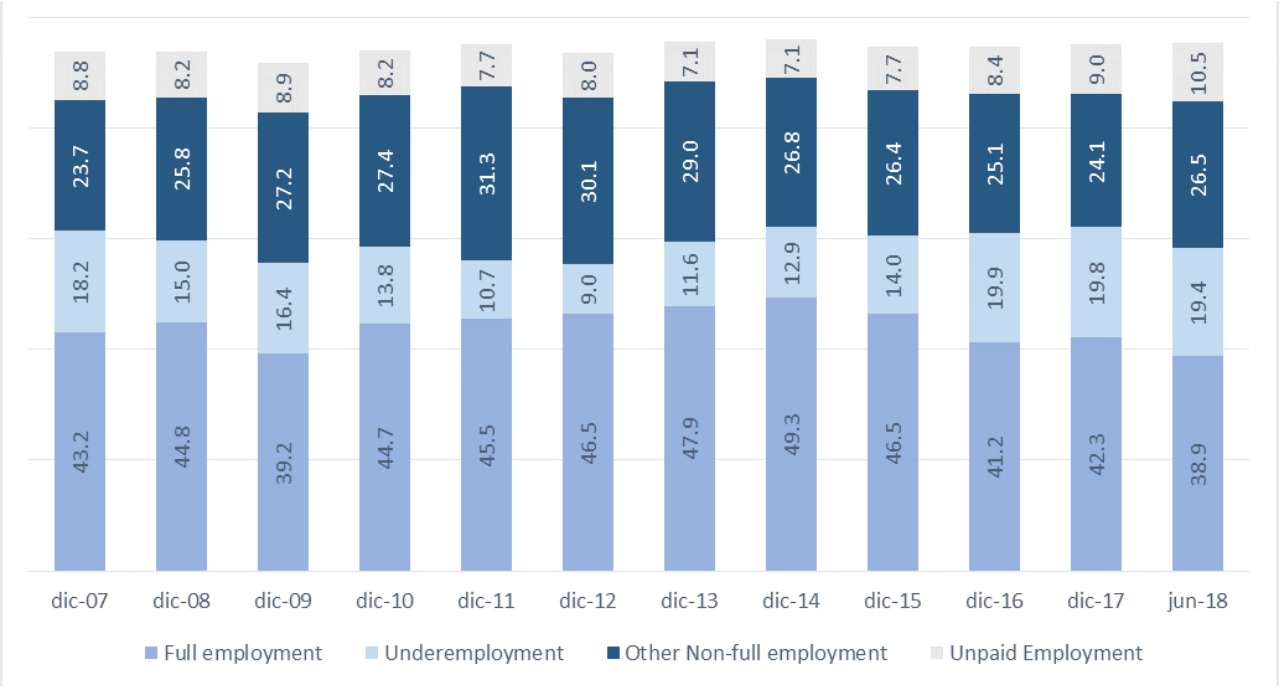

Figure 2. Unemployment, Underemployment and Other Non full-employment Evolution in Ecuador (in %). Adapted from INEC, Ecuador (2018).

Formal employment increased considerably between 2007 and 2015, reaching 50.5%. This is due to the expansion of social security coverage through higher levels of compliance. A well-articulated campaign of social security affiliation was underpinned on Labour Code reforms that eliminated the practice of hiring workers by the hour, and limiting labour outsourcing for specific "complementary activities" such as surveillance, security, catering, messaging and cleaning . Furthermore, Labour Inspections were strengthened to enhance compliance on labour rights and demanded that employers induct workers into the social security system. The 2011 referendum, approved the criminalization of the non-affiliation of workers to the Social Security. Also, mechanisms were set between the Ministry of Labour and the Social Security Institute –IESS- so that the registration of workers in the Social Security system had to be done according to the terms of employment. The registration enables only wage entries above the statutory minimum wage, /or the sectoral minimum remuneration, according to occupation or industry.

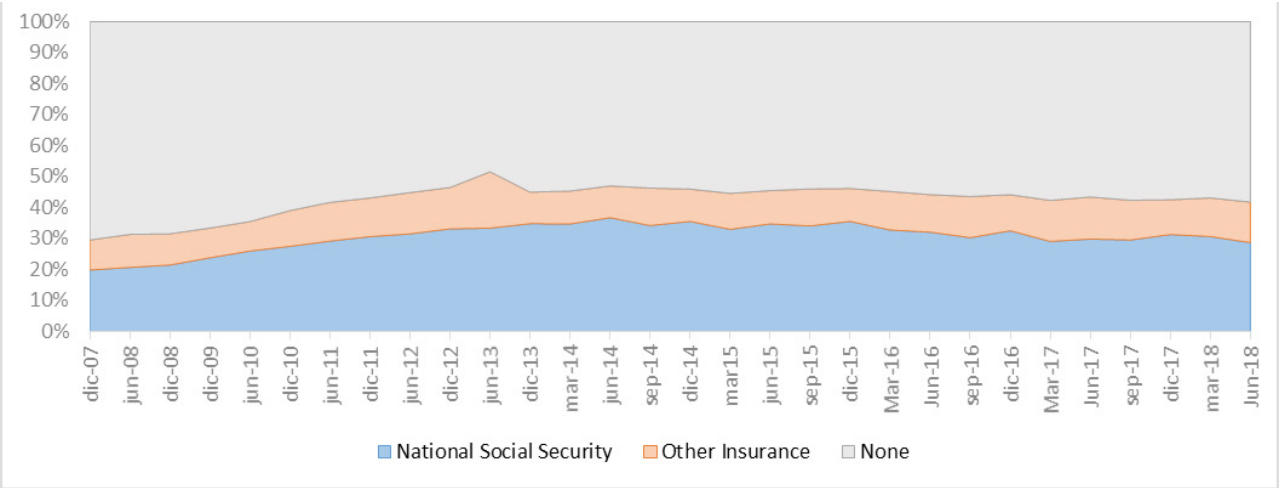

Figure 3. Employment Activities Under the National Social Security. Adapted from INEC, Ecuador (2018).

Through a process of formalization, workers with social security or other insurance mechanism have increased from 29.5% in December 2007, to 41.8% in June 2018 (Figure 3).

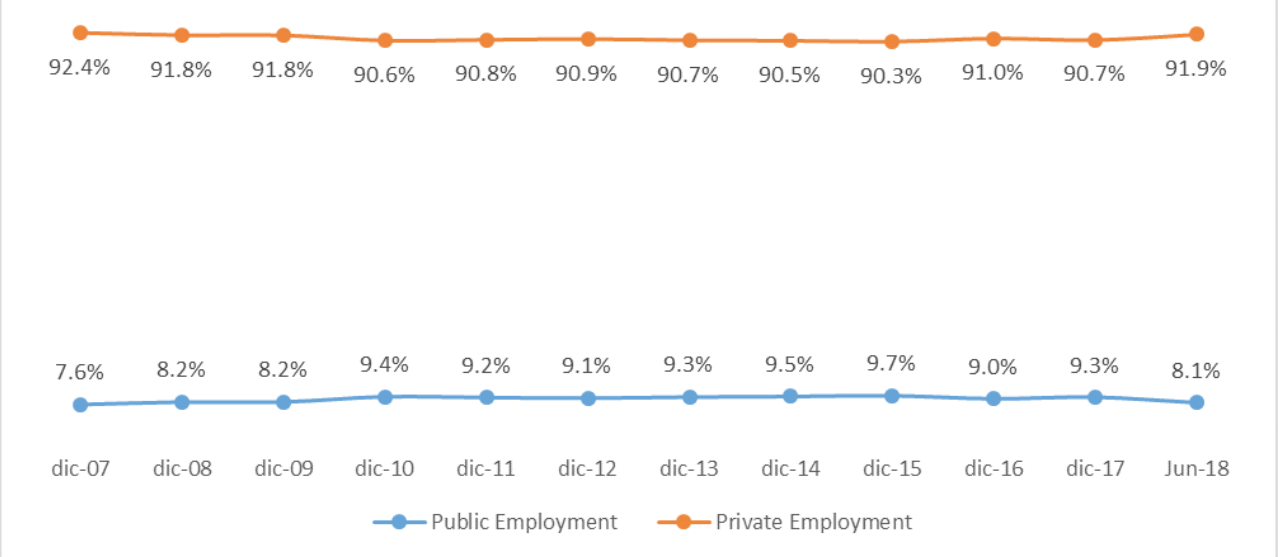

Figure 4. Share of Public and Private Wage Employment. Adapted from INEC, Ecuador (2018).

Concerning wage employment (Figure 4), data from INEC shows that since 2010 it is the private sector that employs 8 out of 10 workers, and 2 out of 10 workers are in the public sector.

Public Employment Service – "Red Socio Empleo" - RSE

The Public Employment Service – Red Socio Empleo RSE – was established as the Ministry of Labour's flagship programme. It later became part of the Vice Ministry of Labour and Employment to contribute in the "application of labour, employment and wage policies, to protect workers, empower the labour force and strengthen labour relations between employers and workers" (Ministerio de Relaciones Laborales, 2010).

In December 2009, the first agency opened in Quito, and during 2010 another 3 cities - Cuenca, Machala and Nueva Loja - inaugurated their establishments.

The Quito agency initially targeted a particular objective. It operated in a geographical area where construction workers gathered to be hired as casual workers (Ministerio de Trabajo, 2015). The conditions under which these workers offered their services were extremely hazardous, and dangerous. Other social problems such as drug addiction and alcoholism coexist, which further affects workers' precarious situation, highlighting the vulnerability of this group of workers.

These workers are self-taught, and they learn on the job. Many of them come from rural areas, and most have no educational qualifications.

The implementation of the RSE agency in Quito, and openings in other locations, also responds to the need to dignify job search conditions of these and other workers, through comprehensive assistance, employability through training processes, and finally linking them to employers or public construction linked to infrastructure investment.

The scope of RSE has expanded to cover all sectors and has become a vital intermediation channel for job seekers and enterprises. Partnerships with decentralised autonomous governments have improved the interaction with local enterprises and has helped identify mismatch gaps between

what the required skilled qualifications are and the profiles of local candidates that apply for these vacancies. RSE officials help candidates enrol in vocational skill training primarily from SECAP to enhance their employability in future recruitment processes.

The RSE also provides SECAP (Figure 5) with first-hand information on the types of qualifications that are highly demanded in the local context. The permanent feedback that the public employment service and the vocational training institutes have, enables them to provide services better addressing local skill requirements and also in reducing the job mismatch gaps found in the intermediation processes.

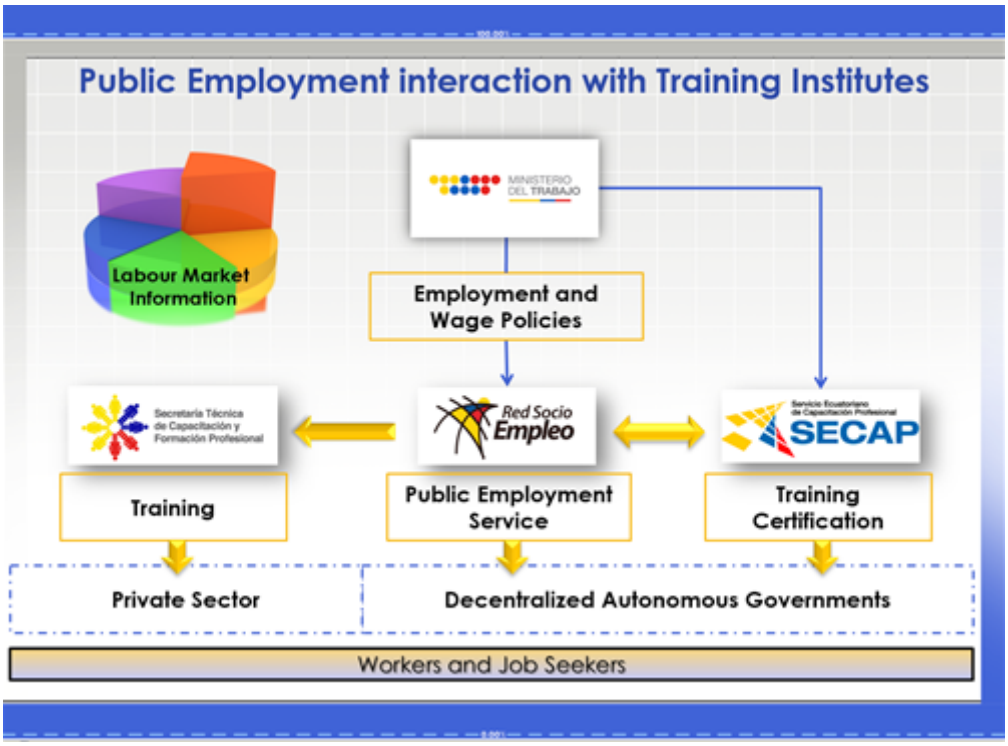

Figure 5. Public Employment Interaction with Training Institutes in Ecuador.

Since 2010 the network of offices has expanded rapidly at a national level. RSE has a presence in 22 Provinces where 25 offices (Figure 6) are operating, providing services such as labour intermediation and specialised training focused on the range of 80 vocational training courses from SECAP (2013).

RSE has a robust technological platform that helps to streamline the link between labour supply and demand. It can also identify the profile deficits of each economic sector, crucial information to better articulate training and education programs.

The platform combines different sources of information about job -seeking persons,

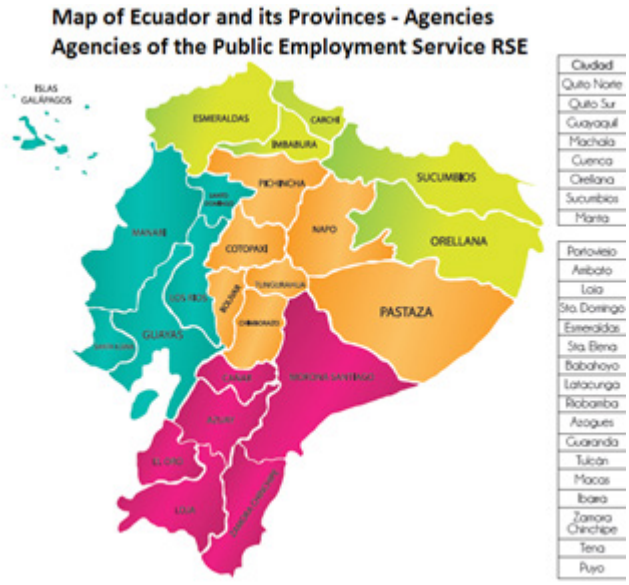

Figure 6. Agencies of the Public Employment Service in Ecuador. Adapted from Ministry of Labour, Institutional Strategic Plan 2015-2018.

to configure a complete profile of candidates. The platform has interconnectivity with different institutions such as the Tax Administration Institution (Servicio de Rentas Internas), Social Security Institution (IESS), National Directorate of Civil Registry (Direccion Nacional del Registro Civil), SECAP or the Secretary of Education Superior, Science and Technology (SENESCYT), and the Social Registry handled by the Ministry of Social Welfare (MCDS). The information that is cross-checked and validated provides transparency and helps offer different personalized services for those seeking work, according to their profile.

The Ministry of Labour promotes the RSE, which has become a direct, transparent and free link between the supply and demand of human resources in the country, providing various labour facilitation services at the national level. The Ministry has kept a two-pronged strategy. On the one hand it provides employers with a free service platform with access to Ecuador's human resources and on the other it helps job seekers to enhance their employability in the labour market through vocational training and the certification of labour competencies.

Since 2010, a series of events were organized in the cities of Quito, Guayaquil, Manta and Machala for employers' organizations and enterprises from the public and private sectors and other interested organizations. It was developed to present more detailed information about the RSE network and its services, and allows them to access the different profiles of the network's job board, through the web page www.socioempleo.gob.ec.

Various events and job fairs have been held in targeted districts where several people have been successfully placed in different vacancies registered on the website.

Critical joint ventures with Employers Organizations in Quito, Guayaquil, Manta and Machala, served to awaken the interest of companies and Chambers of Commerce of these cities, to participate in the aforementioned fairs, and to place their vacancies online at no cost.

There are various channels through which vacancies and profiles are advertised such as a national newspaper (El Telegrafo), web pages (Ministry of Labour, SECAP and IESS), Twitter and Facebook.

Some Results

Through the new technological interface, the RSE has information about the characteristics of labour demand. It also identifies how vacancies are filled and when a job-mismatch may happen.

From April to December 2013, 71,119 vacancies have been registered of which 60,699 correspond to the private sector. On an average, there are 3,028 job opportunities each month. Each job gets an average of 16 applications, which means that a total of 134,829 applications have been made to the aforementioned vacancies.

Through the system it has been possible to fill 24,242 of the requested applications and benefit 19,260 candidates (14%) in the period from April to December 2013, reaching effectiveness of 34% over the total vacancies.

In the construction sector, almost 80% of the vacancies were covered. In health, the placement deficit was of 97%.

In a process where an official intervenes by sending a shortlist and monitoring the recruitment practice, the effectiveness to fill the vacancy increases to 57%.

Labour Demand

Of the total offers, 16% come from the public sector, and 84% from the private. It has been identified that labour demand from the private sector comes from mainly five sectors: services (26%), construction (17%), marketing (15%), health (5%) and tourism (4%). Another 8% of vacancies come from financial services (2%), community activities (2%), technology (2%), mining & petroleum (1%) and transport & logistics (1%).

Of these, 70% of the vacancies are concentrated in 6 of the 24 Provinces (Pichincha, Guayas, Tungurahua, Manabi and Sucumbios). A good 65% of job offerings are proposed a month salary that ranges from USD 318 to USD 500. Another 24% offer salaries that go between USD 500 and USD 1,000 a month. A limited amount of vacancies (9%) have salaries that are above USD 1,000 a month.

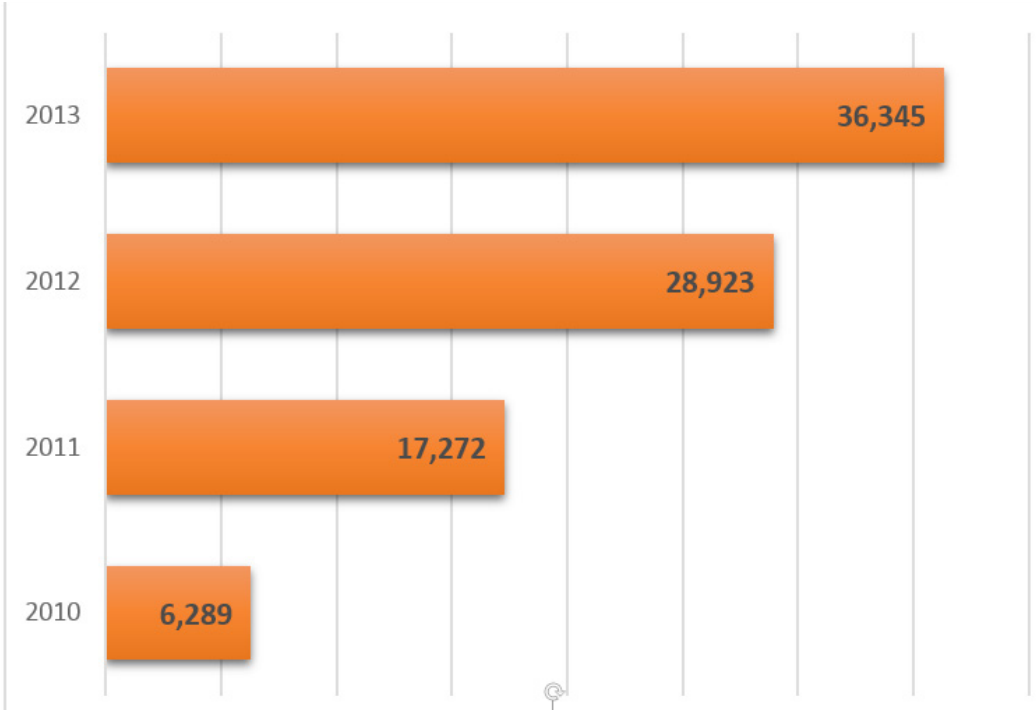

Figure 7. Job Placements in the RSE. Adapted from Red Socio Empleo, Ministry of Labour Ecuador (2013).

An important feature that has been identified through the system is that 71% of the vacancies require up to secondary school to participate in a recruitment process. Only 29%, of the vacancies, require higher levels of education. The efficiency for filling the vacancies is reduced as the requirement of education increases.

Organizational arrangements to promote the public employment services through municipal governments and other stakeholders such as Employers Organizations have played a crucial role in increasing the number of job offerings. On the other hand, the human resources and the use of technological interface mean higher job placements. From 2010 to 2013, there has been a substantial growth of effective job-matching process.

Key Features as drivers of the Public Employment service

The development of the public employment service and the capacity to achieve better results is underpinned by different features of the public employment policies that have influenced such outcomes.

Public Sector Labor Demand

The 2008 Ecuadorian Constitution, on the one hand, obliged the legislative body to approve the "law that regulates the public service" and, on the other, determined that "the law ought to define the governing body in matters of human resources and remuneration for the entire public sector" (Asamblea Nacional, 2008). For this purpose the Vice Ministry of Public Service was created in August 2009, dependent on the Ministry of Labour Relations (MRL). The objective of this dependency was the human resource restructuring of all central public institutions by the year 2012.

On August 2010, the National Assembly approved the Public Service Bill that aimed to promote the professional, technical and personal development of public servants, and to improve the efficiency of the State and its institutions, through the development of a human talent management system based on equal rights, opportunities and non-discrimination (Asamblea Nacional, 2010).

The new public service law (LOSEP) regulates the relationship of public servants with the State. It prioritized the development of the career focused on transparency and the vocation of service of the State and its institutions, in the exercise of the public function.

The general regulations of the law were issued in 2011. The regulation benefits not only public officials and employees but also users of the services provided by state entities. Also, it guarantees the rights of the public sector and banishes any form of labour informality.

In 2011 there were over 500,000 public servants with a wage bill of 6.4 billion dollars (Table 1). With the LOSEP, the only mechanism to access the public service was through a merit and opposition contest.

Table 1. Expediture and Public Servants, 2011. Adapted from the Ministry of Finance, Ecuador 2012 (Iacoviello, 2014).

Expenditure and Public Servants 2011			
Public Sector	**Civil Servants**	**Expenditure (USD)**	**% of total expenditure**
Public Enterprises	2,295	21,485,623.60	0.1%
Transparancy and Social Audit	5,884	154,939,465.20	0.6%
Executive	488,672	5,880,929,647.10	24.5%
Election	870	24,005,047.80	0.1%
Judiciary	9,083	273,391,953.60	1.1%
Legislative	1,117	38.835,913.10	0.2%
Autonomous Governments	2,509	21,804,254.50	0.1%
TOTAL	**510,430**	**6,415,931,904.90**	**26.7%**

For this purpose, the platform of the public employment service was the entry point for any citizen to register and apply for any public service position. Through the new public service structure, some features across state institutions have been corrected (Iacoviello, 2014). They are:

a) Labour regimes unified and wage inequality reduced in the public sector

b) "Golden salaries" disappear. Salary dispersion is reduced.

c) Minimum and maximum salaries established by constitutional mandate.

d) Market studies conducted to compare remuneration levels between public and private companies

e) Appropriate scales introduced and standardized across all state institutions.

These actions underpinned the public employment merit contests that were properly advertised and executed, to pull competitive profiles of workers from the private sector as well as from universities, to access these seats.

So the RSE was the first door through which citizens would register to have access to the public employment merit contests. Through this mechanism, more than 300,000 profiles were registered in the system from 2010 to 2012.

Additionally, public investment projects including major hydroelectric ventures were requested to channel their labour needs through the RSE. Through these interventions, the planned process of recruitment was carried out, mainly to identify local prospects that would meet the skill qualifications for these vacancies. If local candidates were not found, the search widened to locations nearby. In some cases, vocational training was made available in local districts to provide adequate skills to targeted groups in the local communities, especially women and youth.

Focusing on Construction and Domestic Workers

Construction has seen steady growth in the last several years, but this accelerated dramatically in 2011, with construction accounting for over 40% of the total GDP growth for the year (Ray and Kozameh, 2012). Construction sectors opened up jobs for unskilled workers and this was accompanied by a reduction in the salary gap between the skilled and unskilled workers.

Table 2. The share of Employment by Sector. Adapted from INEC, Ecuador (2018)

Sector	dic-07	dic-08	dic-09	dic-10	dic-11	dic-12	dic-13	dic-14	dic-15	dic-16	dic-17	Jun-18
Agriculture, livestock, forestry & fishing	28.5%	28.0%	28.5%	27.6%	27.9%	27.4%	24.8%	24.4%	25.0%	25.6%	26.1%	29.4%
Oil & mining	0.6%	0.5%	0.5%	0.6%	0.5%	0.5%	0.7%	0.8%	0.7%	0.6%	0.4%	0.4%
Manufacturing (including oil refining)	10.9%	11.3%	10.6%	11.1%	10.5%	10.6%	11.4%	11.3%	10.6%	11.2%	11.3%	11.1%
Electricity & water	0.6%	0.5%	0.7%	0.6%	0.6%	0.5%	0.8%	1.0%	0.7%	0.6%	0.7%	0.5%
Construction	***6.6%***	***6.7%***	***6.9%***	***6.5%***	***6.1%***	***6.3%***	***7.6%***	***7.4%***	***7.3%***	***7.1%***	***6.7%***	***6.5%***
Commerce	19.9%	19.2%	19.5%	19.6%	20.4%	19.9%	18.3%	18.9%	18.8%	19.0%	19.1%	18.0%
Hotels & food services	4.7%	4.7%	4.5%	4.4%	4.9%	5.1%	5.3%	5.5%	6.1%	6.5%	6.4%	6.3%
Transport	4.9%	4.7%	4.7%	5.1%	5.6%	5.6%	5.5%	5.9%	6.2%	5.7%	5.9%	5.7%
Communications	1.3%	1.3%	1.5%	1.3%	1.1%	1.2%	1.2%	1.2%	1.2%	1.0%	1.0%	0.9%
Financial	0.9%	0.9%	0.8%	0.8%	1.1%	0.9%	1.1%	1.0%	0.8%	0.6%	0.7%	0.7%
Professional, technical and administrative activities	3.4%	3.5%	3.6%	3.7%	4.0%	4.4%	4.6%	4.3%	4.5%	4.2%	4.5%	4.3%
Education, social & health services	7.3%	7.6%	7.5%	8.3%	7.9%	8.0%	7.6%	6.8%	7.1%	6.9%	6.8%	6.2%
Public administration (includes defense)	3.2%	3.6%	3.1%	3.5%	3.8%	3.7%	4.0%	4.4%	4.4%	4.2%	4.3%	3.6%
Domestic service	***3.3%***	***3.5%***	***3.4%***	***2.9%***	***2.3%***	***2.5%***	***3.1%***	***3.3%***	***2.7%***	***2.8%***	***2.5%***	***2.6%***
Other services	3.9%	4.1%	4.1%	4.2%	3.5%	3.5%	4.1%	3.8%	3.9%	3.9%	3.6%	3.8%
Construction + Domestic Service	10.0%	10.1%	10.3%	9.4%	8.4%	8.7%	10.7%	10.7%	10.0%	9.9%	9.2%	9.1%

Table 2, shows that from 2007 to 2018, the construction sector has employed 6 to 7% of the overall labour force. It is usually the construction sector that has a fundamental role in absorbing surplus labour from rural areas. Construction workers are mainly from rural areas, poorly educated, usually self-taught and employed in the informal economy, as temporary workers.

Historically the turnover of workers in the construction sector is high (ILO, 2015c), with the largest turnover being observed in the unskilled group, where almost all the workers change throughout the year.

Since its implementation, the public employment service, RSE concentrated efforts to provide adequate support towards construction workers. The attention to vulnerable groups of the population such as the aforementioned was focused to provide a physical and decent infrastructure to access job opportunities. Previously, construction workers would gather outdoors and sometimes in unworthy conditions to hope to get the attention of possible contractors (Ministerio de Trabajo del Ecuador, 2015). Besides, the RSE provides technical support and training opportunities to increase the level of employability.

As one of the most important policies for the reconstitution of workers' rights, the Ministry of Labour Relations advocated for the defense of the labor rights of domestic workers. These rights include the affiliation to the IESS (Ecuadorian Social Security Institute), payment of minimum wage (Salario Basico Unificado), paid overtime, annual vacations, a daily 8 hours of work limit, and the payment of legal allowances.

In addition to dignifying the work carried out by these citizens, a multi-year support plan was implemented for their professionalization. This entails free training through SECAP in different cities of the country, as well as the fixing of their basic salary, which is currently the same as for any other Ecuadorian worker.

Dignified Domestic Work Campaign

Domestic workers are considered to be one of the most precarious and vulnerable groups regarding working conditions. Thus, wages are the lowest, the working hours are unstable and are unregulated, and also, the rate of social protection coverage is historically meagre.

The Ministry of Labour, since 2010 established a single minimum wage for all workers, which includes domestic workers and artisans. After the minimum wage increase, a campaign was designed, to disseminate information regarding the obligations and rights of employers and domestic workers. Various channels were established to inform employers about the procedures to affiliate their workers, as other information to formalize the employment relationship.

Two hundred and sixty venues of information were set up in the main cities of the country, and close to 50,000 people were assisted by the Dignified Domestic Work Program, in the process of dissemination of rights and receipt of complaints about breach of obligations.

The second phase included labour inspections, which began in cities with the highest concentrations of domestic workers, such as Guayaquil, Quito, Cuenca and Ambato.

In 2010, The Ministry of Labour carried out 16,854 inspections of domestic work, which allowed an increase in social security affiliation and enforced labour rights.

In parallel, the RSE through the vocational training institution – SECAP-, set up a free training course for domestic workers on different topics including cooking, care and arrangement of the home, elderly and child care, necessary safety measures, first aid, management and prevention of risks; added value training that would almost professionalize domestic service.

The course, denominated "Home Organization", consisted of 3 modules (Home Organization, Care of Children and Elderly, and Kitchen Management).

The registration process for domestic workers in the SECAP courses was an articulated work between the Ministry of Labour and RSE, through different channels to encourage their participation.

The SECAP classrooms were adapted to have an appropriate environment for the completion of the courses that were free of cost and allowed more than 15,000 domestic workers to access this training and thus completion received a certificate of participation endorsed by the SECAP and Ministry of Labour. This document was incorporated into the resumes of the participants who were registered in the RSE and served as a reference for future recruitment processes.

The ample database of certified domestic workers has enabled RSE to facilitate a process of filling up job vacancies. Not only does this address an appropriate profile for the job but it also looks into the nearest geographical area, or even identifying if transport is available for the domestic worker to reach the workplace within an appropriate time span.

Vocational Skills and Certification

Skilling Institutions

In addition to formal education, the State offers several options for non-formal continuing education programs for youth and adults. The Ecuadorian Vocational Training Service (SECAP), provides training at the national level, some of which is aimed at specific professionals.

While the Technical Training Secretariat (SETEC) designs competency-based study plans and coordinates training with accredited providers. SECAP is the main public training agency which is affiliated to the Ministry of Labour, and a natural partner of the RSE.

The Ecuadorian training system has gone through a modernization process to improve the adaptation between the labour supply and the demand for work. In 2007, the National System of Training (SNC) brought together two institutions, the Council of Training and Training (CNCF) and SETEC. The former was in charge of designing the training program, and the latter dealt with the financing and accreditation of suppliers (World Bank, 2014).

One-third of the funds of the SETEC comes from budget allocations of the State for training priority identified groups. These groups, usually vulnerable groups of workers, are trained through the SECAP. Meanwhile, two-thirds of the funds are assigned to training for the rest of the labour force, as well as for research, impact evaluation and the competence certification system (World Bank, 2014).

In 2013, SECAP focused its actions on three areas of training: For the Non-marginalized groups: 57,876 participants, Marginalized Groups: 91,293 participants, and Civil Servants and Public Workers: 9,662 participants (Ministerio Coordinador de Producción, Empleo y Competitividad, 2014).

In 2016, the SECAP program offered courses and workshops in different academic areas such as nursing, accounting, computing, electronics, automotive mechanics, electricity, sales, and administrative activities. The duration of the courses ranges from 60 to 590 hours. Candidates obtain a certificate accredited by SECAP and endorsed by the Ministry of Labour.

SECAP is also responsible for the labour competency certification system. The Ecuadorian Vocational Training Service -SECAP- is promoting the certification process for Labour competencies, which allows workers to obtain an official endorsement of the knowledge, skills, abilities and aptitudes they apply to their jobs.

To carry out this process, SECAP was accredited before the SAE as a certifying body of persons for Labour competencies, under International Standard ISO: 17024, in March 2013 (SECAP, 2015). No other institution in Ecuador develops this activity, maintaining international standards.

Certifications profiles are already available for the following: civil construction – builder, carpenter, operator specialized in housing maintenance, construction worker in concrete and prefabricated concrete, plumber, supervisor of civil works and welder.

Workers who apply for certification are summoned to take a theoretical test and a practical test in which they demonstrate their knowledge and skills. When the applicant passes these evaluations, he or she becomes a creditor to the document, which is registered on the web portal of the SENESCYT and RSE. The certification process is valid throughout the national territory and validates the knowledge and abilities of workers.

RSE has been able to be the link between job seekers and the different training programs available in SECAP, to improve the potential employability of candidates. The certification in different labour competencies has also improved the vacancy placements. Many employers prefer to hire workers with certification of their competencies concerning workers who state that they are capable of doing the job.

Inclusive approach workers with disabilities

The Ecuadorian Labour Code determines that the public or private employer, with a minimum number of twenty-five workers, is obliged to hire at least one person with a disability, in permanent jobs. These jobs need to be appropriate concerning their knowledge, physical condition and individual skills; observing the principles of gender equality and diversity of disability. As of 2009, the compulsory percentage of hiring people with disabilities is 4% of the total number of workers in a company.

Article 64 of the Organic Law of the Public Service (LOSEP) establishes that for those institutions with 25 workers or more it is mandatory to hire or appoint 4% of people with disabilities or with terminal illnesses (Asamblea Nacional, 2010).

The Ministry of Labour encourages compliance and, carries out inspections through the Labour Inspectorates and Regional Labour Directorates at the national level, in coordination with the Disability Unit, to guarantee the rights of workers with disability in accordance to the law.

On the other hand, it is the Disability Unit, also provides support both at the public and private levels for the labour insertion of persons with disabilities. For the latter RSE has become an essential partner for the Ministry. The public employment service is the link for public and private enterprises to find the specific profile of persons with disabilities for inclusive placements.

The Disability Unit coordinates plans and organizes activities for job seekers and workers with disabilities. Besides, it is a friendly space where workers with disabilities and employers can go to meet their work expectations.

According to the Ministry of Labour (2014), in Ecuador, there are 394,465 people with disabilities, of which 107,422 are part of the economically active population (EAP). If we take into account people with disabilities inserted into the Labour market (80,381), it means that 74.8% of the total number of people with disabilities who can work was absorbed into the Labour market, while 25.2% remain looking for a job.

The provinces with the highest number of people with disabilities absorbed in the workplace are Pichincha with 27.1%, Guayas with 23.8%, Manabí with 9.9% and Azuay with 8.2%. RSE has also strengthened its capacity in these geographical areas to provide better services. Some of the offices already have a disability expert who provides specialised support, to facilitate recruitment processes.

Employment Programs for Youth

The design of employment programs also constitutes appropriate mechanisms to link potential candidates to private and public labour demands. The program may have better output through a planned process involving partners such as the public employment service.

Over the last few years, the Ministry of Labour has been the main advocate to promote the youth employment policy, through decent working conditions and equal opportunities. For this purpose, the program "My First Job" – "Mi Primer Empleo", provides opportunities for youth involved in higher education by helping them access internships in the Private Sector and pre-professional practices in the Public Sector. This first job assignment provides pre-professional experience and enhances employability opportunities in the labour market for the youth.

From 2007 to 2017, 15,884 young people have benefited from this program; and for the period 2018 - 2021, the project aims to employ approximately 29,000 young students nationwide: 19,000 through internships in the Private Sector and 10,000 in pre-professional practices in the Public Sector .

In 2013, a pilot helped marginalized adolescents with only secondary education by providing them with technical skills through a training program with SECAP. These programs were linked to predetermined job vacancies in the private sector.

A workshop took place inviting essential firms who had used the RSE as a mechanism to fill in their vacancies, as well as other large and medium firms from similar sectors of those who had already used the public employment service. The objective of the workshop was to identify two of the highly demanded profiles and address the constraints that take place after the recruitment process ends. Following these interactions, a training program was customized and developed by SECAP for young people and adolescents, which included two alternatives vocational technical skills and also soft skills. The program developed a training course for soft skills trainers to technicians of the Ministry of Labour.

The soft skills program designed by SECAP trained 230 young people and adolescents, allowing them to put into practice the principles and values from a social, personal and group point of view, applying key tools to manage and resolve labour inconveniences efficiently.

Following the soft-skill training young people have the opportunity to be prepared in a technical area among the two selected programs: Assistant in Sales or Warehouse Assistant manager. Both programs aimed to develop skills and abilities for labour competency and jobs in these areas.

The curriculum was developed in-house, and both the designs for the programs of Soft Skills and Technical Skills started from an educational and pedagogical model to respond to a basic approach in labour competencies.

The competency-based curricular design is understood as a process by which the content of the training is determined, based on the detected needs of the labour system. The curricular design includes the curricular structure, performance criteria, methodological strategies, resources and

evaluation criteria (SECAP, 2013a, 2013b, 2013c). This curricular design is a standard at the institutional level, based on the needs and requirements of the country.

Through the youth and marginalized adolescents program, of the overall 231 participants, 213 passed the soft-skills course; 87 participants passed the Warehouse Assistant manager course, and 120 the Assistant in Sales course (SECAP, 2013d).

Most of the participants were linked to a recruitment process that was previously coordinated with the RSE, and 38% of the candidates filled in the vacancies. The whole process was documented, and the results show an effective way to work with vulnerable groups. One valuable lesson learnt is that not all participants had the same level of knowledge. Some struggled through the course due to lack of basic writing ability and simple arithmetic calculations. For future programmes it is recommended that a preliminary test could provide necessary information on the participants' level of basic knowledge.

Technological Features of the Platform

The RSE has developed a robust technological platform that works as a web application. This means that there is no need for installing an application, and to access it, you only need an Internet browser. There are three different interfaces for the user: 1. The job seeker module 2. The enterprise or job offer module and 3. The public employment official module.

Job seeker module

For candidates who seek a job, the system requires basic personal information. There are many built-in characteristics of the system that ensure that the information is trustworthy and reliable for all users. In fact, since 2010 the system is connected to the General Directorate of Civil Registry (Direccion General del Registro Civil) making it possible to obtain names, family name, date of birth, gender and updated marital status, upon entering the national identification. This process that seems very simple has helped with verification of all the users in the system and has reduced the risk of false identity.

The system also requires one to specify if the worker has any competency or ability based on experience and if he or she has had formal education. The system is also interconnected with Senescyt - Secretary of Higher Education, Science, Technology and Innovation; which validates if the candidate has any record of higher education degree. Training courses are also seen as an essential component to take into account. Any training provided by the Ecuadorian Vocational Training Service – SECAP also appears automatically in the candidate's profile. Therefore formal and non-formal education become important features for the job matching processes.

Other elements could be listed, but the one that deserves to be highlighted is that of positive or affirmative actions. The aforementioned actions that are referred to as reservation in other countries provide an advantage of access to certain groups to a percentage of government jobs. In Ecuador this is mainly for ethnical minority groups, returning migrant or persons with disabilities. It is, therefore, possible to facilitate the access to specific job positions if these profiles are proved to be part of these prioritised groups.

Once the minimum percentage of information is completed, the candidate or job seeker can start applying for job offers that are placed in the system.

Job Offers module

One of the challenges of Public Employment Services is to have a permanent number of vacancies either from the public or private sector, to be advertised through its system.

The increasing number of vacancies has been a process of awareness-raising through the employers' organization, media coverage and also due to the effectiveness of intermediation that has improved over the years.

The RSE through its technological interface has also evolved and provides different types of services to employers who either require candidate profiles urgently or need to initiate a recruitment process to hire qualified workers.

For any of the aforementioned requirements, the RSE has set four available services that an employer may access:

1. Publish a job offer
2. Request immediate 10 profiles that match the job description
3. Request an RSE official to select 3 candidates that match the job description
4. Request a recruitment process, with a schedule for interviews and test applications – only for public enterprises

The employer can make use of any of the services free of cost. Nevertheless, if the employer needs to make use of a new requirement, he or she must provide feedback on the results of his or her recruitment process. This guarantees a better understanding of the intermediation process. It helps identify if job matching was effective or if the there are any flaws in the system.

If feedback is not provided by the employer, he may not continue using more services. If within a month there is no response from the employer; an RSE official contacts the enterprise to seek the respective feedback or provide support if needed.

The RSE validates the profiles that the employers get, and through cross-checking procedures, it provides transparency and prompt response to the labour demands. As a result of an in-depth analysis, the RSE also has a monthly report on the level of job mismatches and the identification of sectors where vocational training has effective influence on employability. Other reports can also help identify if training has little influence regarding employability, or where more research is necessary to explain if other factors must be taken into account to improve job insertion.

Nevertheless, the technological interface has helped keep records to facilitate workers access different job opportunities and to optimize resources to address vulnerable groups and to improve their level of success as they apply for public or private vacancies in the labor market.

CONCLUSIONS AND RECOMMENDATIONS

Public employment agencies have a range of services and characteristics, which can contribute to building active employment and labour market policies. Ecuador has a relatively young employment service that has evolved over the last ten years, buttressed by the 2008 Constitution and the National Plan 2013-2017.

Coordinated institutional strategies and actions have increased the rates of formal employment especially from 2007 to 2015. Amongst these actions, there are ones carried out by the Ministry of Labour, the public employment service and Ecuadorian vocational SECAP, which have contributed to increasing the intermediation between supply and demand of labour, involving the use of technology.

The RSE increased the number of job placements from 6,289 in 2010 to 36,345 in 2013. Apart from the rapid expansion of agencies at a national level, many features have contributed to the increase of job intermediation and usage of the public employment services of the RSE, these include:

1. The approval of the Organic Law of the Public Service – LOSEP - that regulates the relationship of public servants with the State to provide an efficient public service to the population. The competition to access the public sectors vacancies had to be filled via registering through the Public Employment Service, RSE. The initiative provided the RSE with a stock of qualified workers' profiles which also participated in recruitment processes in the public and private sector.
2. The RSE focused attention on two groups of marginalised workers that represent a 10% share of total employment: domestic and construction workers. For both these groups a planned strategy was designed to advocate their labour rights and provide them dignified work opportunities, which would include affiliation to social security, and access to training or labour competencies certification.
3. The access to free vocational training and labour competence certification has contributed to upskill workers and to close the skill gap.
4. The Labour Code stipulates that enterprises with more than 25 employees must fill at least 4% of staff positions with persons with disabilities. This requirement has enabled RSE to specialise in the recruitment process for people with disabilities. Currently, the Unit of Disability of the Ministry of Labour works closely with the RSE to provide the adequate candidates to access the vacancies published in the public employment system.
5. From 2007 to 2017, 15,884 young people have benefited from the youth employment program, denominated "My First Job". Many of the candidates were selected from the RSE database and participated in the process to access pre-professional practices in the Public Sector. The project has expanded its scope to the private sector through internships and hopes to reach and benefit 29,000 young students for the 2018-2021 period.
6. The technological platform of RSE is a crucial feature to provide transparent and effective intermediation between job seekers and employers. Its interconnectedness with other institutions facilitates the quality of information and gives practical solutions for reporting and monitoring processes of recruiting workers and linking candidates to training courses to enhance the possibilities of employability.

The labour market in Ecuador has more than 50% of underemployment, and since 2012 it has somehow deteriorated. The improvement of working conditions and the creation of jobs is still one crucial challenge that has to be addressed through sustainable growth and a development process that shapes the structural transformation of employment.

Meanwhile, the public employment service RSE should continue to promote the efficient development, integration and use of the current labour force with efficient tools and services.

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GRAVITY OF TVET TOWARDS ACHIEVING SDGS IN NEPAL

Mr. Baikuntha Prasad Aryal[1]

ABSTRACT

As Nepal is moving ahead towards the 'Prosperous Nepal and Happy Nepali' through maximizing the human capital by equipping them with appropriate knowledge, skills and attitude for gainful employability, entrepreneurship and livelihood development. TVET has considered as crosscutting endeavor for achieving the SDGs in Nepal with ensuring equity, right and justice in opportunity and efficiency and effectiveness of the program. The paper starts with highlighting the national context including TVET development in Nepal, its governance modalities and curricular context. In the same way, major issues and challenges of TVET has analyzed with the lens of national priority and the principle of SDG. Finally, an appropriate way forwards in achieving the SDG have also been listed out with its modalities. It is believed that the paper will be able to be a reference to understand the past, present and the future of TVET in Nepal.

Keywords: SDGs, TVET, Nepal

INTRODUCTION

Nepal aspires to emerge as an inclusive, equitable, and prosperous middle-income country by 2030 with the spirit of welfare state envisioning an inclusive society and economy, leading to a prosperous nation (NPC, 2017). The country's vision has been set in line with the Sustainable Development Goals (SDGs), which are well accepted as universal call for actions to end poverty, and ensure that all people can enjoy peace and prosperity through the improvement of their life in a sustainable way. Technical and Vocational Education and Training (TVET) has been recognized as a driving force for socio economic transformation of the nation, and is therefore accordingly reflected in the formulation of Goal 4 and Goal 8. The SDG4 is a goal of "ensure inclusive and quality education for all and promote lifelong learning" enforce the right based education with equity, inclusiveness, and quality in both formal and lifelong learning. With regard to TVET, SDG 4, calls to ensure equal access to TVET programs, to substantially increase the number of youth and adults with relevant skills for employment, decent jobs and entrepreneurship, and to eliminate gender disparities in education. Similarly, SDG8 is a goal of "promotes inclusive and sustainable economic growth, employment and decent work for all" further emphasizes the priority on TVET as a means to increase the quality and skillful human resource for the world of work and sustainable livelihood. Thus, it is quite crucial to enhance the TVET sector with maximizing its potential to contribute not only for the achievement of SDG 4 and SDG 8, but in a broader way, all SDGs in the context of promoting sustainable economies and overall prosperity.

DEVELOPMENT OF TVET IN NEPAL

Vocational training in Nepal was introduced during Lichhavi regime as part of traditional occupations (MOE, 2012). History shows that the scope of skills-oriented occupations further extended and

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developed into enterprises after Rana regime in the early 20th century. This included the country attracting technical expertise from abroad to support skill development to further professionalize its technical workforce, such as architects that were invited from England to train the Nepali masons and carpenters in order to meet the demand of the nation (ibid.). Nepal introduced vocational skills within the education sector after the initiation of multi-purpose schools in 1960 (MOES, 1997) though the Technical Training School (now renamed as Pulchowk Engineering College) that was established in 1942.

In order to responding the rapid change in technology and the impact this had in the job market as well as perusing access of TVET to all, the Government of Nepal established Council of Technical Education and Vocational Training (CTEVT) in 1989 based on CTEVT Act. The CTEVT was provided with a mandate of overseeing functions of TVET. Subsequently, the CTVET Regulations sanctioned in 1993permitted the private sectors were permitted to run schools and training centers in Nepal with the aim of meeting demands of people on access to TVET (CTEVT, 2017). As a result, there are currently 34 constituent institutes including polytechnics,185 technical schools with ITechnical Education in Community schools (TECS) programs and 429 affiliated training institutions running the long term program where as 650 short term training providing private institutions are affiliated by CTEVT are also functioning (CTEVT, 2017).

Furthermore, technical education was introduced in tertiary level in 1999 with the establishment of Pulchok Engineering campus. As of today, technical higher education is provided through several institutions under Tribhuwan University, which are; the Institute of Agriculture and Animal Sciences (IAAS), the Institute of Medicine (IoM), Institute of Engineering (IoE), the Institute of Forestry (IoF), and the Institute of Science and Technology (IoST) under Tribhuwan University. In the same way, A significant number of technical education campuses are operated under these institutions, as well as a separate university that is established in the field of agriculture and forestry and other technical universities are in the process of being established.

EFFORTS IN TVET STRENGTHENING IN NEPAL

Policy initiatives

The constitution of Nepal has envisioned the prosperity and sustainable development of the nation through good governance and partnership with the private and cooperative sectors for the socialism oriented economic objectives in order to ensure economic equality, prosperity and social justice through the independence economic growth (NLC, 2015). The constitution of Nepal has also recognized education, and within that technical, vocational, and skill based programs, as the main strategy to generate the employment opportunity in the country (ibid). The Government of Nepal has developed the Technical and Vocational Education and Training Policy in 2012, with the objectives to expand the opportunities of TVET as to prepare the capable, efficient, competitive and efficient human resource for the economic development of the country. It also has put policy in place to guarantee of access to quality TVET through inclusion, national vocational qualification framework, and identification, protection, promotion and development of the traditional skills (MOE, 2012).

The14th periodic plan of the nation (NPC, 2016) has also given the priority in transforming the nation to middle income country by 2030 from the competent, entrepreneur, innovative human capital. For that the plan has emphasized on the quality vocational and technical education with its expansion and also taken the cost sharing and cost recovery approaches for the easy access in TVET. In this regard, the SDGs provision that by 2030, all women and men will have the access of the quality technical and vocational education and all adults have the access in relevant vocational knowledge

and skills has also given the policy guidance for the development of the TVET sector in Nepal (UN, 2015). Moreover, the provisions mentioned in the National Agriculture policy (2004), the Labor and employment policy (2005), the Nepal Tourism Policy (2008), the National Youth Policy (2009), the National Cooperatives policy (2012), , and the Trade policy (2016) are also given the policy guidance to enhance the TVET sector in Nepal.

School Sector Development Plan (SSDP; MOE, 2016) aims to strengthen technical and vocational education (TVE) in secondary schools from grade nine to develop qualified and technical human resources by strengthening technical and vocational subjects in secondary schools to improve access, equity, and quality and relevance of secondary education by introducing and exposing children to vocational and technical education programs that facilitate the school-to-work transition. To ensure readiness for students when engaging in these subjects, pre-vocational subjects have been introduced in grade 6-8.

Governance and management

For the management of TVET in Nepal, the 1989 CTEVT act provisioned an assembly and establishment of the CTEVT. Both the assembly and the council are responsible for formulating TEVT policies, coordinating TEVT providers, assuring quality in TEVT, and facilitating to implement all types of TEVT programs that would produce skilled workforce required to bring changes in existing socio-economic situation of the nation (NLC, 1989). For the coordination with TEVT actors, the government has formed TVET Policy Coordination Committee (PCC), which includes representatives from the private sectors as well.

Institutionally, In the public sector, the CTEVT, the Department of Cottage and Small Industries (DCSI), the Nepal Academy of Tourism and Hotel Management (NATHM), and the Vocational Skills Development Training Centers (VSDTC) are the major players in providing skill training. Likewise, the Federation of Nepal Chamber of Commerce and Industry (FNCCI), the Federation of Nepal Cottage and Small Industries (FNCSI) and other independent training providers under private sector are involving in the management of the skill-based training in Nepal.

Similarly, the projects like Skill development Project supported by the Asian Development Bank (ADB), Employment Fund (EF), the National Vocational Qualification Framework (NVQF), and ENSSURE supported by the Swiss Development Cooperation (SDC), and the Enhanced Vocational Education and Training (EVENT) project supported by World Bank, TVET PPP supported by European Union and implemented by British Council, SKILL supported by UNDP have also been contributing to providing technical and vocational education and training by mobilizing both public and private sector technical training providers. There are also some other agencies such as Poverty Alleviation Fund (PAF), Non-Government Organizations (NGOs), and International Non-Governmental Organizations (INGOs) that offer technical and vocational training according to their respective institutional objectives. There are 12 ministries, including the ministry of Education Science and Technology (MOEST) and Ministry of Labor and Employment and Social security (MOLESS), which are involving in TVET program in Nepal.

As mentioned earlier, a separate TEVT stream in secondary schools has been introduced since 2013 to facilitate expansion of the TEVT opportunity to wider segment of youth population in Nepal. The purpose of a separate stream in secondary school is to prepare student for work and also open up opportunity for advance education in the area they are being trained. There are all together 284 community schools that are running TVET stream (DOE, 2017). School management committee are made responsible for the overall management of these school.

Furthermore, The Training Institute for Technical Instruction (TITI) was established in 1991 to produce technical instructors to meet nationwide training needs of technical, managerial human resources and curriculum developers of TEVT sector. For the testing of the skills, one major activity of CTEVT, National Skill Testing Board (NSTB) has been established which develops National Occupational Skills Standard from elementary level and level one to four (CTEVT, 2017). Moreover, technical higher education institutions are providing technical education on cost sharing and cost recovery approaches.

Program interventions

Globalization and technology simultaneously have compelled to all nations to adopt innovative TVET programs and interventions to compete in the world of work. Basically, TVET in Nepal has been supplied in two ways (CTEVT, 2017); (a) long-term technical education, and (b) short-term vocational training. These programs have been delivered through both public and private sectors with ample focus on principles of equity, inclusiveness, quality and the importance of lifelong learning as the integral parts of TVET. Basically, preparing and developing middle level human resources through a 3- year diploma program, technical education in community school (TECS) and technical stream in community school, and production of junior technicians and middle level technicians from other ministries are the major program interventions. In addition, universities have also been engaging to produce high-level technical human resources. As hands-on knowledge has been regarded as a means of poverty reduction, a multitude of short-term skill training provisions have been made available across the country.

The participation of poor, marginalized, women, Dalits, indigenous ethnic groups, Madeshi Muslim, people with disabilities and geographically disadvantaged people in TEVT and skills development programs has been increased through the provision of scholarship and promotional packages offering from CTEVT. Annually, the CTEVT produces more than 50,000 skilled human resources. In addition, recognition of prior learning, informal learning and life-long learning are being implemented as new programs through CTEVT (CTEVT, 2017).

The Vocational and Skills Development Training Center (VSDTC) under Ministry of Labor, Employment and Social Security (MoLESS) offers short-term training for about 20,000 youth per annum through its 16 wings located at different parts of the country (CTEVT, 2017). Similarly, Ministry of Industry, Commerce and Supplies deals with the trainings related to different occupational areas. More than 600 private training providers have been providing both short-term and long-term trainings. The expansion, integration, quality, relevance and coordination of TVET provisions have been addressed by mobilizing both public and private sectors. Despite these efforts, a few thousands, about annually 140,000 of youth (MOE, 2017), have an opportunity of acquiring skills compared to 500,000 youth enter into the labor market every year in Nepal (ibid).

TVET and sustainable goals

According to UNESCO (2013) TVET is an incredibly diverse sub-sector of education and training. It is an important tool for a country's social and economic advancement. It offers an alternative educational path for youth and adults who wish to grow professionally, and at the same time provides qualified manpower needed across all sectors of the economy. The purpose of TVET is to provide knowledge and skills required in the world of work. Effective TVET policy must therefore be embedded in the socio-economic context, encompass various policy areas and be sufficiently flexible to ensure graduates' successful transition from school to work (UNESCO, 2018). Thus, TVET has a prominent place in the 2030 Agenda for Sustainable Development targeting equal

access to affordable, high quality TVET, together with a commitment to ensure target 4.3 and target 4.4 (United Nations, 2015). Similarly, in SDG8 there is also the priority in TVET with the commitment to achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value by 2030 (target 8.5) and substantially reduce the proportion of youth not in employment, education or training (target 8.6) by 2020 (ibid).

To achieve the SDGs goals, NPC (2017) has proposed specific targets for the SDG4 as the proportion of youth and adults who have relevant skills (including technical and vocational skills for employment, decent jobs and entrepreneurship) will reach 75 percent and for the SDG8 as to promote inclusive and sustainable economic growth, employment, the target is to reduce the lower underemployment will be less than 10 percent (NPC, 2017). Ministry of Education is now preparing the national framework for action to achieve the SDG4 targets under the direction of National Planning Commission a coordinating agency for the SDGs.

Approaches for strengthening TVET

There are several approaches applied to strengthen TVET in Nepal. CTEVT skill development program with long term and short-term training course, CTEVT academic course for TSLC and diploma in different technical subjects, expansion of technical education in community schools (TECS) by CTEVT, technical education as the separate stream in secondary schools, vocational skill training by other ministries and the academic courses in tertiary education in different subjects by the universities are now in operation in TVET sector.

CTEVT mainly carries out the delivery of the long term and short-term training courses through polytechnic, constituent schools and affiliated institutions with the duration of less than one year on various market oriented occupational skills. The academic courses called TSLC for 18 months and three years diploma courses are also conducted through polytechnic, constituent schools and affiliated institutions (CTEVT, 2017). Furthermore, vocationally oriented Annex Program in community schools in collaboration with Department of Education (now CEHRD) offering a technical education program within the premises of general secondary schools by sharing the part of the physical facilities and human resources. These types of separate TEVT stream in secondary schools was started by the CEHRD in 2013 to facilitate expansion of the TEVT opportunity to wider segment of youth population in Nepal. The purpose of that separate stream in secondary school is to prepare student for world of work and also open up opportunity for advance education in the area they are being trained. Short term vocational/occupational skill trainings are also conducted by other different ministries like, Ministry of Labor Employment and Social Security, Ministry of Women, Children and Senior Citizens, Ministry of Industry etc.in different occupations to address the needs of the skilled human resources in different occupations. Apart from these the academic courses in different technical subjects like engineering, medicine, agriculture, forestry etc. conducted by the constituent and affiliated campuses of the universities. The purpose of such initiatives is to supply the competent human resource as per the requirement of the market and to develop the foundation of knowledge and skills for the higher education as well.

SSDP and TVET, and Skills Testing

School Sector Development Plan (SSDP) has made the provisions of training for technical and skilled workers to meet the demands of skilled human resources familiar with earthquake safety techniques (MoE, 2015). In addition, the government realized to extend its ongoing training programs to meet the additional demand caused by the devastating earth quake in 2015. CTEVT has been taken as

a foremost institution to meet the anticipated demands of skilled workers (ibid.). The SSDP further envisions that the technical and vocational stream of secondary education (grades 9-12) needs to expand in order to improve access to and equity of technical and vocational skilled workforce across the country. This component has been focused on improving the relevancy of technical and vocation education in secondary education by exposing children to vocational orientation to facilitate the school-to-work transition.

As of today, there are 357 local levels have access to TVET program out of the total 753 local levels. When considering access of long-term training program, only 338 local levels have access of long-term training programs. The Center for Education and Human Resource Development (CEHRD) has given approval to 284 community schools to run 9-12 technical streams in community schools.

Currently, National Skill Testing Board (NSTB) has developed 287 National Occupational Skill Standards to test the informally or formally gained occupational skills. The current statistics indicate that the number of graduates under the diploma-level programs of CTEVT is 55,335 and the corresponding number of TSLC programs is 177,680. Similarly, the respective number of skill test appeared and passed candidates till the date is 283,469 and 274,400 respectively (CTEVT, 2018).

The business-industry communities in Nepal, which are the major beneficiaries of TVET programs, have been fully functional in developing partnership mechanism in TVET delivery systems. However, until and unless tri-partite ownership among government, business -industry communities and training providers are fully aligned, sustainable financing on TVET would further remain an unsolved issue.

GAPS AND CHALLENGES IN TVET IN NEPAL

Many efforts and initiatives in terms of policy and program have been taken to strengthen TVET sector in Nepal. Although, we have still some gaps in access and equity, curriculum and accreditation, funding etc. Hence, we have been facing the following challenges on the way to enhance the TVET as major vehicle for economic transformation.

Equity and Justice

Despite continuous efforts of the government's reform initiatives, the TVET coverage has been remained insufficient in terms of access and quality. For example, the Household Survey of 2015 reports that 23.7% children of age 5 years never attended school in Nepal (CBS, 2015). In addition, 11% of youths are neither school nor working. Most of them from the marginalized groups and economically poor families. The TVET facilities are made available in the districts only in the urban areas and the accessible places and unable to provide to those who are needy and willing to get it. The training opportunity offered is less than the labor market entrants. Majority of such opportunities are in urban areas and therefore, only limited opportunities remain for populations in rural and remote areas. The scholarship facilities have not been able to address the youth from economically poor families, though some provisions are made on this.

Thus, to ensure the access of the TVET opportunity for all youth of remote areas, youth from the poor and marginalized families and the youth who are neither school nor working with quality technical education and vocational skill development program is a major challenge in the TVET sector. Furthermore, the expansion of the TVET institutions in equitable way as the demand of the market is another challenge in this area.

Curriculum and accreditation

A verity of curricula has been developed in the areas of technical education and vocational training. CTEVT has developed curricula for 40 diploma level courses, 25 TSLC level courses and 179 short term vocational courses (CTEVT, 2017). Ministry of Culture, Tourism and Civil Aviation has also Masters' Degree program including other short-term vocational courses. University courses in different technical subjects are also in implementation. However, seem some gaps in the curriculum and its accreditation. Market oriented curriculum development in different occupations is the lacking in TVET sector due to which the produced human resources are not employed in the labor market and thus majority of the youth are in the foreign employment as a non-skilled worker. Similarly, there is the gap in the involvement of the industrial sector in the curriculum development process particularly for the skill development courses. As a result, there is less consistency between the demand of the industrial sector and the supply of the human resource.

In addition, CTEVT has developed the academic courses for TSLC and diploma in different subjects for their own programs. Similarly, Curriculum Development Centre has developed the parrallel courses for grade 9-12 for separate technical streem in community schools. The learning competencies and the time frame is also different in these curricula. Thus, there is some problems in the accreditation also. The coherence in the curriculum development process and their equivalency are also major area for the further intervention.

Human Resource

According to Economic survey of 2074/75 published by Ministry of Finance, on average there are 500 thousand youths enter in the labor market every year. Most of them have the attraction in the foreign employment thus there are altogether 4.3 million youths are in foreign employment. Among them only 1.5% labor force are skilled, 24% are semi-skilled and remaining 74.5% are unskilled. The survey further explores that the unemployment rate in the nation is 2.3%, underemployment rate is 30% whereas the youth underemployment rate is 35.8%. NLSS (2011) stated that 57.9% of the employed population are engaged in agriculture as self-employed whereas only 14.8% are employed in wage earning non-agricultural activities (CBS, 2011). To fulfill the demand of the labor market in one side the skilled human resource should be taken from abroad and in the other side huge un and under employment rate among the youths we have and the youths those who are said to be employed they are in foreign employment. The figure shows there is huge gap between the production and supply of the human resource as the need of the competitive labor market. Thus, the successful integration of young people into social and economic life with the analysis of both supply and demand for skills, and to promote relevant programs and initiatives for youth employment seems the major challenge.

Infrastructure and equipment

In achieving the target of SDG4 relating with the technical and vocational education and training by 2030, massive expansion of the TVET institutions with appropriate infrastructure and equipment are needed. To ensure the quality in TVET, the quality curriculum, quality human resource, and well equipped physical infrastructure is necessary. Which demands huge financial resources as well. Currently there are 34 constituent institutes including polytechnics,185 technical schools with TECS programs; and 429 affiliated training institutions and 650 affiliated short-term training providing institutions are under CTEVT (CTEVT, 2017) and other school based technical stream in 284 community schools. The facilities provided to the institutions should obviously meet the functional requirements of the planned educational programs both qualitatively and quantitatively (Pitanilubut,

1979) the facilities available in most of the technical and vocational education providing institutions have also weak infrastructure. The community schools both offering TECS program and technical stream do not yet have the sufficient physical infrastructure and equipment for the smooth running of the program (DOE, 2017). It indicates that we have huge gap between the requirements of the physical facilities for the quality expansion of TVET programs and the available facilities.

Financing

The financing in TVET covers two issues: at micro-level, it concerns the sources and mechanisms of funding; at macro-level, it deals with the overall funding levels, and their distribution between the public and private sources (Dohmen, 2009). Given the level of demand for skills development, TVET funding seems a challenge for governments and other stakeholders including donors. A study of the Red Book (government budget allocation book of Nepal) showed that the government budget for TVET was Rs. 9.6 billion in 2011/12, scattered across 34 different budget headings. This was just 0.617 percent of GDP and 2.5 percent of national budget (Parajuli and Shakya, 20112). The report further explores that share of budget on TVET has been slightly increased in later years but nearly 60 per cent of total TVET budget came from donors' contribution on which, nearly 40 per cent was loan. Most of the budget from the donor agencies for TVET run under the project basis.

Now the government has given priority in the expansion of TVET as to increase the access of youths for 70% in TVET sector and at least one technical and vocational schools will be opened in each local government level within two years which demands the huge financial resource. In the current federal context, which government is responsible for managing the necessary financial resources is still not clear. However, looking at the spirit of the constitution major responsibility is under the local and provincial government. Though, the federal government has allocated only 7.3% of the total education budget in TVET sector including the technical tertiary education through the universities (MOF, 2018). Considering the current scenario of demand and supply of budget, there is huge challenges in making available of the adequate financial resources to materialize the new vision in TVET sector. Thus, at least two sets of policy issues need to be addressed in this regard: first, exploring and finding ways to ensure adequate funding across all TVET institutions and, second, examining the role of government and other TVET stakeholders and beneficiaries in addressing these challenges.

Governance and implementation arrangement

TVET programs are implemented by the different institutions, ministries, in verities of modalities in Nepal. Thus, the duplication of the program and resources significantly seen in the process of program implementation (ADB, 2015). With the spirit of the constitution, Governance system of the country has reoriented in line with federal setup. As the functional analysis of the level of the government based on the constitution, the provision of the implementation of the TVET program mainly under the jurisdiction of the local and provincial government whereas the policy and national standards are under the jurisdiction of the federal government (OPMCM, 2016). Based on the current strengths of the local and the provincial government, there is a question mark that whether they are able to implement the TVET programs as per the requirements of the nation and the target set by the government for the expansion of the quality TVET programs or not. Moreover, the implementation arrangement with clear terms of reference has not been made yet for the effective implementation. For example, permission to run the separate technical stream in the community school is principally under the authority of the local government, however, the local government are not ensured to have the capacity to operationalize the institution in terms of taking all responsibility, they do not

have the appropriate structure with adequate human as well as financial resources. Thus, making clear implementation arrangement with appropriate structure, clear role and responsibility, adequate resources for the governance of the TVET functions is another challenge which need to be catered to achieve the goals as the new government has taken as 'prosperous Nepal: Happy Nepali'.

WAY FORWARD FOR STRENGTHENING TVET TO ACHIEVE SDG TARGETS

As envisioned by SDG, TVET is pursued as the major vehicle for increasing employability, entrepreneurship and the socio-economic development. Hence, looking at the socio-economic and governing context of Nepal, some priority areas are identified for materializing the expectations of SDG and national priorities. There are six major areas have been underlined for further intervention ahead.

Legal arrangement

On the basis of different legal grounds, there are 12 ministries engaged in the implementation of the different types of TVET programs. There are overlapping and duplications in program implementation and lack of harmonization among the concerned agencies. Thus, an integrated TVET act would be a common legal instrument in order to govern all TVET programs effectively and effectively.

Funding arrangement

Funding on TVET sector has been extremely scattered and different ministries, donor agencies, TVET institutions and the universities have been mobilized public resources in their own ways. So, there is an urgent need of establishing a TVET Fund not only to ensure better coordination, but also to reduce duplications persisted on technical education and vocational trainings across the line-ministries and donor supported projects. This mechanism would help to pool private resources on TVET as well.

Human Resource Planning

There is an urgent need to conduct a human resource audit by assessing human resource supply and demand across the country. For this, there should be a HR projection and development plan based on the established TVET-MIS. This plan will also contribute for the utilization of the skills of the returnees, so that remittances could help to raise the productive investment in Nepal.

Curricula and occupational standard

Industries and business corporations have been seeking skilled human resources to compete in the global market. To address their demand, there should be a mechanism for ensuring diversified curricula and setting occupational standards with the involvement of the industrial sectors. For this, Sector Skill Council would be one of the best strategies in order to supply skilled workers in the TVET world.

Permeability and integration

In order to open the career paths between general and technical-vocational education, a national vocational qualifications framework under national qualification system should be developed. Permeability is one of the best strategies to attract youth on TVET world. This mechanism permits graduates to move from general stream to technical- vocational and vice-versa. It incorporates not only the recognition of prior learning (RPL) but also helps to

specialize their knowledge and skill to pursue the higher education. Moreover, there is a need of promoting skilling, re-skilling and up-skilling programs to integrate formal, non-formal and informal learnings.

Coordination and collaboration

A robust mechanism needs to establish to coordinate among the three tiers of government for smooth implementation of TVET programs across the country. In addition, the mechanism will also coordinate among the line-ministries, TVET providers and private sectors. The apprenticeship program is another strategy to strengthen collaboration with the industrial sectors which needs to be introduced to retain youth in the country.

CONCLUSION

TVET is taken as the means for the poverty reduction which contributes to generate income through employment in both wage and self-employment. This explains the significance of TVET programs and its effective implementation. The SDGs relating to TVET, Goal 4 and Goal 8 stresses on the equal access in TVET programs, priority in skill development for the world of work. In this sense, the need to transform the TVET sector to maximize its potential to contribute in the sustainable economies and societies for the better future as to achieve our motto “Prosperous Nepal: Happy Nepali”.

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CAREER ORIENTED AND RECOGNISED VOCATIONAL QUALIFICATIONS SYSTEM: A NOBLE STEP IN NEPAL

Mr. Devi Prasad Dahal[1]

ABSTRACT

Possession of skills in human is one of the key steps assuring the person's ability to perform better in any occupation. Skills set with competencies defined by the job market and due recognition from private and public sectors are the key drivers of the country's economic prosperity and built in career for the individuals. Examples of most of the countries' systemic changes are linked to complete cycle of skills, competencies, social values, commercial values, employers' weightage, and thus preparing globally competitive people. With such a vision and mission – today's TVET in Nepali will not remain as it is, rather it will evolve to maximum potential. Dream of recognized, competitive, qualified, career oriented, credible and relevant workforce development in Nepal is possible through National Vocational Qualifications System (NVQS) as an integral and equal part within National Qualifications System.

Keywords: SDGs, Vocational Qualification System, Nepal

INTRODUCTION

Several countries have not yet implemented or fine-tuned their national vocational qualifications systems. This is leading Technical and Vocational Education and Training (TVET) sector into a state of confusion and disarray when it comes to selecting, training, certifying and releasing their graduates into employable jobs not only domestically but internationally given the right opportunities to hone their qualifications. It is important, therefore, that countries should strive for the implementation and review of National Vocational Qualifications Framework (NVQF) to ensure that TVET, as an option, is a viable and gainful alternative that will guarantee employment and improvement in standard of living.

Worth citing an inspirational quote from Albert Einstein – "We cannot solve our problems with the same level of thinking that created them". This means, having skills to do something alone is not enough to improve the possibilities of better opportunities in one's career. Having a skill is one thing and being duly recognised for the skill you have is different. This is the reason why Nepal Vocational Qualifications System (NVQS) has been set up to ensure that skilled workers' capabilities are recognised to give them better opportunities in their career.

When we talk of career it is worth quoting what Tom Peters said - *"A career is a portfolio of projects that teach you new skills, gain you new expertise, develop new capabilities, grow your colleague set, and constantly reinvent you as a brand"*. It simply means one must gain new skills, capabilities, set brand and have a portfolio of all these.

Established with the support of Swiss Agency for Development and Cooperation (SDC) and with the technical assistance from Swiss Foundation for Technical Cooperation (Swisscontact), NVQS is

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working to upgrade and consolidate the existing National Skill Testing Board (NSTB) at the Council for Technical Education and Vocational Training (CTEVT). The Ministry of Education, Science and Technology is at the regulatory and supervisory role. NVQS is working for a well recognised certification system that not only tests your skill but also gives opportunities to the employers to recognise the level of skill you possess.

UNDERSTANDING NVQS IN NEPAL

NVQS is a national system of technical vocational qualifications aimed at validating competencies (knowledge, skills and attitudes) of trained, and experienced people that meet the needs of the industries (market), and are nationally recognised in private and public sectors.

This consolidated system of NVQS will not only improve the skilled workers' mobility in both inside and outside the country but would also provide workers the opportunities to get better perspectives regardless of their social origin. Whereas, the other important aspect of this system is to provide the employers sufficient supply of adequately skilled workers for their needs.

Besides, NVQS can also help design programmes to meet exact expectations of the market and provide new offers for new clients while it would help the government manage the Vocational Education and Training System more effectively. This would only help increase the number of skilled workers recognised for better career opportunities, which ultimately helps improve the overall standard of the TVET in the country.

Under NVQS, NVQF is articulated as part of the transformation from NSTB to NVQA. The proposed NVQF will address the concerns of market standards at different qualification levels. Considering regional and international practices and experience, the NVQF has proposed eight levels of qualifications that allows one to gain competencies from basic to advanced degrees. This will provide employers find workers with 'recognised vocational qualification' that meet the market competencies at different intervals.

NVQF in a nutshell

- The National Vocational Qualifications Framework (NVQF) is a competency-based framework that organizes all qualifications according to a series of levels of knowledge, skills and attitude. These levels, graded from one to eight, are defined in terms of learning outcomes which the learner must possess/prove in an assessment regardless of whether they are obtained through formal, non-formal or informal learning.
- NVQF integrates qualifications which are attained through various modes of learning and pathway and ultimately ensures its compatibility with National Qualifications Framework (NQF).
- The NVQF makes provision for a nationally consistent technical and vocational education and training (in Nepal) relevant to economic and social development.

Defining NVQF in Nepal

NVQF is considered one of the building blocks of modern TVET for providing a structure for recognised and market-led qualifications to be developed. It is very important that there is an effective qualification and certification system in place to recognize the skills and knowledge of millions of skilled workers and provide them better opportunities both inside and outside the country.

The NVQF of Nepal will be based on competency standards identified and endorsed by the industry stakeholders. The key objective of NVQF at the policy level is to set national standards for learning outcomes coherent with other national policies related to technical education and vocational

training. This process will be transparent and progressive to further improve the sector to meet the international standards in vocational qualifications systems practiced in other countries.

It also aims to collaborate and build trust among all the private and public-sector stakeholders to develop more inclusive, accessible, and responsive skill and qualification assessment system by recognising a person's previous skills & knowledge through 'recognition of prior learning (RPL)' system.

NVQF provides pathways and progression from informal learning to the formal TVET programmes; assures the quality and relevancy of TVET to labour market expanding its coverage and provides easy transitions between the pillars of the education system. It also establishes equivalencies with vocational qualification systems to overseas labour markets by enhancing access and equity to disadvantaged youths. To meet this objective, a National Vocational Qualifications Authority (NVQA) has been proposed in place of the existing National Skill Testing Board (NSTB) as an independent authority to govern and manage entire NVQs. NVQA assesses the competencies required for different qualifications as per the standards set, and awards certificates with TVET qualification title.

Nepal's NVQF as of today stands as follows (Figure -1) to be approved by the government.

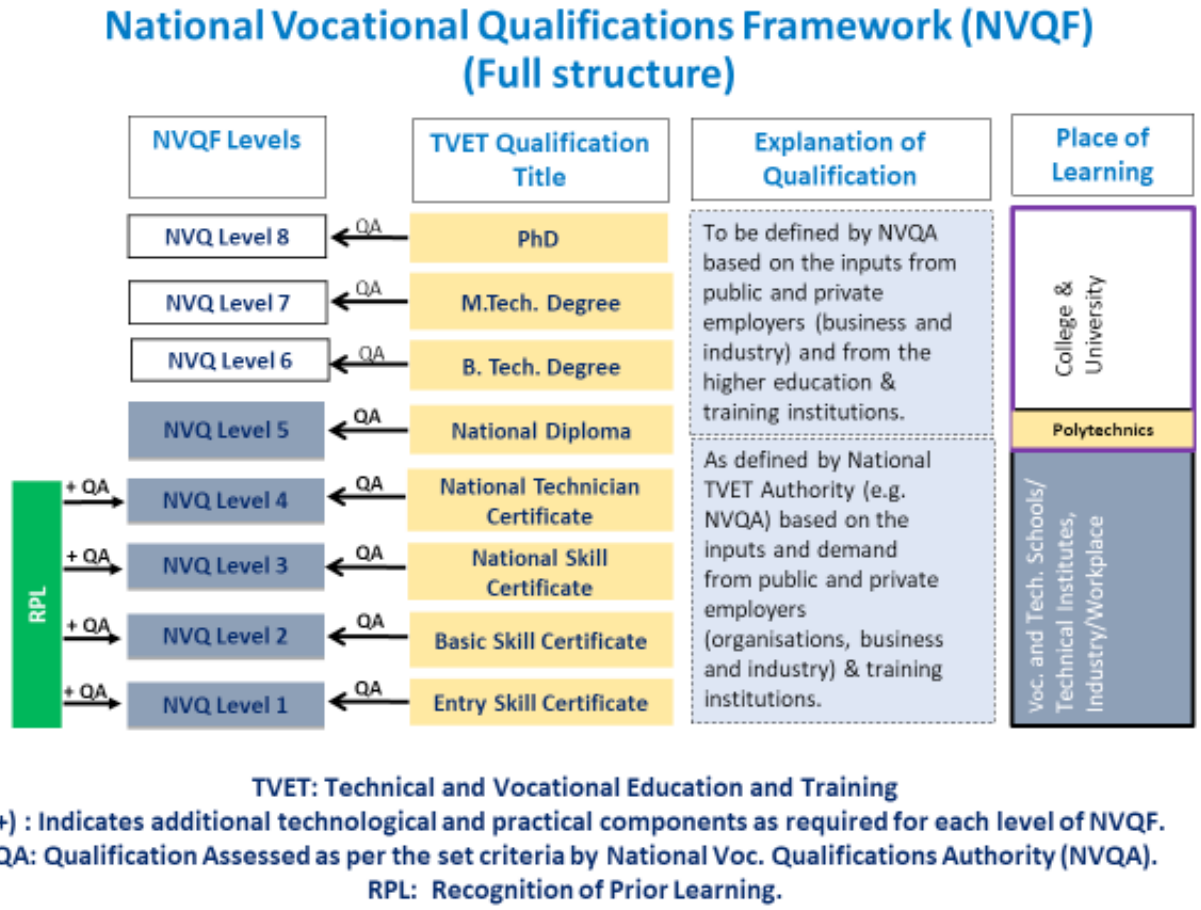

Figure 1. Structure of Nepal's Planned National Vocational Qualifications Framework.

Purposes of NVQF

The main purpose of development and implementation of the NVQF for Nepal is to ensure and assure quality, widening access, enhancing transparency and interrelation of qualifications, and facilitating recognition of qualifications at national and international levels. The purpose is also to provide flexibility in obtaining qualifications, possibility to plan different learning paths for career and personal growth.

The NVQF for Nepal aspires to become the 'national language' for the TVET sector for describing qualifications and the relationships between different level of certificate/diploma and degree, to reduce barriers to access and progression and to promote a culture of lifelong learning.

Outcomes of NVQF

Specific outcomes expected from the implementation of NVQF in Nepal are (but not limited to):

a. Mobility between vocational and general education by alignment of degrees with NVQF.
b. Recognition of Prior Learning (RPL), allowing transition from non-formal to organized job market.
c. Strong participation of industry in setting competency standards and assessment criteria.
d. Approval of National Competency Standards as national standards for TVET.
e. Standardized, consistent, quality assured and nationally acceptable outcomes of training across the country through a national quality assurance framework.
f. National and international mobility of skilled workforce, through international equivalence of NVQF.
g. Mapping of progression pathways within sectors and across sectors.

WHY NVQF AND NVQA IN NEPAL?

The goal of establishing NVQF and NVQA is to provide key contributions to systemic changes in the TVET system by enabling everyone including disadvantaged groups, to get access to increased employment and to perform at higher productivity levels. This will ultimately lead to higher income, enhanced livelihood and resilience, whereby combating poverty and promoting inclusive growth.

The objectives of establishing NVQF/A are but not limited to:

i. Provide pathways of progression from informal learning, work-experiences, and non-formal courses to the formal TVET programmes;
ii. Provide access and equity to all disadvantaged youths;
iii. Provide easy transitions between the pillars of the education system;
iv. Improve the quality and relevancy of TVET to labour market and expand its coverage; and
v. Establish equivalencies with vocational qualification systems to overseas

What impacts will NVQF/S have in Nepal's TVET system?

Once the NVQF and NVQS are developed and implemented in Nepal,

a. TVET will be:
   - driven by the effective participation of employers/ industries/ businesses.
   - relevant and of high quality.
   - inclusive and accessible to all the beneficiaries with their skills and qualifications recongnised in and out of the country.

b. Progression and permeability will be effective in national education and training system.

c. Employability and income of the graduates enhanced.

d. Even in TVET, one can obtain PhD qualification in the long-run.

e. Nepal's TVET qualifications will be recognised in and out of the country.

CONCLUSION

With the proposed qualifications system, the concerned sector will have more competent workforce for better productivity leading to more profits. Take for example, the hospitality industry which is booming in the country with the construction of dozens of big hotels and resorts throughout the country. When all these hotels come into operation, the demand for competent workforce will soar sharply. But, without the proper recognition of the qualifications of the skilled workforce, fulfilling the market demand would not be possible.

Emi Iyalla, an eminent author of 'Skills That Pay the Bills', quotes "Skills make dreams happen. They build economies. They make people rich and famous. In today's world, the demands for skills are staggering……".

As a team leader of the NVQS project, I can assure here that the graduates of vocational training programmes and working youths with skills and competencies in Nepal have now brighter days ahead to get their qualifications and skills recognised within and outside the country. This will make their dreams come true within the next few years in terms of academic and professional career progression.

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ROLE OF DEAN IN DEVELOPING SECTOR-INSTITUTIONAL LINKAGE

Murali Gopal Ranjitkar, PhD[1]

ABSTRACT

The role of Diploma Engineers Association Nepal (DEAN) in national development becomes the very important in changing scenario of Nepal. There are so many aspects during the study of any plan and feasibility of any project, beginning with the design, estimate, survey, study of local status and context to set up the infrastructure. In these phases, middle level technicians are engaged effectively. There is also a need to make strong lobbing to establish Diploma Engineering Council to make technical education more effective to enhance the quality of development works.

Keywords: Sector-Institutional linkage, IDEN, technical education

INTRODUCTION

It has been understood that the role of middle level Diploma Engineers are very vital. There are so many aspects during the study of any plan and feasibility of any project, beginning with the design, estimate, survey, study of local status and context to set up the infrastructure. In these phases, middle level technicians are engaged effectively. Whether to collect project information before the planning phase or, concept drown after the baseline survey or, consultant report, middle level technicians are involved. Even their roles are important to detailing the size of the project, mobilization of human resources and expected benefits perceived from the project and sharing among local authorities and political leaders. Understanding the context, the diploma level Engineers should be supported from the other Engineers. If any Diploma Engineers say that it's not their responsibility to design, estimate and survey of the technical engineering works, then, they might be wrong at this point. With the technical assistance and consultation from middle level engineers, proper designs and sizes of any project/schemes are mostly done.

Historical background

Attempts to produce skilled work force through vocational training can be traced back to 1929 when the "Ayurvedic School" was established to train homeopathic Physicians in the early 1950's, the Department of Cottage and Village Industries established a series of vocational training programs to promote cottage industries (Sharma and Nepali, 1995) This was followed by the establishment of a Technical School to train sub-overseers, a nursing school, an agricultural school and a number of other training institutions. These institutions were governed by various government departments. These were the basic schools lasted for a decade before 1956 (2004 B to 2014 BS). Some of these training centers evolved in technical institutes of Tribhuvan University producing technicians and professional in Engineering, Medicine, Agriculture and Forestry. Based on the recommendation of National Education Planning Commission 1956, Multipurpose schools were opened in 1960 to offer vocational courses in agriculture, industrial arts, secretarial science and hoe science. Although the concept of a multipurpose school scheme seemed to be appropriate to support economic development efforts of Nepal, this scheme also suffered from many problems and didn't proved to

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be effective. Vocational graduatesof multi-purpose schools were not motivated to work as low paid skill workers. They were motivated to continue their education for prestigious academic pursuits.

The National Education System Plan (NESP) was implemented in 1971. The plan emphasized vocational and technical education and called for every secondary school to be vocationally oriented by providing instruction in at least one vocational subject. In 1979 the National Education Committee introduced a Technical School Work Plan The technical school schemes emphasized skill training and occupational preparation of the school dropouts, school leavers and non-college bound youths, including economically poor population unable for pursuing higher education. They were the trade schools. The curriculums of such programs included in the system were spinning, weaving, gardening, carpentry, leather work, craft work, pottery and elementary engineering as vocational component in public-schools.

The TVET efforts so far were unrecognized and scattered. For the purpose of formulating policies, implementing and managing the newly developed Technical School System, a national level Technical and Vocational Education Committee (TEVC) was formed in 1982. The Directorate of Technical and Vocational Education (DTVE) were established in the same year as a Division of Ministry of Education. Furthermore, after the realization of the need for a unified structure for coordinating, developing and strengthening TEVT in Nepal, the Council for Technical Education and Vocational Act, 1989 established the Council for Technical Education and Vocational Training (CTEVT) in Nepal. Polytechnic schools were established in 1996. During the same time the ANNEX school (now TECS) was introduced in community schools. During the implementation of SSRP (2009-2014) the technical streams (class 9-12) was incorporated in the general secondary schools.

To strengthen TEVT development activities in Nepal a “Nepal National TEVT Policy Platform” was developed in 2005. Subsequently revising the Policy Platform a “Nepal TEVT and Skill Development National Policy 2007’ has been introduced. This national policy has envisaged 5 key policy areas: expansion, inclusion and access, integration, relevancy and funding. The last TVET policy 2012 has been in use with special emphasis of boarding private sector in training.

There are TSLC and Diploma programs in various engineering accredited by the educational institutions, the 9-12 engineering education with one-year internship has still to be accredited by the educational as well as professional societies. Similarly, skill testing to the non-formal engineering education and apprenticeship are there in the market to contribute technical engineering education.

DEAN Organizational background

Diploma Engineers Association, Nepal (DEAN) was established on 11 Jestha 2037 (May 24, 1980 AD) as Nepal Overseers Association (NOA), which changed its name as Nepal Engineering Technicians Association (NETA). Engineers technicians were known as overseer (for diploma holders) and Sub-overseer (for TSLC level) in Nepal and in 2006 August 6 Nepal Government decided to change the title of engineering technicians as Sub-Engineer and Assistant Sub-engineer respectively, which was considered as a major milestone in the history of engineering professional practice of the country. To mark this historical event, name of NETA has been changed to Diploma Engineers Association, Nepal (DEAN). DEAN is a nonprofit professional organization representing over 30,000 engineering technicians of the country and dedicated to strengthen and enhance professional environment of practicing engineering in the country with paying high regards towards health, safety and environment.

Vision: To work for professional enhancement and recognition of diploma engineers in the region.

Mission: To serve the community in developing and managing physical infrastructure by employing acquired engineering knowledge and skills with integrity and honesty by mobilizing motivated and committed diploma engineers.

Objectives

1. To help promoting less expensive and appropriate technology for the benefit of the people and the country.
2. To help promotion research based engineering practice and be proactive in promotion of engineering profession.
3. To help enhancing standards of engineering practice by adhering engineering codes.
4. To protect professional rights of engineering technicians in the country.
5. To help strengthening the linkage of practice of engineering profession with overall nation building objectives.
6. To hold training, workshops and conferences.
7. To develop linkages with regional and international professional societies/organizations for mutual benefits.

Organizational approach

Central Assembly elects 35 members for Central Committee for three (3) years term incusing Chairperson, vice-chairpersons, General Secretary, Secretaries and Treasurer, who will serve as Executive Committee members. Executive committee will be responsible for day-to-day activity of Dean. The secretariat is backed up with required staffs to perform day-to-day activity of DEAN.

Nepal is in the process of transforming towards federal system with seven (7) provinces and 753 local governments from its central government system divided into five (5) regions and 75 districts. DEAN is the central body with its district organizations and now is in the process of restructuring to suit the need of the time. TVET is critically important for rapid development of the country like Nepal, where each year about 400,000 young entered into labour market and substantial numbers of young people go abroad for employment but without skills Hence, this transformation of the country has made the role of DEAN more important in advocating and promotion Technical and Vocational Education and Training (TVET) in newly formed provinces and local government.

DEAN activities for development and Institutional linkage

- The Eleventh National Convention was held in 2065, Push 10-12. The letter was dispatched to all the ministries for implementing passed resolutions.
- Conducted a workshop on 067/01/07 jointly with the initiation of DEAN and organized by Ministry of Physical Planning and Works in which final draft were prepared. Now, the act is in pending in Law and Justice Ministry.
- Eastern Regional Meeting
- The prescheduled Eastern Regional meeting was jointly organized by Eastern Regional Coordination Committee and Sunsari District Committee along with the three days workshop

on “Disaster Management” on 2065 Bhadra 19 & 20 at DEAN Office. The meeting passed the 3 points proposal and made the path to the Central Committee for implementation.

- Central Regional Meeting

  Central Regional Meeting was held in Bharatpur, Chitwan with the workshop on “Climate Change and its Effect on in Hydropower” on 2067 Bhadra 05-06. The meeting was chaired by Mr. Arjun Khanal, Central DEAN Vice-President.

- Eastern Region Meeting and 5th meeting of Central Committee

  Eastern Regional Coordination Committee and Sunsari District Committee jointly organized the 3rd Eastern Level Meeting decided by the Association along with the 3 days’ workshop entitled, “Quality Control in Local Infrastructure Development: Challenges for Nation Building” on 2067, Kartik 19-20. The meeting cleared the road for Central Committee with 3 points proposal.

- DEAN strongly defended the stunt created by Nepal Engineers Association through the circulation of suggestion collection initiated by Chief Secretary on the decision made from Nepal Gazette on the endorsement of Sub-engineer and Assistant Engineer dated on 2063, Bhadra 05.

National and International Workshop and Seminar

- Successfully conducted on day workshop on “Naya Nepal NirmanmaPeshakarmiMahilaharukoBhumika and SAARC chhetramayaskoPrabhab” initiated by DEAN Female Department on 2066, Push 23 at Kathmandu Mall, Kathmandu.
- One day workshop/seminar to revise the Diploma Engineering Council Act was conducted with the initiation of DEAN and organization of Ministry of Physical Planning and Works with the presence of experts from various organizations on 2067/01/07.
- Celebrated World Environment Day-2010 with the one day international seminar on “Climate Change and its Impact on Local Infrastructure” with the support from DoLIDAR and in association with SERDeN on 2067/02/22.
- Celebrated World Environment Day-2011 with the one day international seminar on “Development of Green Infrastructure: Challenges and Opportunities” with the support from DoLIDAR and in association with SERDeN on 2068/02/22.
- One day workshop was organized in association with DoLIDAR and SERDeN on “Quality Control in Local Infrastructure Development: Challenges for Nation Building” on 2068/08/16-17 at Pokhara, Kaski.
- Conducted 1 week long training on “Total Sanitation” in association with Advance Research and Training Institute (ARTist) on 2068/09/18-24.
- Celebrated World Environment Day-2012 with the one day international seminar on “Green Economy and its Impact on Sustainable Local Development” with the support from DoLIDAR and in association with SERDeN on 2069/02/22.
- Successfully conducted on day workshop on “PeshakarmiraJibanPadhati” initiated by DEAN Female Department in association with Nature Care Hospital on 2069/06/29 at Kathmandu Mall, Kathmandu.

- Conducted 1 day workshop on “Engineering Management and Its Importance in Nation Building” on the occasion of 12th National Convention.
- Conducted 2 days’ International Seminar on “Infrastructure for Economic Development” on the occasion of 7th Convention of SAARC Diploma Engineers’ Forum (SDEF) and 14th Apex Body Meeting.
- Celebrated World Environment Day-2016 with one day international seminar on “Go Wild for Life”
- Celebrated World Environment Day-2017 with the one day seminar on “Water Resource Management in the Context of Gorkha Earthquake-2015”
- Conducted one day workshop on “Physical Infrastructure Development at Local Level: Challenges and Opportunities” on the occasion of 13 National Convention.
- Conducted two days’ workshop/seminar on “The Role of Middle Level Engineering Technicians in Implementation of Federal Structure in Nepal” on 2074/11/24-25.
- Celebrated World Environment Day-2018 with the one day international seminar on “Plastic Pollution, Environment and Health” in association with National Institute of Health and Environment and supported from High Powered Committee for Integrated Development of the Bagmati Civilization.

Initiatives so far to fulfill the demands

- After 10th convention, DEAN have submitted the memorandum to Prime Minister and concern ministers time and again.
- In order to amend the existing Engineering Council Act and make it wide coverage to all or, separate Diploma Engineering Council Act, DEAN officials have approached Minister and Secretary of Physical Planning and Works with written memorandum. Furthermore, we also submitted the draft act based on the memorandum.
- Conducted various sorts of workshops/seminars with civil society and government with collection of suggestions to support to fulfill the demand.
- With realizing the fact that only structured force can fulfill the demand, the organization is transformed as the organization with Trade Union Right and forms were sent to each district to register on the concern labor department.
- Carried out partnership with other organizations and protest in order to create pressure to amend and promote self-promotion in government sector.

SUGGESTIONS AND PROPOSAL RECEIVED FROM DIFFERENT LEVEL OF THE ORGANIZATION

As per the suggestions and proposal received during entire convention, conference, regional meeting, district committee, district visit, etc., following are the specific actions to be carried out in coming days as follows:

1. Need to increase the capacity and skills of members with short term and long term training, seminar, workshops, etc.;
2. Relation extension with national and international organization for the friendship and mutual support;

3. Create pressure to approved Diploma Engineering Council Act toestablish Diploma Engineering council.
4. Initiate to establish SAARC Technology Center inItahari, Nepal;
5. Pressurize policy makers to form the plan that every ward of Rural Municipality/Municipality should be recruited one Sub-Engineer, two assistant Engineers and one Engineer.
6. Carried out pressure activities to promote action regulation upto local level as per the rule of government promotion provision.
7. Carried out pressure activities with coordination with concern organization for the level based promotion system.
8. Initiate to establish Institute of Diploma Engineers Nepal
9. Need to be established Diploma Engineers Training Center(DETC) to enhance quality survive of the Diploma Engineers.
10. Make mandatory of on the job training for all diploma holder engineers.

WAY FORWARD AND CONCLUSION

1. Establishment of Engineering technician Council Act(ETCA)- To regulate practice of engineering profession of the mid-level engineering technician and produce of mid level engineering workforce as per the requirement of national development activities.
2. Institute of Diploma Engineers Nepal Need to be establish for the professional development of middle level technician.
3. New position for TSLC level should be created in each local government to fulfil the huge demand of middle level technician in local organization.
4. Implement licensing requirement for trade person and tie up it with mandatory personal insurance to fulfil the huge demand of this level of technical in development activities.
5. Introduce new position as gazette forth class officer level position in all level of government office.
6. Develop job description for higher and middle level engineering workforce and devise a clear carrier path for middle level engineering workforce to make opportunity to move up to Gazetted first class level.
7. To develop corporate culture in construction industry DEAN and Construction Business Development Council(CBDC) need to work together to absorb, utilize and retain middle level technical in country's development.

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COUNTRY PAPER: BHUTAN
SUCCESSFUL MODEL
OF VOCATIONAL SKILLS TRAINING (VST) IN BHUTAN

Mr. Palden Tshering[1]

ABSTRACT

This paper examines the Bhutan Vocational Qualification Framework (BVQF) concept as a successful model of vocational skills training in Bhutan. It also justifies why BVQF is the way to go for TVET institutions. As part of the new TVET reform initiatives undertaken by the Ministry of Labor and Human Resources in 2010, TVET in Bhutan has undergone major changes in order to make it a credible alternative to academic education. One of the successful reform initiatives includes introduction of Quality Assurance System as part of the BVQF to regulate the quality of training providers through Registration of Training Providers, Quality Management System, Accreditation of Courses and National Assessment and Certification System.

Keywords: Bhutan Vocational Qualification Framework, Vocational Skills Training, Quality Assurance

BRIEF BACKGROUND OF TVET IN BHUTAN

The importance of Technical and Vocational Education and Training (TVET) was recognized early on at the beginning of the second Five-Year Plan (FYP) during the mid-1960s. It was during that time the first technical school, the Kharbandi Technical School was established in the country. A decade later, the Royal Government took a step further by restructuring and reviewing the courses of the school with more focus on technical and vocational education and later the school was renamed the Royal Technical Institute (RTI). Further, the need for a national authority for technical education was conceived in 1974. However, it was only in 1999 that the Technical and Vocational Education section under the then Ministry of Health and Education was disengaged and the National Technical Training Authority (NTTA) was established through a Royal Charter.

In 2003, the functions of the NTTA were transferred to the newly established Ministry of Labor and Human Resources (MoLHR). With this, the roles and responsibilities of NTTA were bifurcated into two departments, the Department of Technical Education (DTE) and Department of Occupational Standards (DOS). The DOS had the mandate of regulating the quality of TVET and implementation of Bhutan Vocational Qualification Framework (BVQF). The DTE was mandated to ensure availability of adequate human resources both in terms of numbers and quality to facilitate sustainable socio-economic development of the country. Also, all the six vocational training institutes and two zorig chusum (traditional arts and crafts), previously under NTTA, came under the direct administration of the DTE. As such, the DTE is responsible for all aspects concerning TVET and other skills development in the country.

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The Ministry of Labor and Human Resources have taken several initiatives to revamp the TVET system in Bhutan which includes registration of TVET providers, accreditation of TVET courses, quality management system, national assessment and certification system. The TVET Blueprint and National Workforce Plan were developed in 2014 with a hope to support and further strengthen the image, accessibility, relevancy and quality of TVET significantly and also to make TVET as the mainstream career choice of Bhutanese youth.

Currently, there are 121 Registered Training Providers both public and private sector offering TVET programs in the country. Most programs are offered at certificate and diploma courses, including national certificate NC1-NC3 and ND1-ND2 as per BVQF. In the 11th FYP (2013-2018), a greater emphasis was placed on improving quality and relevance of TVET through implementation of employment based skills training, diversification and innovation of TVET programs, introduction of more diploma courses and building the capacity of TVET trainers. Further efforts has been made in developing green skills, entrepreneurship skill, e-learning, improving industry-institute linkages and strengthened monitoring and evaluation mechanism.

Further, the government has made considerable progress towards setting up and the implementation of BVQF system in the country by aligning the TVET programs with BVQF levels. The quality assurance system and assessment and certification of TVET graduates were integrated with BVQF. Public-private partnership strengthened in TVET system. The licensing systems and minimum wage of skilled workers are aligned with BVQF levels. BVQF certificates are also aligned with the position classification system in the civil service for those joining the civil service.

TVET Programs

TVET is provided through formal TVET and alternative modes (non-formal, informal). Formal TVET is provided as part of the BVQF system by registered TVET providers and the alternative modes of TVET are provided outside the formal BVQF system.

The Department of Occupational Standards (DOS) administers national accreditation of TVET courses. The courses are accredited at national certificate (NC level 1-3 and ND 1-2). Training providers are eligible to apply for accreditation of their course as per accreditation guidelines. However, it is not mandatory for training providers to accredit their courses. The technical training institutes and institute for zorig chusum which are under the direct administration of the Ministry of Labor and Human Resources are mandatory to accredit their courses and award national certificates to graduates after the training.

TVET Providers

TVET providers in Bhutan consist of public and private sectors offering certificate and diploma courses aligned with the BVQF. The training providers are required to formally register with the Department of Occupational Standards, MoLHR to offer training in the country and comply with the Regulations for Registration of Training Providers 2010. A total of 121 training providers are currently registered with the Department. While the MoLHR is committed to make TVET as the mainstream choice for school leavers, TVET in Bhutan is faced with hordes of challenges such as quality of TVET trainers, financial resources to diversify training areas, image of TVET outlook, lack of training resources/facilities, weak industry support etc.

Reforms in TVET

Having achieved significant improvement in the country's basic education system, the Royal Government's emphasis gradually shifted to preparing youth for the world of work. The acute

shortage of trained workers at all levels and heavy reliance on foreign workers amidst increasing youth unemployment has been a major concern of the government. Hence, concerted efforts to strengthen and improve the access, quality and relevance of TVET were made by the MoLHR. Some of the major reforms in TVET were:

1. TVET policy developed
2. TVET Blueprint developed
3. National Workforce Plan developed
4. Bhutan Vocational Qualifications Framework Developed and Implemented
5. Quality Assurance in TVET introduced
6. TVET programs enhanced based on labour market needs
7. Introduced competency based training
8. Quality management system implemented
9. Introduced entrepreneurship courses in formal TVET institutes
10. Introduced capacity development programs such as training of trainers, curriculum development, assessor training, etc.
11. Alternative modes of TVET delivery strengthened
12. Private participation in TVET delivery enhanced
13. Collaboration with industries strengthened
14. Advocacy of TVET strengthened

Changing Roles of TVET in Bhutan

The table below compares two paradigms of TVET. The past column indicates how over the years TVET systems exist in Bhutan and the present/future is based on current BVQF system.

Table 1. Past and Present/Future of TVET Systems in Bhutan

Past	Present/Future
Supply-driven approach	Demand-driven approaches
Lack of regulations related to quality assurance system	Introduced regulatory functions related to quality assurance system
Conventional methods of training	Competency Based Training
Institutional assessment	National Assessment and Certification System
Lack of skill recognition for industry workers	Skill recognition through RPL assessment
Institutional certificate	National Certificate (NC1-NC3, ND1-ND2)
Lack of mobility/articulation in TVET system	BQF and BVQF linkages to higher studies
Lack of mobility/articulation in TVET system	
Training for wage employment	Training for wage and self-employment
One –time learning	Continuing recurrent life-long learning
Skill recognition based on training period and examination	Skill recognition based on competency and prior learning
Training for Employment	Learning for employability

BHUTAN VOCATIONAL QUALIFICATIONS FRAMEWORK (BVQF): AN EFFECTIVE TVET SYSTEM IN BHUTAN

The Ministry of Labor & Human Resources (MoLHR) has developed BVQF for TVET System in the country. This framework is a system of qualifications and aims to facilitate coherent integration of agreed qualifications within the TVET sector. The main purpose of the framework is to provide consistency in recognition of TVET qualifications. The Department of Occupational Standards (DOS), MoLHR is mandated to regulate the quality of TVET and implement BVQF in the country.

A BVQF qualification is an award which recognizes that learning has taken place and that certain outcomes have been achieved by the learners. These outcomes are expressed as achievements in meeting competencies that are based on National Competency Standards. Award of qualifications is based on assessment of competencies against the assessment criteria for each occupation. A national assessment and certifications system is one of the main components of BVQF conducted based on competency-based assessments model.

Qualifications Levels

The BVQF has five qualifications: National Certificate 1 (NC1), National Certificate 2 (NC2), National Certificate 3 (NC3), National Diploma 1 (ND1), and National Diploma 2 (ND2). NC 1 is the lowest and NC 3 is the highest in terms of skill competency requirements or complexity at the vocational level. However, applicability of all levels differs from occupation to occupation.

NC1, NC2 and NC3 shall be mainly skills and practical based with only about twenty per cent of trade related theory whereas the ND1 and ND2 shall focus on mastery of more theory with decreased proportion of skills competency. Therefore, there will be an increasing theory material content as individual progresses up the level hierarchy. Potential individuals transiting to ND1 shall pursue courses/programs in line with their trade of competency or related courses offerings only as decided during the selection process.

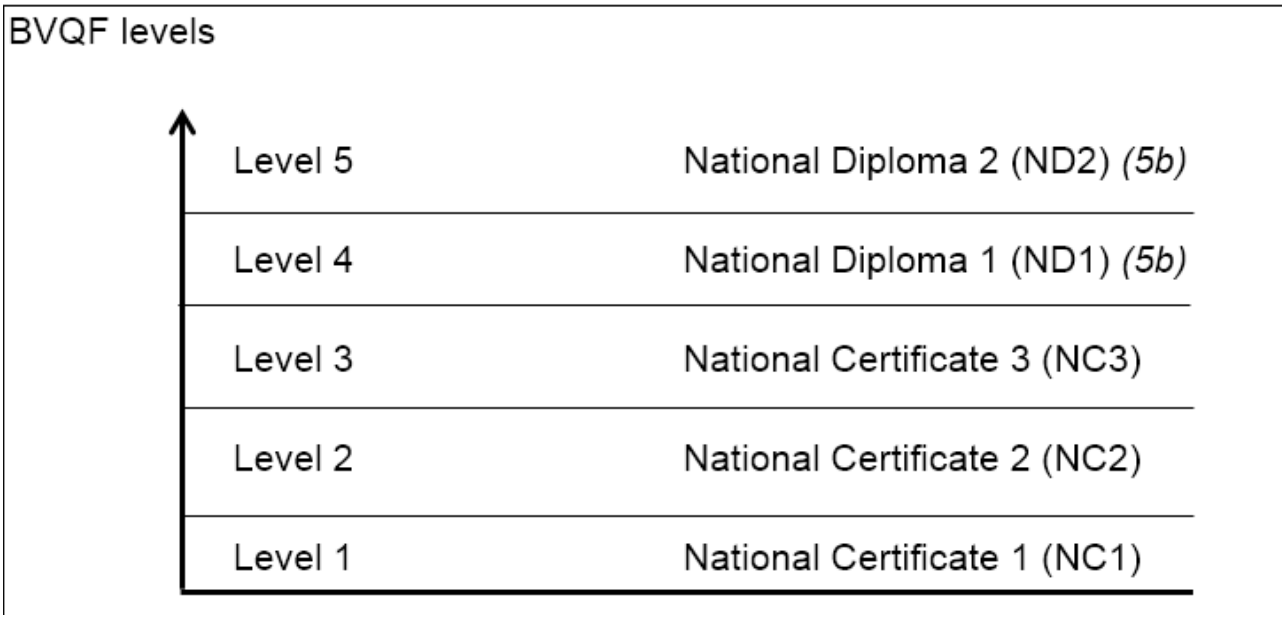

Figure 1. Bhutan Vocational Qualifications Framework (BVQF) Levels

Components of BVQF

The components of BVQF consist of national competency standards developed in-consultation with the industry experts based on the labour market needs. This component reduces the gaps in the training system, with particular emphasis on current industry requirements. The competency based curriculum is developed based on the national competency standards (NCS) for specific BVQF levels. The national assessment is conducted based on NCS by the third party as per national assessment and certification system. The assessors are trained and registered with the DOS, MoLHR. The BVQF certificate is awarded to those successful in national assessment both for theory and practical assessment. The ratio is theory and practical is 20% for theory and 80% for practical.

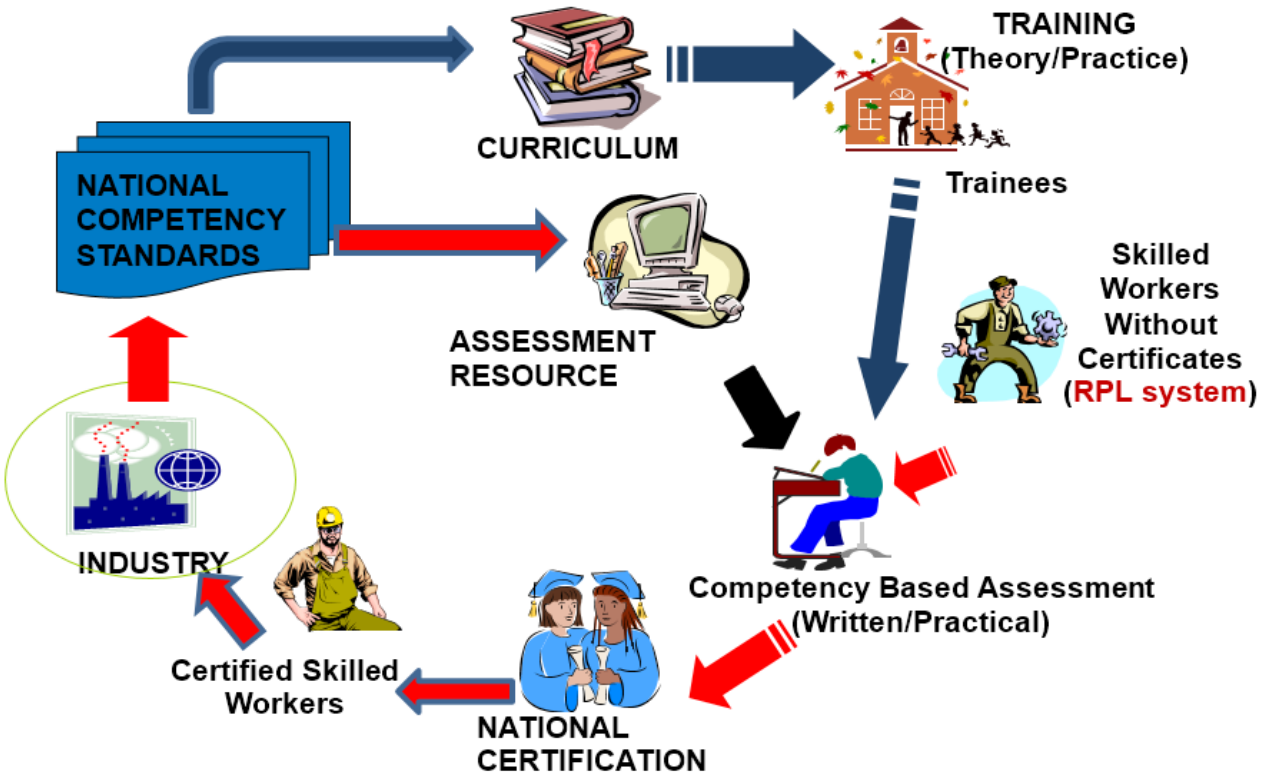

Figure 2. Components of BVQF

Integration of quality assurance system in BVQF

Quality assurance system started formally in 2010 with the launch of the Regulations for Registration of Training Providers 2010. The quality assurance system consist of Registration of training providers, accreditation of TVET courses and quality management system as the three main components to ensure quality and relevance to TVET programs in the country.

The quality assurance system is considered a core underpinning elements of the BVQF mainly to ensure that when learners are awarded a qualification, they have attained the level of knowledge, skills and competence that is expected and required of them, regardless of when, where, how or by whom those learning outcomes are assessed.

The quality assurance is broadly divided into two components – voluntary and mandatory. Registration of training is mandatory and accreditation and quality management system is voluntary for certain institutes and courses.

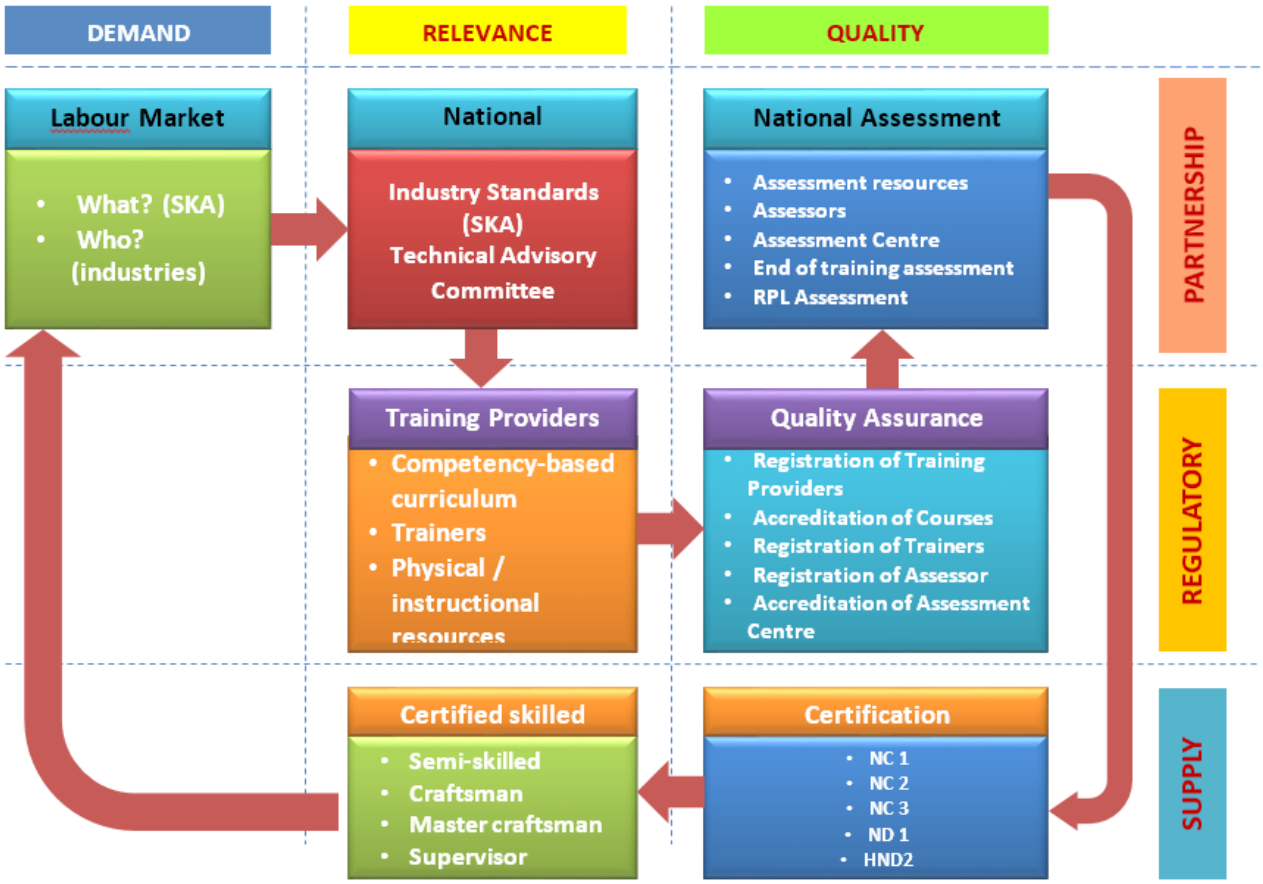

Figure 3. Bhutan's Quality Assurance System

Progression and Linkages of TVET to Tertiary Education

Individuals have the option to enter the labor market upon certification at particular level. No restrictions on individuals who wish to progress up from NC1 to NC3 levels. However, minimum of three months OJT in relevant industry is required to progress from NC2 to NC3.

Entry to National Diploma programs offered by institutions within the country is based on fulfillment of selection criteria. While diploma program categorized as 5a according to the UNESCO International Standard of Classification of Education is offered by the institutions affiliated to Royal University of Bhutan and the national diploma programs categorized as 5b is offered by the training providers registered with the Department of Occupational Standards. Similar linkage and bridging arrangements are also established for entry to first degree qualification. This provision to link TVET to Tertiary Education is proposed in Bhutan Qualifications Framework to promote life-long learning and career development opportunities.

The following illustration focuses on the concept of life-long learning shown by dotted arrows from the labor market to TVET, school education, tertiary education and informal sector. This is further complimented by the Bhutan Qualifications Framework which proposes 8 levels across School education, Vocational education, University education and Monastic education.

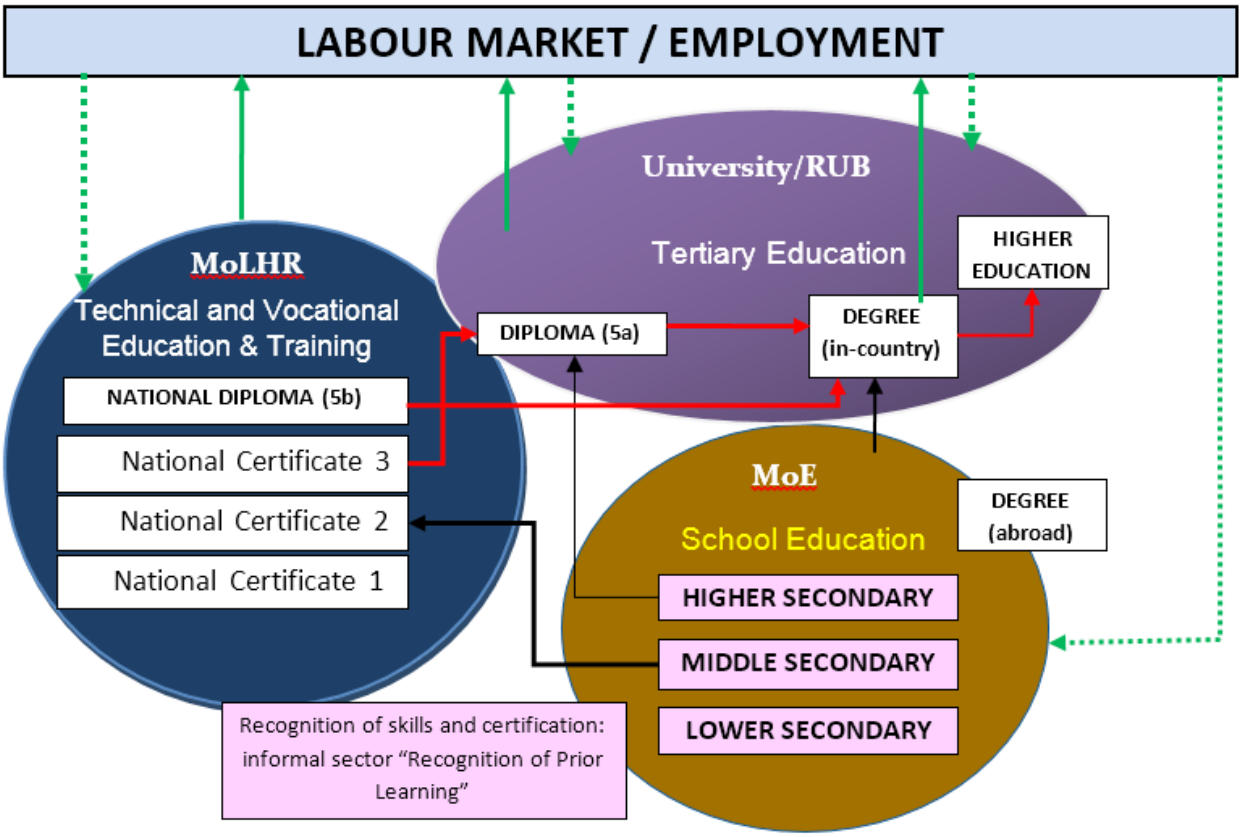

Figure 3. Bhutan's Quality Assurance System

Active Industry Participation in BVQF

Industry plays an important role in driving the BVQF in Bhutan. At the national level the governments, together with technical advisory committee for specific sectors and the national workforce plan developed in-consultation with industry sectors identify priority sectors and occupations that Bhutan needs to develop in short and long term. These priorities influence state funding and the type of TVET programs delivered by institutes. The government has also developed regulations and guidelines to ensure continuous and strong industry involvement at the national and institutional levels. The regulations and guidelines mandate industry participation at various levels such as national competency standards development where, the requirement of industry experts is about 90% participation. National competency based curriculum is developed in-consultation with industry experts. National assessment is conducted by trained assessors from industry. Further, the industry is also involved in accreditation of courses and quality management system audit of training providers. This helps to ensure that industry has an important role to play and input into the TVET system.

Subsequently, within each training institutes there are series of advisory board/committees, industrial liaison and publicity unit setup in institutes, exchange of resources and OJT for trainees and trainers, which is mandatory requirements as per BVQF system.

Skilled Worker Certification through RPL

Over the couple of years, more than 2000 skilled workers in industry were certified at various occupational levels, NC1-NC3 as per Recognition of Prior Learning (RPL) system. The RPL certificate provides opportunity for workers in industry to upgrade their positions, improve monthly income and uplift overall performance of individual workers in the industry.

RPL was also targeted at those in the informal sectors who do not have formal qualifications and skill training. The RPL has also increased utilization of national competency standards.

BVQF Certificate Recognition for Issuance of License and Minimum Wage

For BVQF to improve skilled workers in the country and successful TVET system, the royal government has changed the system of licensing of workers in certain category such as cultural tourist guide license is provided for those who have successfully passed NC2 national assessment for cultural tourist guide and for professional driver's license, a person must have completed NC2 professional driver assessment.

The minimum wages for workers are also aligned with the qualification levels to support recognition of workers with BVQF certificate. The categorization of workers such as semi-skilled, craftsman/ skilled and supervisor are part of the BVQF system.

BVQF Certificate recognition in Civil Service Jobs

The Royal Civil Service Commission (RCSC) has recognized the BVQF certificate as part of the position classification of civil service at different position levels. Example BVQF certificate, NC2 is equivalent to S1A, NC3 is equivalent to S2A and national diploma (ND2) is considered equivalent to other diploma qualifications in civil service. The same recognition and equivalency is also applied in corporate sectors.

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COUNTRY PAPER: FIJI
SUCCESSFUL MODELS OF TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING IN FIJI

Prof. Nigel Martin Healey, PhD[1]

ABSTRACT

This paper outlines the changing landscape of technical and vocational education and training (TVET) in Fiji, a small, upper-middle income island state in the South Pacific. It outlines the key priorities of the largest provider of TVET, Fiji National University: 1) the professionalisation and parity of esteem of TVET teachers in a dual sector university; 2) the development of industry-relevant TVET programmes; 3) the international accreditation of TVET programmes; and 4) matching the supply of, and demand for, TVET programmes. It considers some of the main challenges in achieving these objectives and sets out some recommendations for strengthening the position of TVET, based on Fiji National University's experience.

Keywords: TVET, Fiji, Professionalisation

INTRODUCTION

Fiji is an archipelago of 330 islands and 500 small islets. Although 110 of the islands are inhabited, rapid urbanisation means that 70% now live on the main island, Viti Levu. The largest population centre is Suva, which serves as the country's economic and political capital. The population is approximately 0.9m, of whom 57% are iTaukei (indigenous Melanesians) and 38% are Indo-Fijian – descendants of indentured labourers ('Girmitiyas') from India who arrived in Fiji in the late 19th and early 20th century (Central Intelligence Agency 2017). Fiji is the main commercial hub for the South Pacific island states and the economy has been growing rapidly over the last decade. Per capita income was US$9,109 (adjusted for purchasing power parity) in 2016, classifying Fiji as 'upper-middle income' (The World Bank 2018).

Fiji has experienced significant expansion in its tertiary education system since 2000 (Healey, 2018). There are three universities:

- Fiji National University (FNU), which was founded in 1885 (as Suva Medical School) and established in its current form in 2010 by the merger of six government tertiary colleges (medicine, nursing, agriculture, technology, and two education colleges). It has ten campuses across the two largest islands, Viti Levu and Vanua Levu.
- The University of South Pacific (USP), which was founded in 1968 as a regional university for the South Pacific (modelled on the University of West Indies). It has its largest campus and administrative headquarters in Fiji and smaller campuses in 11 other Pacific islands.
- University of Fiji (UniFiji), which was founded in 2005 as a small, faith-based university by Arya Pratinidhi Sabha, a Hindu organisation dedicated to promoting education.

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UNESCO defines technical and vocational education and training (TVET) as 'those aspects of the 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 occupation in various sectors of economic life' (King and Palmer, 2010). In common usage, TVET relates to technical qualifications which are sub-degree. Two of the colleges (agriculture and technology) that merged to form FNU were predominantly providers of TVET in 2010. In the period since, both have developed a range of degree programmes, including a BEng (Hons.), an MSc Engineering and a Bachelor of Veterinary Science and Animal Husbandry. Since the merger, the university has been restructured into five colleges (medicine, agriculture, business, education, engineering) and the last three have extensive TVET provision.

In this regard, FNU is unlike so-called 'dual sector' universities in Australia like RMIT, Swinburne and Victoria, which were formed by merging a university with one or more technical and further education (TAFE) colleges. Rather than merging TAFE/TVET with a higher education institution, TVET was always part of the FNU academic portfolio and, in the cases of the colleges of business and engineering, bachelor's and master's degrees evolved out of colleges that had previously been TVET only. As a result, FNU retains a very strongly vocational and practical orientation in all its programmes. All its undergraduate and TVET programmes, for example, have a mandatory internship as a graduating requirement.

USP is also a dual sector university. In contrast, however, USP was founded in 1968 as a regional (pan-Pacific) university. It was set up as a traditional research-based university, but developed a sub-degree portfolio to cater for some of the smaller Pacific island countries that did not offer a conventional 13-year school curriculum (Chandra, 2009). Today, USP has a large foundation programme which prepares regional students who have left school at year 12 for university study. More recently, USP has entered a partnership with the Australia-Pacific Technical College (APTC, rebranded as the Australia-Pacific Training Coalition in mid-2018) to offer a range of TVET programmes in both Fiji and across the Pacific.

To complete the picture, in 2015 the Fiji government established the Technical College of Fiji (TCF) to cater for the basic levels of TVET (equivalent to years 10 and 11 of school). By 2016, TCF had almost 5,000 enrolments across its ten sites (compared to enrolments in the three universities of approximately 55,000). FNU no longer offers these basic TVET programmes and there is a Memorandum of Understanding between FNU and TCF, which allows graduates from the TCF to transfer to the more advanced stages of the same TVET programme at FNU.

Tertiary education in Fiji is 'free at the point of use' for Fijian citizens. Financial assistance for students comes in the form of both grants and income-contingent loans, which are managed by the Tertiary Scholarships and Loans Board (TSLB). The National Toppers Scheme (NTS) provides tuition and maintenance grants for 'top' students (measured by their grade point average in high school) in national priority disciplines (medicine, engineering, etc). All other students can access the Tertiary Education Loans Scheme (TELS) to cover their tuition fees and living costs. TELS loans are interest-bearing and repayable at 20% of gross income once graduates begin working.

DESCRIPTION OF ACTIONS

Because the two dual sector universities in Fiji have been on very different trajectories – with higher education growing out of a TVET base at FNU, as opposed to TVET being grafted onto a higher education base at USP – this section focuses only on FNU's experience. FNU is also the largest provider of TVET in Fiji by some way. FNU's TVET agenda has had four main priorities:

1. The professionalisation and parity of esteem of TVET teachers in a dual sector university;
2. The development of industry-relevant TVET programmes;
3. The international accreditation of TVET programmes; and
4. Matching the supply of, and demand for, TVET programmes.

Consider each priority in turn.

The professionalisation and parity of esteem of TVET teachers in a dual sector university

One of the concerns of many of FNU's TVET teachers post-merger was that, as the university expanded the provision of higher education programmes, TVET would become gradually marginalised and seen as 'second class' by both staff and students. This fear was exacerbated in colleges like agriculture and engineering where the need for qualified faculty to develop and deliver bachelor's and master's programmes resulted in an influx of PhD-trained expatriates, mainly from India. To a large extent, this trend was inevitable, as there were initially almost no doctorally-qualified Fijians in the new disciplines being developed.

Nonetheless, by appointing highly qualified foreigners to the senior (and higher paid) academic ranks (Associate Professor, Professor) and focusing on the importance of peer-reviewed research, many TVET staff began to feel that their work was increasingly less valued by the new university. Compounding this effect was the salary structure, where TVET and higher education academic staff were on different salaries, but with common job titles at the more junior levels.

Table 1 shows, as of 31 December 2017, the ranks and salary ranges for TVET and higher education staff (FJD1.0 = USD0.47). For the ranks with the same titles between Tutor and Lecturer II, TVET salaries were significantly lower than for their higher education counterparts. As well as the salaries, terms and conditions differed between the two groups of staff. For many TVET subjects like carpentry, plumbing and cooking, instruction tends to be very 'hands-on' in workshops and kitchens, with the TVET teachers demonstrating techniques and skills to students and then overseeing them as they learn by trial and error. Because the teaching is labour-intensive, but requires relatively limited preparation ahead of time, TVET staff could be scheduled to teach for up to 28 hours a week.

Teaching at degree and postgraduate level, in contrast, tends to be lecture-based, although there are notable exceptions in the natural sciences and engineering. Preparing a lecture to be delivered to two hundred students requires a considerable amount of time and higher education staff are expected to be research-active, so that their teaching is informed by the latest theoretical and empirical developments in the literature. For these reasons, higher education staff are limited to class contact time of 16 hours a week.

Table 1. Fiji National University's Ranks and Salary Bands (December 2017, FJD)

TVET Ranks	Salary range	Higher Education Ranks	Salary Range
Tutorial Assistant	$19,841-23,001		
Tutor	$28,989-33,606	Tutor	$30,694-35,583
Assistant Lecturer	$30,695-33,541	Assistant Lecturer	$37,055-38,747
Lecturer I	$34,875-38,109	Lecturer I	$39,235-44,281
Lecturer II	$39,156-48,157	Lecturer II	$46,066-56,655
Senior Lecturer	$48,400-65,046	Assistant Professor	$56,942-88,713
Principal Lecturer	$65,662-76,121	Associate Professor	$94,545-109,603
		Professor	$109,716-162,407

The combination of common academic titles but differential salaries and teaching hours sent the unfortunate message that teaching in the higher education stream was higher status. The university's historic human resources policy, moreover, actually allowed staff to transfer from one stream to another; inevitably, this led to a one-way flow from TVET to higher education.

Following a review in late 2017, the university management determined that it was critical to clearly demarcate the two streams, so that TVET could be protected as a professional career pathway. This exercise involved rationalising the number of academic ranks and retitling the TVET ranks, to create a distinct TVET scale. It also required being much more explicit about the minimum academic qualifications required for each rank (eg, PhD for Assistant Professor and above) and only permitting movement between the two streams through an open and competitive selection exercise (eg, a TVET staff member who completed a PhD could apply for a vacant Assistant Professor position, but would have to compete for the post). Table 2 sets out the new rationalised and differentiated ranks.

Table 2. Fiji National University's Ranks from January 2018

2018 TVET Ranks	2018 Higher Education ranks
Tutor	
Assistant Instructor	Assistant Lecturer
Instructor	Lecturer
Senior Instructor	Assistant Professor
Principal Instructor	Associate Professor
	Professor

Along with these changes, a new professional development policy was introduced for TVET staff, which allowed them to spend a number of days each year working in industry (fully paid by the university) to refresh their knowledge of developments in the workplace. For example, a TVET instructor teaching automotive engineering might spend two weeks shadowing senior mechanics in a Toyota dealership, to update his/her knowledge about the maintenance of the new hybrid vehicles.

TVET staff were also encouraged to view themselves not as plumbers or carpenters, but as professional educators and strongly encouraged to upgrade their teaching qualifications in-service. The University developed and launched a structured 'ladder' of TVET teaching qualifications, starting with a higher educative certificate in TVET teaching, which articulates into a bachelor of TVET

teaching and an MEd (TVET). For TVET staff wholly hold sub-degree trade qualifications, contract renewal is contingent on progress towards upgrading their teaching qualifications.

Paradoxically, but not unsurprisingly, this reform which was intended to create 'parity of esteem' between the TVET and higher education streams met initial resistance. Many TVET staff resented the change in title from lecturer to instructor, which they felt devalued their professional status. The paradox, of course, is that this feeling stems from a subconscious assumption that higher education titles have a higher status. They were also worried that the insistence on minimum academic qualifications and gaining teaching qualifications ignored their considerable practical experience.

Although this reform is still in its early stages, a large number of the university's TVET staff have enrolled in the in-service teaching qualifications and there is a growing acceptance that, if TVET is to flourish in a dual sector university, it needs to be a distinctive career track in which TVET staff are proud of their vocation, rather than secretly feeling second-class and jealous of their higher education counterparts.

The development of industry-relevant TVET programmes

A common complaint by employers is that universities do not produce graduates who are fit for purpose. This is particularly acute in TVET, where companies expect plumbers, electricians and mechanics to be 'day one, work-ready'. Unlike high education, where the emphasis is on high-level transferrable skills like critical thinking and teamworking, so that employers can reshape new graduates through management trainee programmes, most employers of TVET graduates typically require them to be fully productive almost straightaway.

The rapid rate of technological advance in many TVET subjects, and the inevitable funding constraints on public universities, is widening the gap between the facilities that universities have to train students and the equipment graduates will be expected to use when they start work. For example, tourism is a major growth sector in Fiji and most of the hotels are large four- and five-star resorts. The kitchens needed to cater for a 500-bed hotel are on an industrial scale, while FNU is training its cooks and chefs in small teaching kitchens. A recent review at the university concluded that to expand and refit an existing training kitchen to international resort standards would cost over $2m.

In other cases, structural change in the Fijian economy is creating demand for new jobs that require programmes that the university is not offering. Rapid economic growth and investment in new physical infrastructure, for example has led to a boom in mining and quarrying, which calls for employees with specific training. Nutraceutical manufacturing is also a strongly emerging sector, which needs very particular skills and competencies if companies are to meet the exacting standards to export to the United States, the world's largest nutraceutical market.

The university mandates that every academic department needs to have an active 'industry advisory committee' (IAC) comprising a representative range of industry stakeholders, which must meet at least once a year to review the department's academic portfolio and recommend changes to existing programmes and the development of new programmes. The university is also represented on the various sectoral committees of the Fiji Chamber and Employers' Federation, to take feedback on changing employer needs. And the new policy of requiring TVET staff to spend time in industry each year updating their knowledge of workplace practice is not just intended to improve their own teaching, but also to allow them to bring back ideas for curriculum development to the university on their return.

The international accreditation of TVET programmes

For a small, middle-income country like Fiji, with larger wealthier neighbours to the South (New Zealand) and South-West (Australia), gaining international accreditation is a double-edged sword. On the one hand, it provides a way of ensuring that the university's qualifications are benchmarked on international standards, thereby enhancing productivity and economic growth. On the other, it means that Fijian graduates are more internationally-mobile, increasing the risk of 'brain drain'.

However, the alternative is much less appealing. Providing second-rate TVET qualifications which lag international standards would mean that Fijian graduates are trapped in their home country, which itself is locked onto a path of low economic growth by an unproductive and unskilled workforce. It is far better to produce high quality graduates, who have the choice to emigrate or look for work at home in a vibrant, booming economy.

FNU is on a journey to gain international accreditation for its TVET programmes, both to upgrade the quality of its education and training, as well as to provide a portable qualification to its graduates. One example is the advanced diploma in engineering. To gain 'Dublin Accord' recognition for sub-degree programmes in engineering, the diploma needs to be accredited by the professional engineering body of one of the signatory nations. In FNU's case, the advanced diploma of engineering has been redesigned to meet the requirements of Engineers New Zealand (ENZ), with a view to gaining accreditation by ENZ once the first cohort of students has graduated from the new programme.

In New Zealand, ENZ-accredited diploma programmes are typically two years (levels 5 and 6, where level 5 is equivalent to the first year of university). In Fiji, however, the biggest market for diploma students is for high school students who leave at year 12 (level 3). To adapt the programme to meet local circumstances, FNU's new advanced diplomas in engineering (mechanical, electrical, civil) are three-year programmes, which start at level 4 and go through to level 6.

Seeking international accreditation for programmes in a small, remote country like Fiji can be difficult. It has been made easier by the fact that the Fiji Higher Education Commission (FHEC) has designed the national qualifications framework to align with its New Zealand and Australian counterparts (see Table 3), so that Fiji diplomas map directly to those of the country's near neighbours. Nevertheless, accreditation standards developed in rich, developed countries can be challenging to match in poorer middle- and low-income countries, where the resources to equip laboratories and workshops to international standards may be limited.

Table 3. The Fiji Qualifications Framework

Level	TVET	Higher Education
10		Doctorate
9		Masters
8		Honours, Postgraduate Diploma, Postgraduate Certificate
7		Bachelors, Graduate Diploma, Graduate Certificate
6	Advanced Diploma	Higher Education Diploma
5	Diploma	Higher Education Certificate
4	Certificate 4	
3	Certificate 3	
2	Certificate 2	
1	Certificate 1	

Matching supply and demand for TVET programmes

As Fiji's national university, FNU faces two important questions: 1) What TVET programmes should the university be offering to support the nations' economic development today? 2) What TVET programmes should the university be offering to support the nation's economic development over the next 5-10 years? Although the use of IACs to inform curriculum design at departmental level is an important part of the answer, these inputs tend to be relatively instrumental and near-term. They do not answer the broader question at the university level.

The real research questions are: 1) What are the graduate outcomes from FNU's current programmes in terms of graduate employment rates and graduate salaries? 2) What knowledge, skills and competencies will employers need from FNU's graduates in 5-10 years?

The first research question can be answered empirically by studying the data. Fiji Revenue and Customs Service (FRCS) and Fiji National Provident Fund (FNPF) both hold data on the employment status and earnings of all Fiji residents, which are cross-referenced to an individual's Tax Identification Number (TIN). This is because FRCS operates on the basis of a 'pay as you earn' (PAYE) system where employers deduct income tax from their employees at source; contributions to the national pension fund are also statutory and these are also deduced at source by employers and paid directly into employees' FNPF accounts.

The second research question cannot be answered empirically. No concrete data exist for the future demand for skilled labour. But in Fiji, there are government agencies like the Fiji Reserve Bank, the Ministry of Economy, the Ministry of Employment, Productivity and Industrial Relations and the Ministry of Industry, Trade, Tourism, Lands & Mineral Resources which all aim to forecast future labour market trends. Investment Fiji and the Fiji Development Bank are both engaged in shaping the future labour market, by targeting emerging sector for inward investment. The various employers' organisation like the Fiji Commerce and Employers are actively planning the future labour market.

FNU is current working on a major project to assess the changing labour market demand for TVET graduates, by analysing FRCS/FNPF employment and income data and working with focus groups from ministries and development banks to produce more triangulated forecasts for future labour market demand. This is a significant task, but if the country's continued economic development and growth is to be underpinned by a supply of high quality TVET graduates, the university's curriculum designers need this market intelligence.

CHALLENGES AND RECOMMENDATIONS

As noted above, in ensuring the continued vitality and relevance of TVET in Fiji, FNU is focused on four key priorities:

1. The professionalisation and parity of esteem of TVET teachers in a dual sector university;
2. The development of industry-relevant TVET programmes;
3. The international accreditation of TVET programmes; and
4. Matching the supply of, and demand for, TVET programmes.

Each of these comes with its challenges. Reversing the decline in the perceived status of TVET in a dual sector university is hard. TVET and higher education staff are drawn from different pools. TVET staff tend to be less geographically immobile, but can easily return to jobs in industry; TVET salaries

need to be benchmarked against those in the local private sector. Higher education, particularly those who are PhD-qualified and working in an English-language jurisdiction like Fiji, are highly internationally mobile and salaries need to be set with reference to competitor markets like Australia and New Zealand. Inevitably this means that TVET salaries tend to be lower than higher education salaries, so that attempts to professionalise and instil pride in a TVET career risk being undermined by the message sent by salary differentials.

The university has had considerable success in developing industry-relevant TVET programmes, but this tends to be limited to programmes where there is an immediate industry need. In the case of the nutraceuticals sector discussed above, the university was able to quickly develop a bespoke certificate for the leading manufacturer, because the company could derive its requirements by working backwards from the US Food and Drug Administration (FDA) regulations. Where the industry is in flux and companies in Fiji are reacting to external change overseas, rather than leading change themselves, they often do not know what programmes they will need in one or two years into the future.

As a survey by the Asian Development Bank of TVET across the region concluded: 'Employer advisory councils frequently fail, particularly at the institutional level, because business people do not have the time or incentive to participate, and/or representatives of employer associations may be bureaucrats and isolated from enterprise developments' (Asian Development Bank 2009).

The international accreditation of TVET programmes is expensive and it takes time to 'educate' accreditation panels about the constraints and cultural context of a small, middle-income economy like Fiji. External panel members who demand business class air travel and arrive with an expectation that facilities and equipment should replicate their laboratories and workshops in Australia or the United States can easily appear arrogant and patronising, demoralising local staff and undermining the accreditation project.

Matching the supply of, and demand for, TVET graduates at the macro level requires hard data, not employers' anecdotes and opinions. In some countries, notably the UK, the government collects and publishes data on graduate outcomes that students can use to guide their choices of subject and university, and universities can use to improve the graduate employability of their programmes. This data does not currently exist in Fiji in a form that is usable by either universities or the FHEC. There are currently concerns by the FRCS and FNPF about the confidentiality of individuals' data if it were to be released for analysis and this is still work in progress.

The main recommendation is that governments and universities should not lose sight of the critical importance of TVET (Tripney and Hombrados, 2013). In a fast-developing economy like Fiji's, it is inevitable that older generations who grew up in an agrarian society, where work was manual and harsh, want their children and grandchildren to go to university and become doctors, lawyers and accountants, to give them a 'better' life as a white-collar office worker. But underpinning Fiji's economic development requires the skilled TVET graduates that build the new roads, hospitals, hotels and airports, service the exploding number of new cars, and staff the booming service economy and tourism sector. Like many countries, Fiji needs to better celebrate and reinforce the value of a skilled vocational workforce to its economic prosperity.

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COUNTRY PAPER: MALAYSIA
QUALITY ASSURANCE IN TVET: PROGRAM EVALUATION IN POLYTECHNICS AND COMMUNITY COLLEGES

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ABSTRACT

This paper aims to ascertain that the appraisal process of Malaysia's polytechnic and community colleges' course of study can indeed enhance and assure the standard of TVET programs delivery in line with institutional, industrial and community expectations. It is also imperative that evaluation of programs offered should be routinely done and tailored to the needs and requirements of the organization to ensure quality outcomes of TVET graduates. The methodology used in this study is qualitative which entails analysis of TVET documents such as reports, guidebooks, strategic planning and achievements of 36 Polytechnics and 102 Community Colleges in Malaysia. The resulting impact of this study is on the improvement of planning, implementation and monitoring of program offerings so that Polytechnics and Community Colleges will produce quality, balanced, holistic and entrepreneurial TVET graduates.

Keywords: mmunity Colleges, Program Evaluation, Quality Assurance

INTRODUCTION

The industrial revolution is one of the important elements to improve the quality of Technical Vocational Education and Training (TVET) and enhance the economy and embrace the modern world civilization landscape. Schwab (2015) explained the fourth industrial revolution drives 3 major domains, which include physical, digital and biological. The nine pillars of industry 4.0 are (1) simulation (2) system integration (3) internet of thing (IOT), (4) cyber security, (5) cloud computing (6) additive manufacturing, (7) augmented reality, (8) big data and (9) autonomous robots. Figure 1 shows The nine pillars of industry 4.0.

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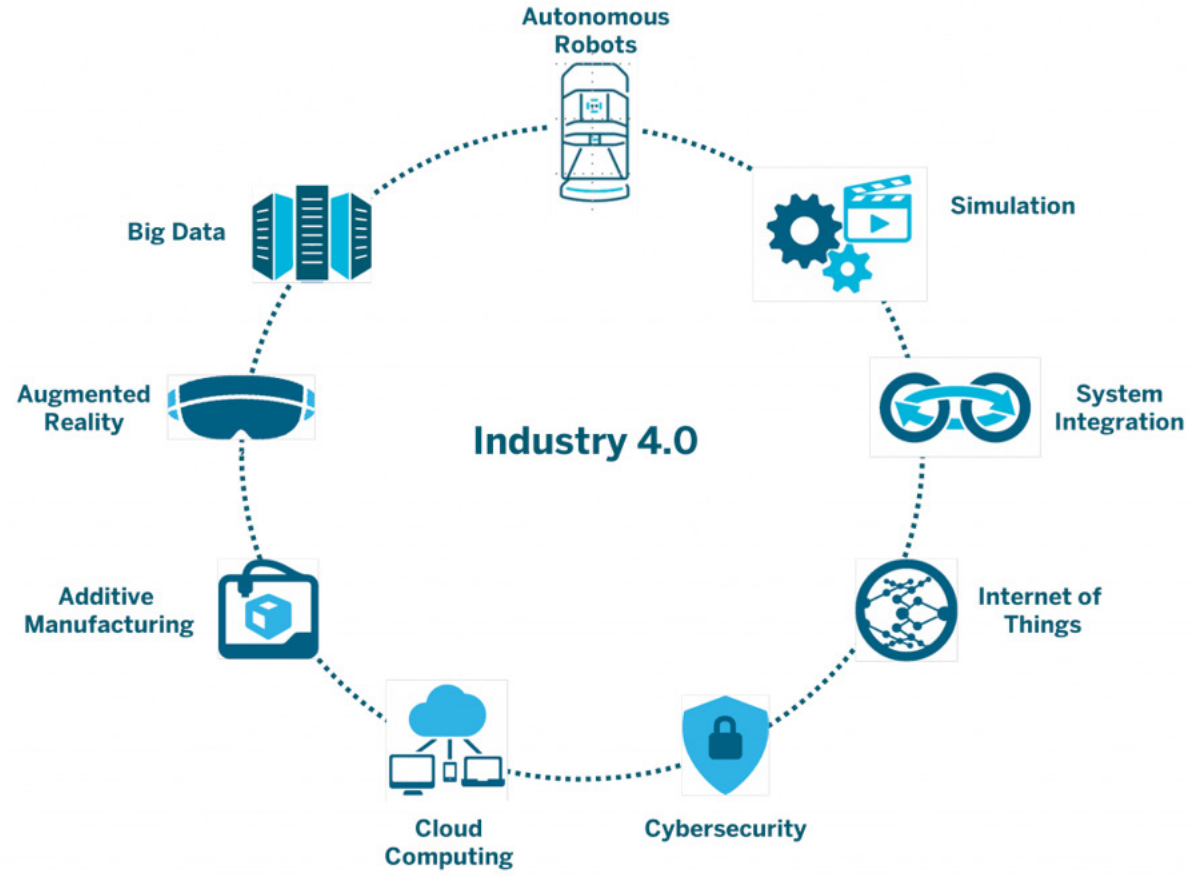

Figure 1. The nine pillars of industry 4.0

The question now is how can TVET institutions in Malaysia play a role and adapt from industry 4.0? Polytechnics and Community Colleges have a significant role in the provision of semi-professional human capital. The TVET system in Malaysia has various changes and innovations in determining the potential development of students and in parallel with the National Education Philosophy (Affero Ismail 2017). The education system in Malaysia has also changed to ensure every planning and implementation of the TVET program in accordance with the policy and strategic TVET Malaysia. The TVET system is one of the most important approaches and in line with national development (Zafir et al., 2015).

Therefore, to realize that TVET in Malaysia is always relevant to technological and economic developments, the quality of TVET education needs to be evaluated from time to time. TVET quality assessment aspects include the curriculum, governance, assessment, industry requirements and programs offered (Hadijah Ahmada 2015). This research paper focuses on the quality evaluation of programs offered in polytechnics and community colleges. Programs should be evaluated within 5 years so that each teaching and learning activity can be adapted to the needs of technology and industry. The program quality evaluation process is implemented according to the Malaysian education system. This paper describes the process of program evaluation in polytechnic and community colleges in Malaysia.

BACKGROUND RESEARCH

Past studies often question the ability of graduates to meet the needs of manpower in the country's economic development. At the same time, technology is changing rapidly and requires a workforce with high skills to meet the needs of the industry (Taylor, 2015) and the willingness of graduates to enter the workforce. In the context of Malaysia, various mechanisms have been introduced by the Malaysian Qualifications Agency (MQA) and TVET institutions to ensure graduates are equipped for marketability. However, there are still times when the industry questions the quality of TVET graduates, especially on knowledge and skills (Shah et al., 2015).

Hence, the provision of human capital that is ready to enter the job market at semi-skill and full-skill levels requires consistent TVET education system. TVET Education requires effective and flexible changes for professional development. Professionalism needs to be applied to produce quality graduates with technical and soft skills and recognized by the industry. Rapid change in technology is one of the challenges of TVET system in Malaysia ensuring that all plans and implementation of programs in education are in line with the requirements of the country (Graham et al., 2018). Program offerings potentially having a positive impact become strategic to TVET institutions. This is supported by the dynamic TVET education curriculum that can be adapted to the needs of national development needs. TVET curriculum content also needs to be assessed in accordance with the requirements of industry other than teaching tools, laboratory and workshop equipment required to be reviewed and updated periodically.

Effective program evaluation requires lecturers to take on regular training to have competitiveness and skills competencies in line with the labor force required in the market (Hamilton et al., 2015). According to Pavlova & Chunlin (2009), TVET program is the key to sustainability. Accordingly, TVET institutions should have the competence and sustainable practices to respond to the growing concerns of the 21st century on environment, economy, society and culture. It makes the TVET system become a viable support to the agenda of the Ministry of Education.

In addition, program evaluations also require collaboration between industry and community to improve program contents, and teaching and learning approaches. This allows TVET graduates to realize that every TVET system planning is relevant at all times (Rasul et al, 2015). The program evaluation should take into account the restructuring process and the strategic policy of the Malaysian education system by showing various changes and new paradigms implemented in TVET system (Hadijah Ahmada 2015). With the increase in demand, competition among graduates to get jobs nowadays has become increasingly intense. This is one of the effects of globalization as supply of graduates to the labour market becomes greater.

HISTORICAL BACKGROUND OF TVET IN MALAYSIA

The history of TVET schools began with the establishment of a Trades School in Kuala Lumpur in 1926. In 1930, the school was expanded to Ipoh, Johor Bahru and in Penang in 1932. After independence, the government started to give an enormous concern on TVET, which is expressed from the First Malaysia Plan 1965-1970 to the Tenth Malaysia Plan 2010-2015. During the First Malaysia Plan period, a number of upper-secondary vocational schools were established for the first time. The main function of the vocational schools is to supply skilled technicians, craftsmen and artisans urgently needed by the agricultural, industrial and commercial sectors in economy.

Furthermore, the increase of foreign investment through multinational companies in Malaysia resulted in the introduction of new production processes and technologies and an increased demand of a highly competent workforce with advanced skills. As a result, two advanced skill training institutions

were established in cooperation with Germany and France: the German Malaysia Institute (GMI) and Malaysia France Institute (MFI) (JPM 1995). In the 1990s, the number of students entering technical and vocational schools was increasing. Thus, in 1995, changes had to be made in the TVET system, which include the restructuring and upgrading of 69 secondary vocational schools (SMV) to technical schools (SMT). This reform was not only restricted to the technical and vocational schools alone, but also to a number of institutions that have as well the objective to help students to get a job based on the skills acquired from technical and vocational training, which are Community Colleges, Industrial Training Institutes (ITIs), Polytechnics, Training Institute of Youth and Sports (ILKBS), and MARA Vocational Institutes (IKM).

In order to support the implementation of an enhanced quality in technical and vocational education and training, the National Industrial Training and Trade Certification Board (NITTCB) was established in 1971.

TVET programmes in Malaysia are offered at certificate, diploma, and degree levels by seven ministries that include the Ministry of Education (MOHE), which offers the most TVET programmes to the highest number of students. Currently, over 1,300 TVET institutions are in operation in Malaysia. Of which, 568 are public institutions including polytechnics, community colleges, vocational colleges and other higher learning institutions that could accommodate about 230,000 students.

According to the Ministry of Education (higher education) blueprint, there will be an increase in demand for an additional 1.3 million TVET workers by 2020 in the 12 National Key Economic Areas identified under the government's Economic Transformation Programme.

Presently, qualifications for academic (higher education) and vocational education sectors offered by MOE's universities, polytechnics, and community colleges are accredited by the Malaysian Qualifications Agency (MQA), whereas skills training programmes offered by skills training institutions are accredited by the Department for Skill Development (DSD) uses National Occupational Skills Standard (NOSS) of the Ministry of Human Resources (MOHR).

Malaysian Qualifications Agency (MQA)

The Malaysian Qualifications Agency (MQA) is now the main quality assurance and accrediting body as stated in the MQA Act 2007 and has the responsibility of assuring the quality of both public and private higher education programmes in Malaysia.

Besides the quality of higher education institutions, quality assurance practices have also evolved tremendously in recent years. The Malaysia Qualifications Framework (MQF) was established to illustrate all levels of higher education in Malaysia, and serve as a national reference point for all Malaysian qualifications.

Without compromising the quality of programme accreditation practices, Malaysia has also started to empower the responsibilities of quality assurance to higher education institutions by introducing a self-accrediting process. This gives certain institutions the authority to accredit its own programmes, with regular monitoring by MQA. It is one of the many efforts of the ministry to continuously strengthen the quality of higher education in Malaysia.

The changing trends in quality assurance show that quality assurance is an ongoing process. MQA is committed to continuously reviewing its quality assurance practices to ensure their relevancy, reliability, adaptability and effectiveness to address the ever changing environment in which higher education operates.

Department for Skills Development (DSD)

For skills programmes approved by the Department for Skills Development (DSD), MOHR, 'occupational skills standards' are developed at a national level. The National Occupational Skills Standards are the 'minimum specification of performance that an individual must achieve competency in when carrying out a function in the workplace, together with the knowledge and skill set needed to meet standard requirements' (NOSS Guideline, Department of Skills Development (DSD) Ministry of Human Resources, 2013).

National Occupational Skills Standard (NOSS)

The National Occupational Skills Standard (NOSS) is a standard established under Part IV of the National Skills Development Act 2006 [Act 652]. NOSS is defined as a specification of the competencies expected of a skilled worker who is gainfully employed in Malaysia for an occupational area, level and the pathway to achieve the competencies. The National Occupational Skills Standard (NOSS) is a minimum specification of performance that an individual must achieve and competent when carrying out a function in the workplace, together with the knowledge and skill set that need to meet standard requirements. It is used as a reference for the industry, career path of a skilled worker, training purposes and benchmarks for best practices.

Malaysian Technical University Network (MTUN)

Malaysian Technical University Network (MTUN) started with the establishment of University Colleges in the early 2000. MTUN specialises in higher technical and technology programmes which are practical-oriented. The universities are Universiti Tun Hussein Onn Malaysia (UTHM), Universiti Teknikal Malaysia Melaka (UTeM), Universiti Malaysia Pahang (UMP) dan Universiti Malaysia Perlis (UniMAP). MTUN offers diploma, degree, master and PhD programmes.

POLYTECHNIC AND COMMUNITY COLLEGE

Polytechnic

Polytechnics were first introduced in 1969 by the Colombo Plan with the establishment of the first polytechnic Polytechnic Ungku Omar, Ipoh. Education polytechnics have been enhanced and strengthened with the recommendation of the Committee. Now there are 36 operational polytechnics across the country and there are 96,391 students enrolled in the diploma programs and degree programs. Currently, polytechnics can be divided into three categories - premier, conventional and metro. These polytechnics provide skilled semi-professionals in the fields of engineering, commerce and hospitality at diploma and advanced diploma levels to meet the demand of the public and private sectors.

Community College

Since the establishment of the first 12 pioneer community colleges in 2001, the number of community colleges across all states in Malaysia with the exception of the Federal Territory, has risen to 102. Community colleges are synonymous with Technical and Vocational Education and Training (TVET) as they provide a multitude of programmes that are based on technical and vocational education and training at the certificate and diploma levels. Until now, there are 23,721 students enrolled in the certificate programs and diploma programs.

Apart from offering full-time programmes, community colleges also offer short courses to fulfil the need of the local communities. The objectives of these short courses are to inculcate interest, to motivate, to educate the communities about lifelong learning and consequently to increase their standards of living.

PROCESS OF EVOLUTION PROGRAM

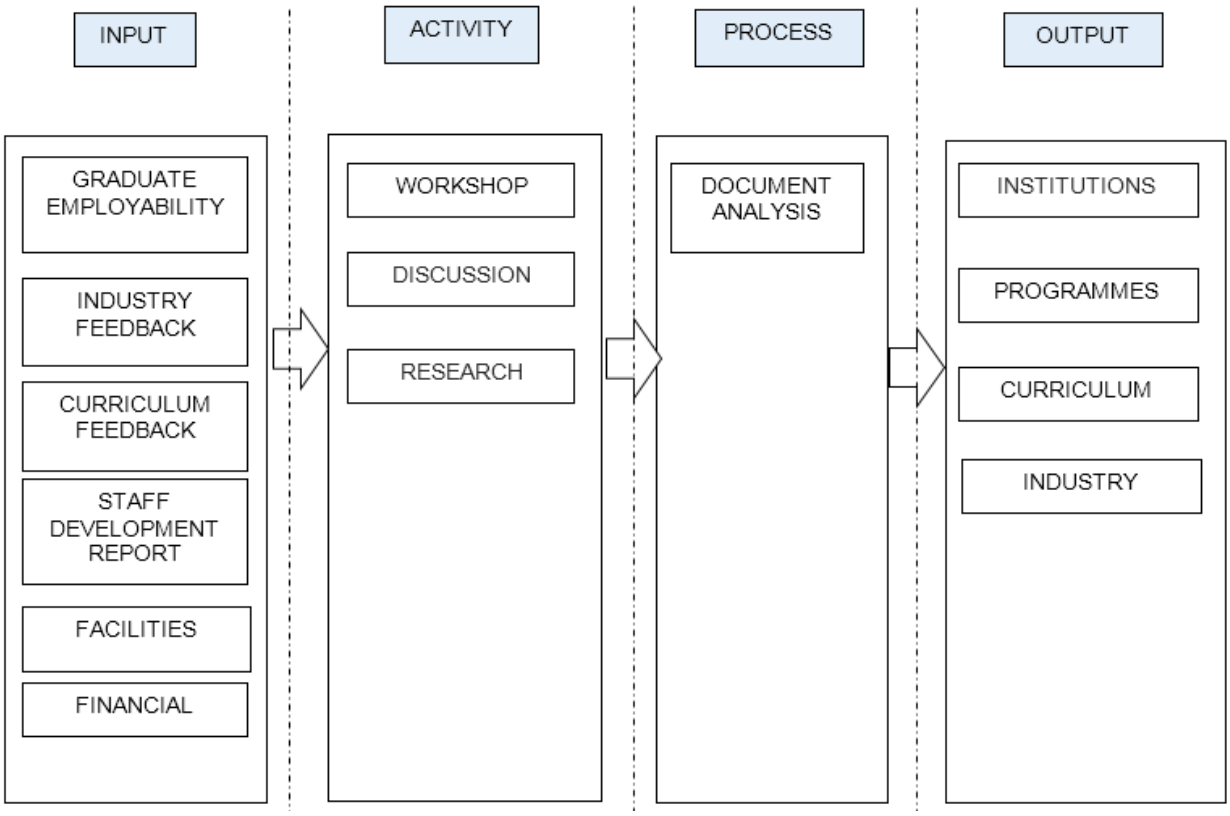

Figure 2. CIPP Stufflebeam Evaluation Model 1971

In this study, the conceptual evaluation of the Stufflebeam Model 1971 program is used. This framework has three main processes - input, process and output. Input is represented by graduates' marketability elements, industry feedback, curriculum feedback, staff development reports, facilities and finance. Activities include research, discussion and workshops. The process is document analysis while output is comprised of institutions, programs, curriculum and industry.

Input assessments involve various program planning approaches that can determine when a program and these inputs need to be made before program execution is approved. Process assessment focuses on the implementation of activities to produce a curriculum such as workshops, discussions and research. Output evaluations are identifying results that have been achieved and are not achievable to help detect the effectiveness of the curriculum to be implemented. Referring to the CIPP Stufflebeam (2000) evaluation model, this study was conducted to evaluate the implementation of Community Polytechnic and College curriculum programs from input dimensions, process and output activities.

For input, a study was conducted to assess the suitability of a curriculum program in terms of marketability, industry feedback, curriculum feedback, staff development reports, facilities and finance. All of these inputs play an important role in determining programs that have been implemented to get good output. For the activity, it is to look at the extent of planning, discussion

and research on the curriculum program information to be developed related to curriculum content components, course learning outcomes, lecturer's knowledge and skills and R & D equipment. While the process is to assess and analyze the curriculum program documents that have been created and implemented. And the latter is the output, which will see the implementation of a curriculum program in the institution such as the implementation of the teaching and learning process of the Polytechnic / Community College lecturer who teaches the composition of teaching and learning strategies, the use of inputs and materials teaching, and assessment.

TVET curriculum will be strengthened to produce high quality TVET graduates that meet the industry demand. TVET curriculum development will focus on critical and creative thinking as well as self-reliance learning among TVET students. Institutions will be encouraged to embed industry input in the curriculum to ensure their graduates match the skills requirements of the industry. In addition, entrepreneurship will also be embedded in the curriculum to promote self-employment and enhance graduates' resilience upon entering labour market. The development of occupational standards will be continuously reviewed to keep pace with changing technological and industry requirements.

DISCUSSION

Generally, this research paper has implications that can measure the strengths, weaknesses and opportunities of each program evaluation activity. This measurement is important for obtaining competent inputs by management in polytechnics and community colleges to make decisions other than putting short-term and long-term targets on the importance of the TVET system in Malaysia. Evaluation of programs that can improve or redesign initiatives of the curriculum, teaching and learning and assessment exams can also be added. The selection of program evaluation and monitoring approaches helps identify appropriate approaches in implementing program evaluation and planning activities.

Ministry of Education Malaysia

This research helps the ministry to gather needs assessment on programs offered by polytechnics and community colleges in Malaysia. Employers valued graduates from polytechnics and community colleges. Success and initiative to integrate TVET into education for sustainable development requires holistic collaboration from administrators, lecturers, researchers, policy makers, non-governmental organizations, industry, unions, students and governments.

Through quality assurance, polytechnics and community colleges could improve their management and delivery system, building a transformative and creative learning environment towards enhancing the value of Malaysian TVET graduates and systems. In addition, future challenges require TVET education institutions to take a proactive approach in producing qualified graduates who are open to change, capable of formulating new ideas and new approaches in doing things, and able to resolve problems to meet the needs of the present and future

Curriculum

The transformation of the TVET curriculum is expected to produce highly skilled workforce in line with increasing economic growth. The assessment of the polytechnic and community college programs takes into account the aspect of curriculum development. Curriculum changes in TVET system should refine and improve aspects of the personality and spirituality. Curriculum changes also have to be precise in order to produce graduates who are competent and holistic. Curriculum must be drafted in accordance with the requirements and changes in the industry. TVET curriculum should focus on critical thinking, creativity and improve convey knowledge and skills in teaching

and learning. In addition, TVET curriculum should reflect the changes and the need to provide knowledge, skills and values that help students. TVET programs need lecturers who are skilled in the delivery of teaching and learning techniques so that students can relate practical skills and theory.

Industry

In order to realize Malaysia's goal of becoming a developed nation, Malaysia needs human capital that is knowledgeable and ethical to drive the current industry-based economic growth. The industry network plays an important role in meeting the needs of developing a human capital concept of TVET. Program evaluation takes into account the industry's need to improve the curriculum through discussions with the industry. Research and innovation collaboration with the industry can strengthen the implementation of Work-Based Learning (WBL) and adopt the implementation of a teaching factory that focuses on curriculum, assessment and teaching and learning. The image of polytechnics and community colleges should be upgraded internationally through knowledge and expertise sharing, and conducting research collaborations focusing on professional bodies and international educational institutions.

CONCLUSION

The evaluation of polytechnic and community college programs is carried out once every five years. This assessment aims to ensure that polytechnics and community colleges are relevant in the TVET education system and are able to provide quality human capital. The program evaluation framework is capable of driving each of the activity and program evaluation phase taking everything into consideration. Polytechnics and Community Colleges are always trying to improve their programs by taking into account changes in the curriculum, teaching and learning, assessment examinations anchored by MQA. In addition, the program evaluation system can discern the targets and achievements of the Key Performance Indicators in the Malaysian Education Blueprint. The program evaluation process needs a set standard. In this regard, integrating sustainable development education with the TVET curriculum must follow a set of standards to ensure that the curriculum truly achieves sustainable education standards. In this standard, there are three generic dimensions or aspects that must be applied in a curriculum for a particular subject or field, i.e. generic knowledge, skills and generic skills. Philosophy, vision, mission, goals, and policies and curriculum through continuous reforms are necessary to make TVET programs in line with the rapid scientific and technological changes, and industrial and societal needs.

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COUNTRY PAPER: MALDIVES
VOCATIONAL SKILLS TRAINING FOR SOCIO-ECONOMIC DEVELOPMENT IN THE MALDIVES

Abdul Hannan Waheed, PhD[1]

ABSTRACT

This paper explains that the Maldives has been undergoing rapid transformations in the field of vocational skills training in recent years. There have been improvements in the social economic development. The government claims that most of the TVET graduates are already employed in their fields. TVET trainees fall in the fields of tourism, construction, transportation, fisheries and agriculture and social sectors. The government of the Maldives has introduced a number regulations that facilitate local employment by placing a number of restrictions on foreign employment in certain sectors/ trades. As in many other countries, changing the perception of the people towards TVET training and attracting sharp brains towards the field has been a challenge that requires overcoming.

Keywords: Socio-Economic Development, Perceptions, Vocational Skills Training

INTRODUCTION

The Maldives is a small island state in the Indian Ocean with a population of 341,256 according to the latest census taken in 2014. It is a geographically wide-spread country with a range of challenges and difficulties as an island state. Compared to other South Asian countries, the Maldives is relatively prosperous in terms of its GDP per capita, which stands at 11,903 in 2013. The Maldives is known as an up-market tourism hotbed for sun-seeking holiday makers from around the world. The tourism sector, therefore, needs skilled labor to cater the ever-growing industry. Hence, a TVET system that delivers vocationally trained people is much needed for the country.

The TVET Authority under the Ministry of Education has embarked on a drive to create a skilled labor force in the country. These efforts are facilitated by the highest authorities in the country, including His Excellency President Yameen Abdul Qayyoom himself, relevant Ministers, especially Minister of Education Dr. Aishath Shiham. The TVET Authority and other relevant bodies usually get full blessing and support of all government authorities in delivering TVET trainings. Certainly, that is the secret of unusually successful TVET delivery and achievements so far.

The current drive for skills training in the Maldives is very much geared towards socio-economic development. At least that is the ambition behind this extra attention by the government to train as many youths as possible in various trades linked to major industries in the country. This drive may also be the realization of the global push for skills training to be a part of the overall education system, which is evident in the UN's Sustainable Development Goals (SDGs).

The regulatory body for TVET is the Technical and Vocational Education and Training Authority (TVET Authority), which is under the Ministry of Education. The TVET Authority not only functions

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as the regulatory body for TVET, but it is also very active in the actual delivery of TVET trainings for various segments of the society in many trades. TVET Authority's regulatory aspects consist of National Competency Standards, Workplace assessments, Trade Licensing and Certification. There are more than 140 TVET qualifications within 40 competency standards in five sectors: Transportation, Construction, Tourism, Social and Fisheries and Agriculture.

EFFORTS TOWARDS ENSURING SOCIO-ECONOMIC DEVELOPMENT

The Technical and Vocational Education and Training Authority in the Maldives is aimed at empowering youth through providing training in various trades linked to five major industries in the country. Attention is given to make the skills training as relevant as possible to the actual jobs they are trained for. In other words, they are trained as job-ready graduates.

To make TVET trainings relevant to the industries and trades, a number of competency standards have been developed in consultation with industry leaders and professionals. Table 1 provides a list of approved competency standards used as the backbone for TVET trainings.

Figure 2. CIPP Stufflebeam Evaluation Model 1971

#	Sector	Competency Standard	Qualifications Included in the Standard	
			Qualification Title	MNQF Level
1	Transport	Automotive Maintenance (Light Vehicle)	National Certificate I in Automotive Maintenance	1
			National Certificate II in Automotive Maintenance	2
		Driving Instructor (Light Vehicle)	National Advanced certificate in Driving Instructor (Light Vehicle)	4
		Marine Mechanic	National Certificate I in Marine Mechanic	1
			National Certificate II in Marine Mechanic	2
			National Certificate III in Marine Mechanic	3
		Reservation and Ticketing	National Certificate III in Reservation and Ticketing	3
2	Construction	Bar Bender	National certificate II in Bar Bender	2
		Carpenter (Furniture)	National certificate III in Carpenter (Furniture)	3
		Electrician (domestic)	National certificate III in Electrician (domestic)	3
			National Advanced Certificate in Electrician	4
		Painter (Building)	National certificate II in Painter (Building)	2
		shuttering carpenter	National certificate II in shuttering carpenter	2
		Welder	National Certificate III in Welder	3
		Arc Welder	Advanced National Certificate in Arc Welder	4
		TIG Welder	Advanced National Certificate in TIG Welder	4
		MIG and MAG Welder	National Certificate III in MIG and MAG Welder	3

#	Sector	Competency Standard	Qualifications Included in the Standard	
			Qualification Title	MNQF Level
3	Tourism	Food Preparation	National Certificate III in Food Preparation	3
		Pastry and Bakery Chef	National Certificate III in Pastry and Bakery Chef	3
		Front Office	National Certificate III in Front Office	3
		Room Attendant	National Certificate III in Room Attendant	3
		Food and Beverage Services Personnel	National Certificate III in Food and Beverage Services Personnel	3
		Tour Guide	National Certificate III in Tour Guide	3
4	Social	Assistant Nurse	National Certificate IV in Assistant Nurse	4
		IT Technician	National Certificate II in IT Technician	3
		Retail services	National Certificate I in Retail services	1
		Retail services	National Certificate II in Retail services	2
		Retail services	National Certificate III in Retail services	3
		Pharmacy Assistant	National Certificate III in Pharmacy Assistant	3
		Pharmacy Assistant	National Certificate IV in Pharmacy Assistant	4
		Photography	National Certificate III in Photography	3
		Art and Design	National Certificate III in Art and Design	3
		Office Administration	National Certificate III in Office Administration	3
		jewelry Design and Making	National Certificate III in jewelry Design and Making	3
		jewelry Design and Making	National Certificate IV in Jewelry Design and Making	4
5	Fisheries and Agriculture	Fish Processing and Quality Control	National Certificate I in Fish Processing and Quality Control	1
			National Certificate II in Fish Processing and Quality Control	2
			National Certificate III in Fish Processing and Quality Control	3
		Refrigeration and Air Conditioning Mechanic (Domestic)	National Certificate III in Refrigeration and Air Conditioning Mechanic (Domestic)	3
			National Advanced Certificate in Refrigeration and Air Conditioning Mechanic (Industrial)	4

The Maldives is trying to improve socio-economic development through skills training. Efforts have been made to encourage TVET trainees to start their own business. Indeed, some TVET trainings such as photography, pharmacy assistance and electricity have realistic opportunities for entrepreneurship. Therefore, discussions and dialogues are already occurring in the society facilitated by the relevant authorities to spread awareness and knowledge in entrepreneurship.

Some TVET training in the Maldives are designed in a way that provide students the opportunity for entrepreneurship. One example is, photography training in which students are given decent entry

DSLR cameras that can be used in real photography. The graduation ceremony of National Certificate 4 was held on 24 September, 2017. During the ceremony, it was announced that many students who completed the course, have already secured jobs; some of them as freelance photographers.

The government of the Maldives earlier enforced a regulation that forbids foreigners to work as photographers in resorts. That facilitated entrepreneurship for Maldivians. Perhaps, other countries can learn from this example and link up skills training entrepreneurship through targeted regulations that facilitate and encourage entrepreneurship.

RECOMMENDATIONS

Designing and delivering TVET trainings along with regulations are difficult and challenging. It includes developing competency standards in consultation with sector councils and technical experts. Inclusion of entrepreneurship within the TVET training is a very recent concept. The traditional objective of TVET training has been equipping students with necessary skills required for certain jobs. However, recent TVET trainings also include the component of equipping students with knowledge and ideas for entrepreneurship or starting their own businesses.

One of the current challenges of the TVET Authority is the inadequate human and physical resources in the Maldives. The fact that the Maldives is a small island state aggravates the challenge of limited resources. For instance, there is a shortage of qualifications developed under various competency standards. Also, options become limited when need arises to develop new competency standards as well as qualifications within those standards. While the process of developing competency standards is dependent to a large extent on sector councils, there are no enough sector councils established.

Despite the difficulties mentioned above, the current TVET Authority is overcoming those difficulties buoyed with a renewed government focus on skills training or vocational education to support its economic agenda and meet skilled labor force requirements. The speed of developing national competency standards has improved in line with the diversification of various industries. It is also worthy to note the success of the TVET Authority in conducting and delivering TVET programs for high priority job sectors such as pharmaceutical, tourism, retail, photography, transportation and other industries.

Typical to many countries all over the world, the Maldives has a fair share of challenges to promote TVET programs. Public perception of TVET is a critical factor i.e. general acceptance of TVET by school leavers. The general belief that TVET is for those low-achievers is a hindrance for the progression of TVET as a viable alternative to traditional academic qualifications. The outcome is often negative and when such an idea is rooted in peoples' minds, it is very hard to eradicate it. Any reference to TVET as a good choice for low-achievers should not be made. Instead, Vocational education should be perceived as the option for various industries to recruit skilled workers who can perform as job-ready workers.

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COUNTRY PAPER: PAKISTAN
PAKISTAN'S SUCCESSFUL MODEL OF VOCATIONAL SKILL TRAINING

Mr. Muhammad Asif[1]

ABSTRACT

Technical and vocational education and training (TVET) is referred to as the master key to socio-economic development of a country. Pakistan's TVET system is confronted with numerous challenges in the area of access, quality, equity and relevance. However, the Pakistani government is making efforts to foster the vocational skills training. This paper is theoretical and qualitative in nature which aims to identify the successful model of vocational skill training in Pakistan. The qualitative data was collected through various TVET policy papers, studies and secondary data sources including economic and labour market surveys. It was found that, National Vocational and Technical Training Commission (NAVTTC) implemented Prime Minister's Youth Skill Development Programme (PMYSDP) which is the largest skill development programme in Pakistan and the model being used has unique characteristics such as trainings in demand-driven technical qualifications to minimize the gap between demand and supply of technical skills and professions.

Keywords: Vocational training, skill development model, technical education

INTRODUCTION

A country can be productive only if it makes greater investments in human capital and fully harness their potential. Pakistan is one of the developing countries having a high population growth rate and a major portion of this population comprises of youth (Ansari & Wu, 2013). With a population estimated at 220 million and a growth rate of 2.2%, Pakistan is projected to have a working age population of 236 million by 2050. Of this, 60% of the population would comprise of youth. This talented and hardworking youth of the country are a "double-edged weapon" whose potential could be tapped by providing them skills in marketable trades. This massive youth bulge can become a priceless human capital only through technical & vocational education, and training and skill development. Once these youth acquire skills through technical education, they will become useful citizens who would become an asset more precious than oil and gold for the nation.

Pakistan Vision 2025 aims to channelize and streamline the energies of Pakistan's large youth population through enhanced opportunities for skill development leading to sustained employment and realize their immense economic potential; and to achieve an annual average economic growth rate of 7% by 2025 (GiZ, 2017a).

The education sector in Pakistan has been growing steadily over the past seventy years; Gujjar and Chaudhry (2009) state that Technical Education could not spread out at the same frequency, as

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general education. Pakistan is facing an ever increasing ratio of un-employment in youth, while the industry is lacking appropriately trained manpower. This gap can be covered by focusing on quality Technical Education in the country (Raza & Khalid, 2017). Nearly 17% of the Pakistan's youth complete their secondary level of education out of which a small number of percentage acquire required employable skill (GiZ, 2017b). TVET sector of Pakistan is faced with many challenges and one of them is lack of demand-oriented technical and vocational training. Every year, around 2.4 million workforce enter the labour market (53% represent the female) however formal TVET sector can only cater for 475,850 trainees annually through 3,581 public and private TVET institutes across the Pakistan. In order to increase the workforce with technical skills and to cater skilled labour market challenges, the capacity of TVET's sector for delivering demand-driven training is insufficient (Shah, 2004; Janjua and Irfan, 2008). Resultantly, a large portion of the youth opt for the informal sector and acquire vocational skills in various technologies through traditional apprenticeship system i.e Ustad-Shagrid (GiZ, 2017a).

The Government of Pakistan recognises the importance of the TVET sector in the development of a country and has given priority to TVET development (Kazmi, 2007; GoP, 2013). Therefore in order to reform the TVET sector in Pakistan, the National Vocational and Technical Education Commission (NAVTEC) was established in 2005 at Federal level. In 2009, NAVTEC made "Skilling Pakistan - The National Skills Strategy (NSS) 2009-2013" which aimed to reform the TVET sector in Pakistan by providing demand-oriented skills with quality and employability prospects (Ansari & Wu, 2013). In order to achieve the objectives of NSS, 20 reforms were proposed with the implementation action plan along with roles and responsibilities. Afterwards, provincial Technical Education and Vocational Training Authorities (TEVTA) were established and in 2011, NAVTEC was re-designated as National Vocational and Technical Training Commission (NAVTTC) with the mandate to regulate, facilitate and develop policy proposals for training of workforce to meet national and international standards for skill development. Therefore, in March 2015, the Government initiated steps to make a National TVET policy in order to improve the quality, establishing a national system, increasing opportunities as well as to improve the coordination mechanism to promote and standardize the TVET sector which was approved in 2018 (GoP, 2018). Pakistan's federal Government initiated a skill development programme termed as "Prime Minister's Youth Skill Development Programme" (PMYSDP).

Model of Vocation Skill Training

Prime Minister's Youth Skill Development Programme (PMYSDP) aims to provide free professional and technical education and training to the unemployed youth from the most underprivileged areas across the country. Therefore in order to execute PMYSDP, the National Vocational and Technical Training Commission (NAVTTC) was assigned this task which is in its fourth year of execution (GoP, 2015). PMYSDP was launched with the objective to create competent, motivated, entrepreneurial, adaptable, creative and well trained / skilled workforce for local and international markets.

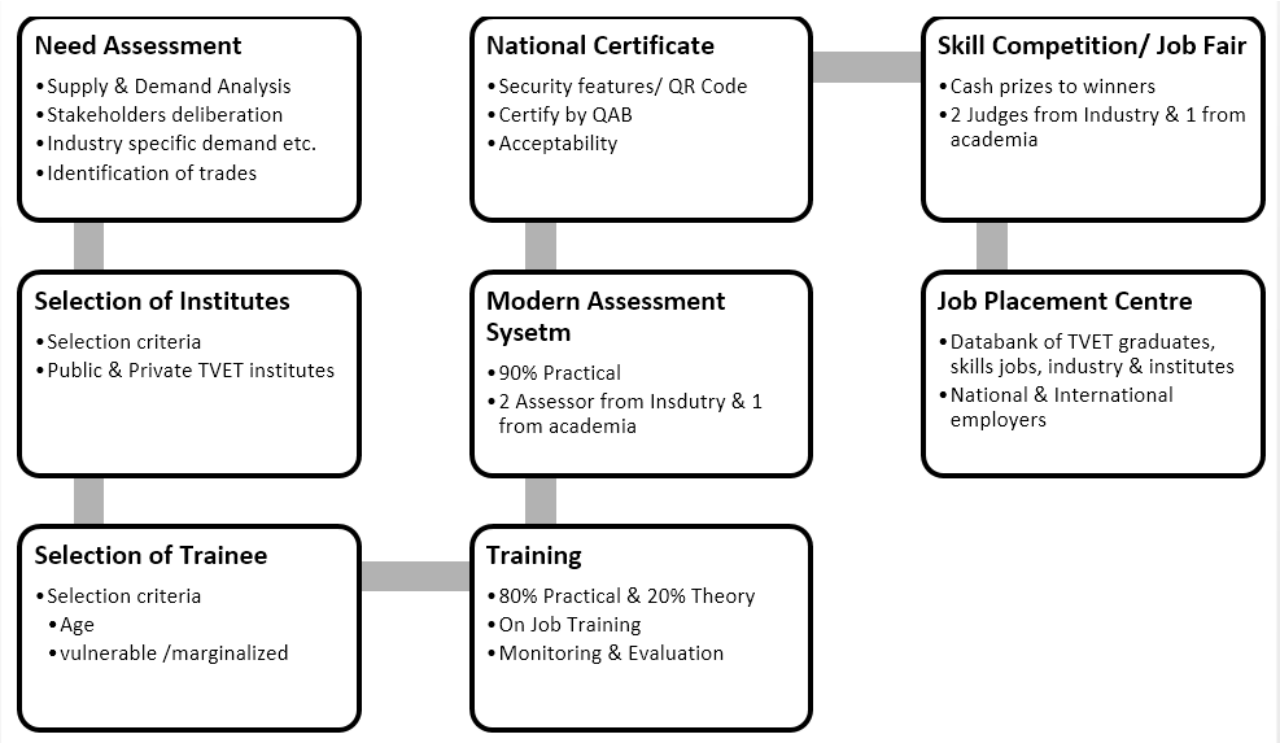

Figure 1: PM's Youth Skill Development Training Process

Under Prime Minister's Youth Skill Development Program, 100,000 youth are trained annually in more than 100 demand driven trades. So far, 150,000 Pakistani youth have been trained under this Program in the most marketable trades. This historic initiative is playing the leading role in producing skilled human resources for local and international labour markets. This Programme is also pivotal in providing a steady supply of skilled manpower for employment opportunities generated by mega projects like China Pakistan Economic Corridor (CPEC), upcoming FIFA World Cup to be held in Qatar, Dubai Expo 2020 and other important projects in the pipeline.

PMYSDP is a nation-wide program which circumferences the whole country including far-flung areas of Balochistan, rural Sindh, Southern Punjab, Azad Jammu & Kashmir, Gilgit-Baltistan & FATA. Special priority is given to women, lower socioeconomic groups and minorities in order to ensure access to quality skill development opportunities. The program is being implemented in collaboration with Provincial TEVTAs, Provincial Labour & Manpower Departments, Social Welfare Departments, Private Technical & Vocational Training providers, Armed Forces Institutes and the industry. The duration of training is 6 months and all the training expenses are borne by the Govt. of Pakistan. The trainees are paid a monthly stipend of PKR 3,000 per trainee (in case of FATA PKR 4,000). At the end of the training, TVET graduates are also provided with toolkits which not only gives them an opportunity to utilize their gained skills but also help them to kick-start their own businesses. The seats under the program are distributed among provinces on population basis; however, the disadvantaged areas like Balochistan, FATA, Gilgit-Baltistan and Rural Sindh are given a high share in enrolment of trainees.

Since the inception of Prime Minister's Youth skill Development Program, a total number of 200,000 youth have benefitted from the Program, majorly belonging to middle and lower middle class as well as deprived segments of society. NAVTTC has allocated a special quota of minimum 30% for female enrolment for skill development courses under this Program. Currently, the Prime Minister's Youth Skill Development Program (Phase-IV) is providing hands-on skills to 100,000 individuals in 02 batches with a project cost of PKR 6,196.5 Million and is already under process.

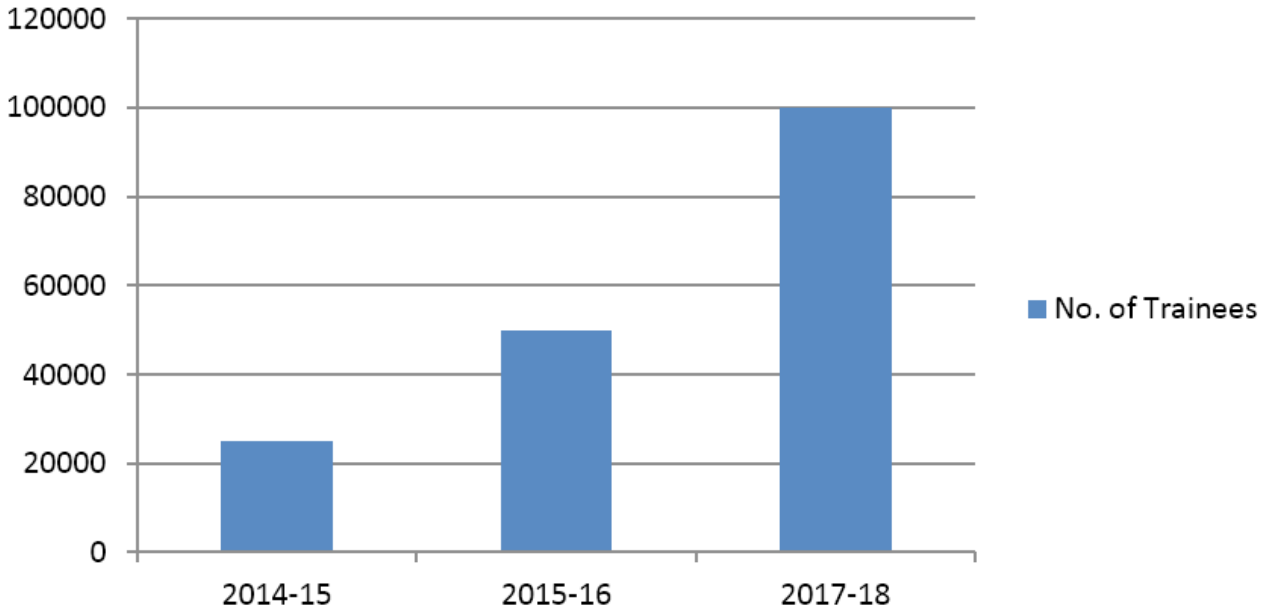

Figure 2: number of trainees in successive phases of PMYSDP.

Need assessment (Identification of Demand-driven Trades)

In order to benefit from the PMYSDP training program, a detailed and comprehensive activity is involved in need assessment/ identification of demand-driven trades. At NAVTTC level, before start of programme's new phase, demand-supply gap analysis is performed so that those trades should be offered to the aspirants who have demand in the market. Besides this, feedback was taken from stakeholders including industry, employment promoters, entrepreneurs etc. to identify the demand for skills which are required by the trainees.

Stringent Institute Selection Process

In order to improve the quality of training in the TVET sector with a target of increasing employability of its trainees, NAVTTC has introduced a series of reforms and initiatives. This journey of improved quality starts from the selection of the best of the best institutes which are imparting quality training to the trainees of PMYSDP across the country. Sound infrastructure, experienced management and highly qualified faculty are some of the criteria on the basis of which an institute is selected by NAVTTC.

The process of selection of the institutes starts with inviting Expression of Interest through advertisement in reputable national newspapers. Institutes from public and private sectors from across the country apply for partnership with NAVTTC. Documents of the applying institutes are scrutinised by the officers in detail. After this, teams are formed for physical verification of these institutes for final selection.

Each institute is inspected against well-defined and stringent criteria. Infrastructure like classrooms, labs, library, and offices are inspected. In addition to these, factors like affiliation with TVET bodies, trainers' capacity, employability ratio, industry linkages and financial health of the institute are inspected. An institute is finally selected for partnership with PMYSDP after meeting all the criteria of selection.

Trainee Selection Process

The objective of the PMYSDP is to provide technical & vocational education and skill to the unemployed youth belonging to the most underprivileged areas across the country. Therefore, a set of criteria was developed by NAVTTC. Under this program, the target applicant's age group is 16-36. The allocation of number of seats under the program is distributed among provinces on population basis; however, the disadvantaged areas like Balochistan, FATA, Gilgit-Baltistan and rural Sindh are given high share in enrolment of trainees.

Training Process

NAVTTC emphasizes more on practical training of PMYSDP trainees. It focuses on a training environment where a trainee gets the opportunity to work with his own hands to acquire the required skills that will ensure better opportunities of employability and upward mobility in the job market. Under this skill development program, NAVTTC introduced practical based training system which comprises of 90% practical and 10% theoretical. In this system, trainee spends more time in the labs/ workshops than in the class room. While in class-room, trainee also learns the basic terminologies & concepts about the skill area which enables the trainee to have theoretical knowledge as well. However, just giving training either in workshops or in class rooms, on job training and monitoring is also necessary to training more effective.

Mandatory On-the-Job Training (OJT)

Relevance of skills of the trainees to the industry's requirement is very important for employability prospects. Realizing this fact, NAVTTC has made On-the-Job Training (OJT) compulsory for its trainees under PMYSDP Program. Under this regime NAVTTC's trainees are provided on-the-job training in the industries for two weeks duration, which not only enhance their practical skills but also increase chances of employability.

OJT provides a unique opportunity to the trainees to work with the industry to improve and align his skills set with the requirement of the industry. It creates awareness in the trainees regarding the current trend and demand of the market in field of their interest. Industry is also benefiting from the influx of freshly trained trainees who can be prospective workforce for them.

OJT is one of the paramount training methods because it is planned, organized, and conducted at the employer's workplace. OJT is usually the principal method used for augmenting employee skills and escalating output and efficiency. The distinguishing feature of OJT is that the trainees gets the opportunity to work under the supervision of industrial experts which brings distinctive improvements in the trainees, necessary for their absorption and mobility in the job market.

NAVTTC emphasizes on practical training. It focuses on a training environment where a trainee gets the opportunity to work with his own hands to acquire the required skills that will ensure better opportunities of employability and upward mobility in the job market.

Effective Monitoring and Evaluation

Monitoring and evaluation are critical to systematically track implementation and output of any project. It helps to determine exactly where the bottlenecks and deviations lie and also helps in suggesting corrective measures. NAVTTC has developed its own internal Monitoring and Evaluation system for observing, reporting and assessing the activities against the set targets for each training project in terms of financial and physical parameters and NAVTTC standards (NAVTTC, 2018).

Periodic progress reports of the project are made by NAVTTC to keep track of the progress of the program. Desk monitoring of all the institutions across the country is done by dedicated teams of NAVTTC on regular basis. Attendance of the trainees is recorded on daily basis through the desk monitoring. Any issue highlighted by the institute is immediately taken up with concerned regional office and efforts are made to resolve the issue at the earliest. Surprise monitoring visits are also made to observe the actual state of affairs on ground. Detailed inquiry report regarding the management, infrastructure, trainers' quality and trainees' attendance is made in these visit. For external validation, services of Third Party Evaluation are utilised in order to ensure effective use of public money and its accountability.

Modern Assessment System

In order to improve the quality of training in TVET sector with the target of increasing the employability of its trainees, NAVTTC has introduced a series of reforms and initiatives. This journey of improved quality starts from selection of best of the best institutes. The new assessment system has been very successful in building the capacity of PMYSDP graduates through measuring their skills based on set evaluation indicators and standards.

NAVTTC has replaced the old and outdated system of examination with modern assessment system which is in practice in the developed countries. This system of examination focuses on practical based examination to gauge the skill levels of the trainees. Weightage in the final assessment is given to demonstration of learned skills through practical exercises. To increase the transparency and relevance of the assessment a team of three assessors is formed. Two of these assessors are from the industry and one assessor is from academic side. This arrangement of assessors provides an added advantage as it assures involvement of industry for bridging the skills gap along with assessment of trainees according to the need of the industry.

Experts of TVET sector have welcomed this new system of examination. They asserted that this new assessment system would not only enhance the knowledge and skills of the trainees but also would help them in securing jobs.

Rigorous Quality Assurance Mechanism

In the execution of PMYSDP, there is special focus on continuous quality assurance at all steps as in present era of unprecedented technological innovation, economies are left with no option then to have targeted actions to manage the near-term transition and build a workforce with future proof skills. Therefore under PMYSDP the skill gaps are identified to align training activities with innovations to maximize available opportunities to capitalize on transformational trends.

To begin with, best of the best institutes, associated with local industry are selected through Expression of Interest. The whole process of selection is characterized by stringent checks and balances and utmost transparency. The institutes are short listed and then are selected after thorough physical verification by NAVTTC officers who visit them and examine their infrastructure, labs, equipment and trained faculty.

The training comprises of 90% practical and 10% theoretical aspects while the trainees are assessed through monthly tests and mid-term skill competition followed by Final Assessments which is in line with international standards. In order to ensure quality training, NAVTTC has been developing and updating traditional and Competency Based Curricula and Training Learning Materials as per NVQF guidelines.

To ensure continued quality assurance, NAVTTC has invited the attention of industry and has engaged it in all activities including selection of institutes, assessment and one month hands-on training in the industry.

NAVTTC works in close coordination and provides technical support to provincial TEVTAS in order to cover the whole TVET landscape of the country. To measure and improve the quality, of TVET institutes and qualification awarding bodies, NAVTTC has a fully operational Accreditation system. Through accreditation, NATTC strives for continuous improvement of quality faculty, updated management and training facilities including labs and equipment in the institutes.

To create close liaison between industry, academia and government, NAVTTC has established Sector Skills Councils first time in the history of Pakistan. Function of these Councils is to bring state of the art training methods in the trades which are most relevant in the ever evolving local and international industry.

In addition to the above, the concerned officers are constantly in touch with the institutes during the entire course of training to ensure that all defined parameters of the training course is followed by the partner institutes.

The impact of the above mentioned quality assurance measures can be gauged by the fact that the number of candidates applying for training under PMYSDP have increased manifolds. Similarly, the interest of public and private institutes has increased which is reflected in the ever increasing number of institutes expressing their interest for inclusion in PMYSDP. The feedback from industrial sector shows that the level and quality of skills acquired are relevant to industry needs. PMYSDP has been very helpful in boosting the confidence of youth by channelizing their potential towards a positive direction, giving them economic independence and making them useful citizens of the country.

Certificate to pass-out trainees

Under PMYSDP, NAVTTC issues certificates to all pass-out trainees that enable the pass-out trainees to get respectable job/ employment in public and private sectors or even start their own business. These certificates are given to pass-out trainees in recognition of skills obtained during the period of training and assessed based on certain recognized parameters. Therefore, venues for these pass-out trainees to get employment are not limited even there are high chances to go abroad and get employment.

Skill Competitions – A Game Changer

NAVTTC organizes skill competitions/job fairs in all provincial capitals and Islamabad for the trainees under Prime Minister's Youth Skill Development Program (PMYSDP). This exercise has proved to be a game changer and have increased the interest of youth, improved their skills, enhanced the overall quality of training and added to the prestige and respect towards TVET sector. These competitions take place at zonal and provincial levels where the trainees exhibit their skills in different trades including plumbing, welding, cooking/ hospitality, general electrician, mason, heavy machinery operators, driving, dress making/fashion designing etc. Winners of provincial skill competitions receive their awards from governors, chief ministers, ministers, corp. commanders etc.

Along with hefty cash awards, certificates and tool kits are also distributed amongst the winners which help them to kick start their own businesses.

The winners of provincial skill competitions then participate at National Skill Competitions and receive handsome cash awards and certificates from the President of Pakistan. These competitions have been successful in attracting young boys and girls to gain marketable skills and have also helped in changing parents' mindset and minimizing their reluctance to provide their children with vocational training.

Vibrant Job Placement Centre

To facilitate the graduates of PMYSDP in securing jobs easily, NAVTTC has established Job Placement Centres at Lahore, Karachi and Islamabad which are being operated through a website. The list of skilled youth across the country along with their complete details is placed on this website. The data is shared with both national and international experts and employers which is a big step towards guaranteeing jobs to thousands of trained youth.

This cell is also responsible for developing & providing reliable information for workforce development in employable skills, which is serving as a base for provision of vocational guidance and placement services for graduates & employers. Initial data on supply and demand of TVET graduates is collected and compiled into database.

JPC has increased industry acceptance and recognition and they are using its portal to get skilled youth's data. JPC is linked with Overseas Employment Promoters Association and Overseas Employment Corporation which has significantly helped in enhancing employment opportunities for our skilled youth abroad.

Stronger Industrial Linkages

One of the most important aspects of PMYSDP is to create linkages with the industry and other stakeholders to improve vistas of employability of TVET graduates. For this purpose, NAVTTC is actively engaged in enhancing collaboration between technical and vocational education and training (TVET) institutions and industries that would lead to provision of relevant practical skills for industrialization.

The renowned industrialists from across the country are invited at skill competitions to witness the quality and level of competencies of the trainees who offer them jobs on the spot. Moreover, NAVTTC encourages them to step forward and play a significant role in revitalizing the TVET sector of Pakistan by giving them opportunities to learn from the best practices of the developed world in TVET sector. An example is the International TVET Conference organized by NAVTTC for the purpose of forging closer public-private partnerships.

For the first time in Pakistan, NAVTTC has established Sector Skills Councils (SSC) which will play a pivotal role in training and producing the skilled workforce as demanded by the key economic players in Pakistan. Four such Councils have been successfully established in Hospitality, Construction, Textile and Agriculture sectors. Through this historic initiative, NAVTTC has been able to bridge the gap between industry and technical training providers so that they can work in unison to address the issue of non-availability of skilled workforce in the country.

Implementation Model of CBT under PMYSDP

NAVTTC under PMYSDP has introduced a Competency Based Training regime across Pakistan, to shift from existing curriculum-based and time bound training to competency based and flexible training approach.

The traditional curricula training approach has been challenged on many grounds by the emerging trends of the market as it has failed to engage interests, minds and aspirations of quality workforce. Future skill world is based on knowledge economy and requires a workforce with transferable skills that enable the learner to navigate through the information age along with core trade competencies and CBT is an approach to training centred on well-defined industry standards encapsulating core, professional, social, and transfer skills. Training program, curriculum, assessment and learning materials are designed on industry standards with the involvement of industry. CBT programs emphasises on what the participants or trainees are expected to be able to do at the workplace and construct necessary skills and knowledge through intellectual adaptation.

Shifting to CBT is one of the most common transformation strategies of TVET Systems across the globe. CBT has gained popularity because it focuses on outcomes measured against industry standards rather than on courses based on institutional arrangements. CBT provides a basis for raising levels of skill nationally. CBT program ensures that learners gain the necessary knowledge, skills and attitude to be successful in any given working environment. CBT approach also develops transferable skills in the individuals through self-paced learning to promote lifelong learning.

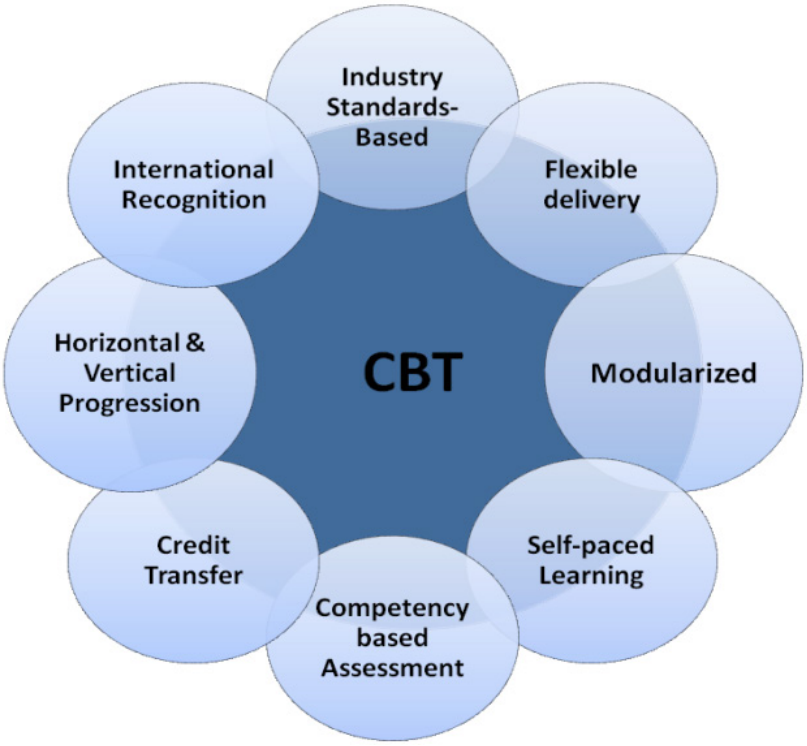

Figure 3: Major Deliverables of CBT Qualifications

To date, NAVTTC has developed more than eighty CBT Qualifications in various sectors of the economy e.g. Construction, Hospitality, Information and Communication Technology, Textile, Agriculture, Automobile, Light Engineering, Energy (Renewable and Non-Renewable), Paramedics and Sales and Logistics etc. Under PMYSDP program NAVTTC has implemented fifteen demand driven CBT training courses in fifty quality institutes across the country. The NAVTTC conducted training of trainers for imparting CBT. Through an exhaustive training and assessment process the NAVTTC has established National Pool of Assessors to conduct CBT assessment. The NAVTTC is the first government organization which initiated CBT implementation across the country.

The NAVTTC has developed about 123 CBT qualifications including competency standards, assessment packages and curricula in consultation with the major industries i.e. Construction, Hospitality, Agriculture, Light Engineering, ICT, Automobile, Energy (Renewable and non-renewable) etc. from level 1-5. These levels provide opportunity to the graduates for further progression.

The NAVTTC is the first public sector organization which implemented CBT programs across the country. Under the aforementioned implementation all the graduates received industry demand-driven training in the major sectors. These graduates have got employment on handsome salaries ranging from Rs. 40,000 to Rs. 120,000 in many local and international companies.

National CBT Assessors

For the first time in the history of the country a pool of Certified National Assessors for competency based training has been established. These individuals will conduct CBT assessment of various NVQ programs of various levels across the country. To date, 700 assessors have been trained in more than 30 CBT trades. These assessors passed through the assessment by a panel of experts of the relevant industry to assess their knowledge, skills required of competency based assessment. After going through the assessment process and upon fulfilment of all the requisite levels of competence they are certified as national assessors. The number of assessors is increasing with the passage of time as per the demands of the industry and availability of qualified and experienced technical experts.

Development of Teaching Learning Materials (TLMS)

National Vocational & Technical Training Commission (NAVTTC) is providing Teaching Learning Materials (TLMs) to each and every trainee in demand driven trades under Prime Minister Youth Skill Development Program (PMYSDP). In the process of reformation of TVET sector in the country through PMYSDP, developing teaching and learning material is very important. The development of TLM is initiated by taking on board the industry experts of the relevant trade who provide core trade knowledge in line with industry requirements. To date, approximately 100 TLM's have been developed in priority sectors of economy, for example, construction, hospitality, textile, agriculture, information technology, light engineering, services, etc. These TLM's are distributed to each trainee of PMYSDP at the start of training courses.

To ensure quality and relevance of training material, a continuous system of review and validation is in place. Feedback and input from academia and industry alike is also invited and incorporated.

Launch of Recognition of Prior Learning (RPL)

Realizing the huge scale of uncertified skilled workforce in the country, NAVTTC has made Recognition of Prior Learning (RPL) one of its top priorities. The National Qualification Framework (NQF) allows the recognition and certification of skills that may have been gained through life experience including other forms of training and informal employment experience. RPL provides an opportunity to the informally trained workforce to integrate into the mainstream certified workforce.

NAVTTC under PMYSDP, has taken the initiative of new and innovative practices such as encouraging linkages with the informal sector by providing assessment and certification opportunities to the skilled and semi-skilled workers under Pakistan's National Vocational Qualification Framework (NVQF). This program bridges the gap between formal and informal sectors by allowing the recognition and certification of skills through Recognition of Prior Learning (RPL) that may have been gained through life experiences and employment in informal (Ustad-Shagird workshop based) or non-formal (industry/apprenticeship based) sectors. RPL uses a very simple and straightforward approach for assessing one's knowledge and skills, regardless of where and how these were learnt. RPL is accessible to any person who processes the requisite knowledge and skill for performing a job with or without having a formal qualification.

Under the Prime Minister's Youth Skills Development Program (Phase-IV) (Batch-I), NAVTTC, in collaboration with Qualification Awarding Bodies (QABs) and Assessment Centres, has selected the following demand driven trades for assessment and certification through Recognition of Prior Learning (RPL) across the country:

(i) Heavy Machinery Operator (HMO) (ii) Auto-Mechanic (iii) Auto-Electrician (iv) Mason (v) General Electrician (vi) Heat, Ventilation & Air-conditioning (HVAC) (vii) Plumbing (viii) Welding (ix) Machinist (x) Beautician (xi) Cooking and (xii) Dress Making.

RPL assessments are conducted through National Certified Assessors. NAVTTC has planned to assess and certify 9,000 skilled workforce under PMYSDP (Phase-IV). So far NAVTTC has assessed more than 4,000 skilled workforce across the country.

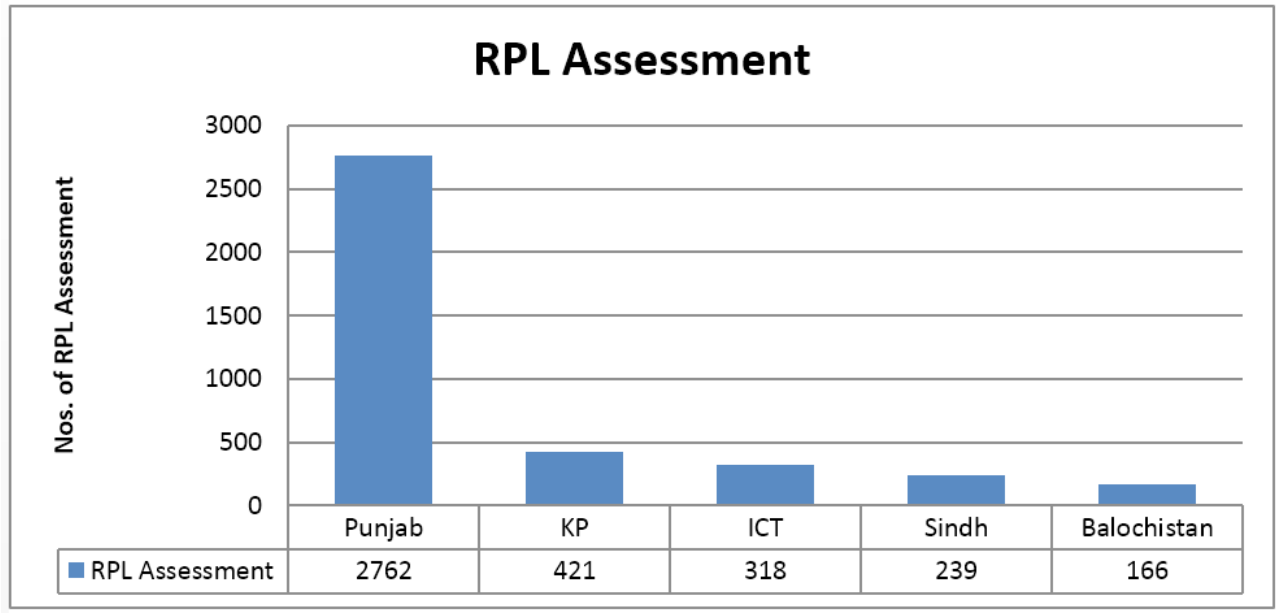

Figure 4: Number of RPL Assessments conducted by NAVTTC

National Certificates will be a great source of help in getting respectable jobs/employment both in government and private sectors at national level and in international markets. RPL provides the opportunity of providing certified skilled workforce to the markets which ultimately prove in expansion in market economy, boosting of trades and earning foreign exchange.

RPL assessment and certification is free for all Pakistani citizens (both male and female) and minimum age required is 18 years with CNIC and experience of two years in the relevant field.

Assessment is very easy and simple but standardized, containing 4 to 5 hours duration of practical assessment of skill and knowledge at assessment centre. Candidates are declared competent or not yet competent by the National Certified Assessors after assessment. Candidates declared not yet competent is given the chance of gap training at their relevant work stations and reassessed till they qualify and declare as competent by the Assessor.

CONCLUSION

The government of Pakistan has realised the fact that TVET is a key to socio-economic development of a country and took various steps in order to reform the TVET sector in Pakistan which are established by National Vocational & Technical Training Commission at federal level, Provincial Technical and Vocational Education and Training Authorities, preparation & implementation of National Skill Strategy, TVET Policy and start of skill development programmes. Prime Minister's Youth Skill Development Programme is one of the largest skill development model having unique

characteristics such as trainings in demand-driven technical qualifications to minimize the gap between demand and supply of skilled manpower, practical based training, modern skill assessment system, skills competitions etc. Further, in this model of skill development, new concepts of technical & vocational training were also introduced like recognition of prior learning & competency based training. Thousands of youth have benefited from this programme and now play effective roles in the development of Pakistan.

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COUNTRY PAPER: PAPUA NEW GUINEA
EXPANSION OF TVET SKILLS PATHWAY IN PAPUA NEW GUINEA

Mr. Lindsay Lawrence Parry[1]
Mr. Reuben Veratau Aue

ABSTRACT

In an ideal world, employment candidates would possess the exact qualifications demanded by the labour market, but that is rarely the case. TVET policies, though a long process, are meant to address the issue of finding the best balance between demand and supply of labour, leading to further development and wealth for the nation, for businesses and for individuals. The TVET sector in Papua New Guinea has undergone major policy changes recently in its endeavour to be relevant to the development needs and aspirations of the country, keeping with the PNG Government's new Vision of "Pursuing and Promoting Excellence in Education for a Healthy, Wealthy and United PNG by 2050". The Human Resource Development Programme 2 (HRDP2), an EU development Project, also aims to reinforce the vocational stream of education at lower secondary level, in order to promote the development of a skilled labour force, which is adapted to the needs of the country.

Keywords: TVET policies, education development projects, HRDP2

INTRODUCTION

The Department of Education (DOE) under the Education Act of 1983 is responsible for administration of the general education system including basic formal education from over 7, 300 elementary, 3,543 primary, 219 lower & upper secondary including provincial 136 TVET vocational centers, 11 national Technical, Business College's and the 1 regional Polytechnic. The median age of the country stands at 21.5 years' in a country of over 7 million people.

Recently, in early 2018, the National Executive Council (NEC) directed the TVET Directorate of DOE administering post-secondary colleges to reform, transform and unify with Department of Higher Education Research Science & Technology (DHERST). In other words to immediately implement the directive of NEC decision No: 54/1985 to effect the transfer of all higher learning tertiary institutions which also included all state sectors to move under DHERST for the National Government's full attention to build their capacity in fulfilling the states obligation towards this very important cadre of professionals to international standards.

DHERST regulates and administers the PNG National Qualifications Framework (PNGNQF), the Labor Market Information System (LMIS), registration and functions of all higher and technical education institutions towards achieving their objectives. This includes state owned post-secondary public and private affiliated universities and colleges both local and international that accredit undergraduate and post graduate qualifications.

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The National Training Council (NTC) under the Department of Labor and Industrial Relations (DLIR) regulates the register and functions of private and industry affiliated occupational training providers and supports all state and private registered training providers in development and accreditation of the PNG national occupational skills standards.

NATIONAL DIRECTION

The national constitution states that the basic education is a right for all citizens and the 'Governments Vision 2050' aim is for the country to become a 'smart, wise, fair, healthy and happy society by 2050'. For education sector this is through improving the number and quality of opportunities at all educational levels.

Figure 4: Number of RPL Assessments conducted by NAVTTC

Sector	Number of Students
Elementary total	**855,608**
Preparatory	335,257
Elementary 1/Grade 1	274,871
Elementary 2/Grade 2	245,480
Primary total	**909,473**
Grade 3	194,695
Grade 4	178,044
Grade 5	159,325
Grade 6	143,143
Grade 7	122,648
Grade 8	111,618
Secondary total	**155,348**
Grade 9	61,932
Grade 10	51,031
Grade11	23,732
Grade 12	18,653
Vocational	**41,331**
FODE	**11,893**
Total	**1,973,653**

By 2014, the system has undergone major reforms and has grown to more than 11,000 institutions and around 1.9 million pupils compared to I million a decade before, who are taught by almost 52,000 teachers in the elementary, primary and post-primary sectors.

In 2012 the government introduced the *Tuition Fee Free (TFF) policy, which subsidized fees for post-basic education institutions, except for tertiary institutions. The aim of TFF is to increase access to education. The successful increase in enrollment in basic education has led to considerable challenges including infrastructure, teaching and learning resources and teachers among others to ensure continuing access to education for the significantly increased enrollment.

KEY POLICY AREAS FOR TVET EXPANSION

The key development within the provincial TVET hinges on strong policy support emphasizing aspects of the reform initiative;

National Education Plan 2015 – 2019

The National Education Plan emphasizes strongly on six major focus areas which are interrelated to contribute holistically to quality learning for all. Specific focus for TVET is on 'Access & Equity' and 'Alternate Pathway' which will result from increased and improved infrastructure, approved teaching, learning and assessment systems for employment and life skills not only in TVET institutes but also while in TVET accredited programs in secondary schools, Technical Secondary Schools (TSS) and registered Flexible Open Distance Education (FODE) schools.

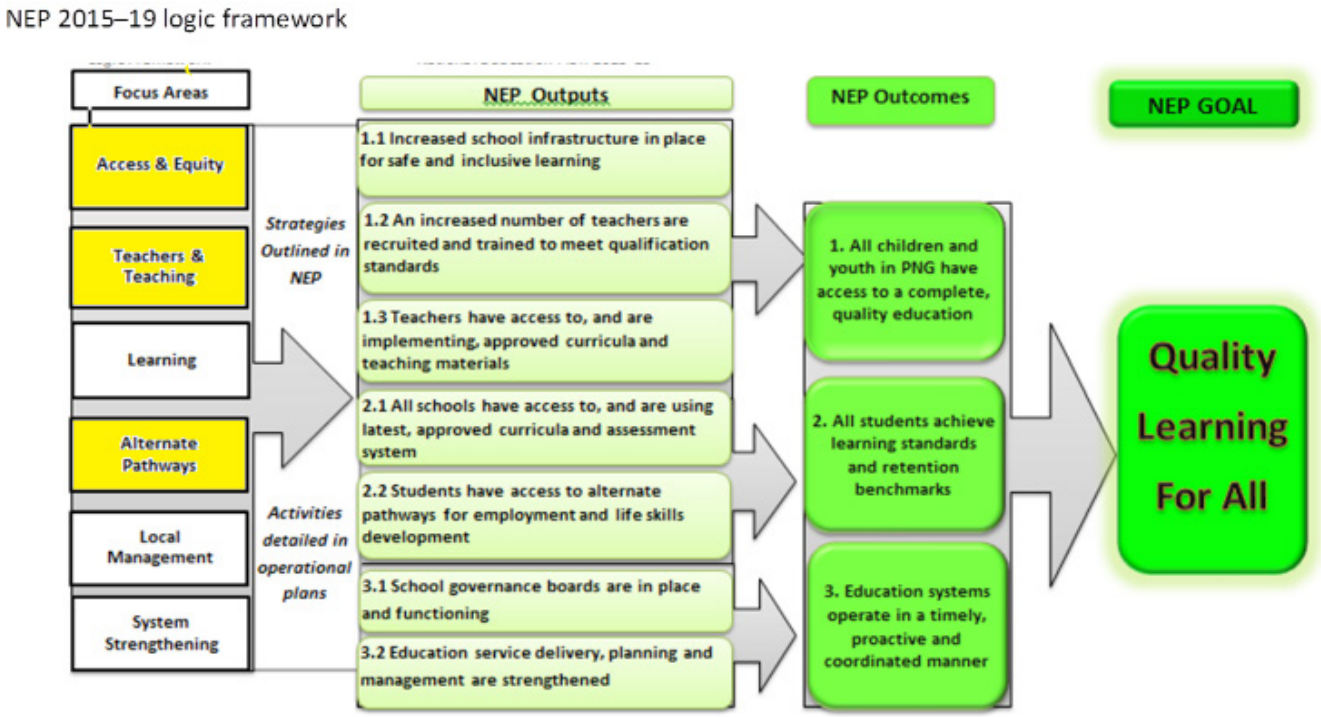

Figure 2: PNG's National Economic Plan 2015-2019 Framework. Adapted from the TVET Strategic Management plan- 2011 – 2020 (2018)

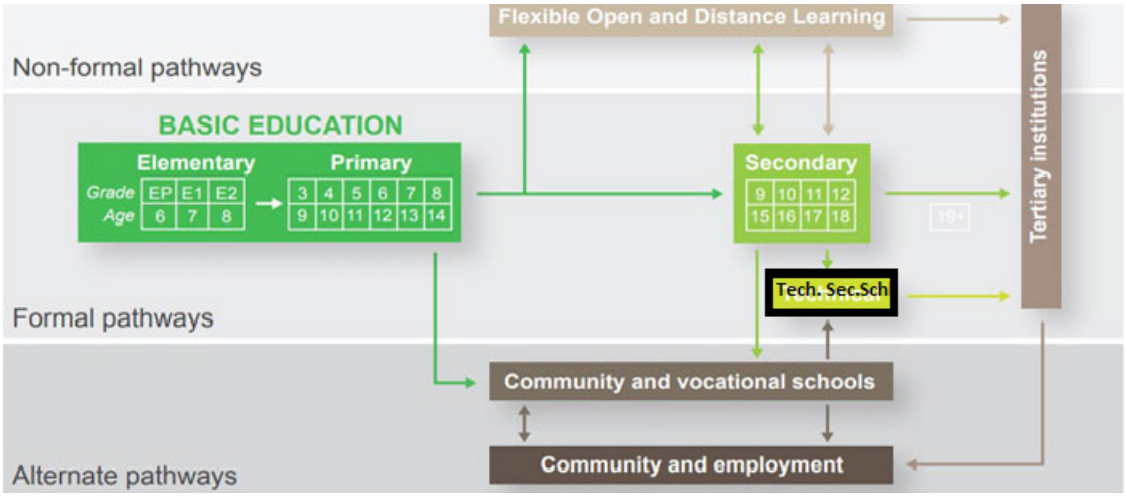

Figure 3: TBET pathways in PNG. Adapted from the TVET Strategic Management plan- 2011 – 2020 (2018)

TVET Strategic Management

The TVET Strategic Management Plan in its delivery of service to the doorsteps aims to create environment conducive to deliver quality skills training for people of Papua New Guinea. The key emphasizes on expansion relates to registration of Technical High School at post grade 8 to offer Pre-Employment Technical Training skills together with basic education certificate qualification in year 10 -12 to counter the capacity of provincial vocational training institution's. Skills training at this level will cater for the vast number of students in secondary education and support the limited space in TVET schools.

The Policy & Concept

More discussions towards the policy and concept was presented at different international conferences. The recent one being "The Role of TVET in Pacific Secondary Schools". In 1999 the 'vocational (technical) high school' concept was identified as the alternate system of schools pathway and four secondary and TVET schools. It was trialed in five secondary and vocational school in the four region to trial the draft policy. The Technical Secondary School Policy was approved for dual curriculum and certification by all heads of Senior Education Officers Conference (SEOC) comprising heads of provincial education offices in 2013 to reduce the level of unemployment and unskilled school leavers. Currently 10 secondary schools are registered and more are in demand to follow suite as the department is pursuing to roll-out on a nation-wide scale.

EXPANSION OF TVET SKILLS PATHWAY IN PAPUA NEW GUINEA

In 2015 the Human Resources Development Programme Phase 2 under the 9th EDF (HRDP2, €26 million) came in to support the policy come to fruition after the financing agreement was signed in April, 2014 and is now in its final phase.

The Overall Objective of the Project is to promote the development of PNG Human resources through lower secondary level of education. The purpose was to increase access to lower secondary level vocational institutions improved. It was aimed to improve transition rates from Primary school to lower secondary TVET education trialled in six target province.

The project is also ensuring quality education at lower secondary level vocational institutions enhanced country wide through teaching capacity for trade's persons joining the teaching force to minimum level diploma level in teacher education and training of senior teaching officers in management roles.

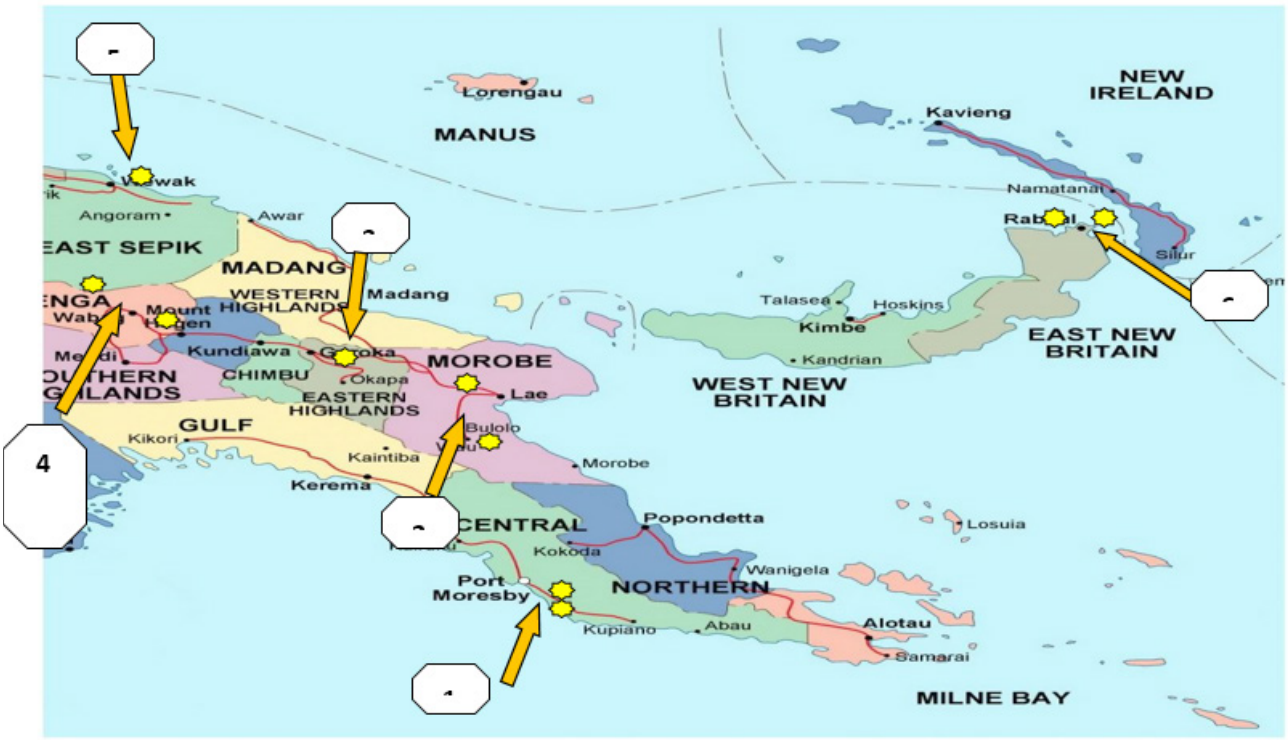

Figure 4: Ten (10) selected school project sites in the 6 provinces. Adapted from the TVET Strategic Management plan- 2011 – 2020 (2018). Adapted from the TVET Strategic Management plan- 2011 – 2020 (2018)

Program Offering

Formal registration of schools or programs accredited under TSS will initially offer 3.3 hours weekly of both Academic and Trades curriculum to amount to the number of credit or hourly requirements to qualify as prescribed. This will be revised during the full implementation period to blend with the demand each skills program requires for certification. It is now planned for a nationwide roll-out for accreditation of provincial schools to offer programs with recognized TVET skills qualifications for approved industry sectors.

PNG Qualifications Framework

Based on the National qualifications framework, Technical secondary Schools will register to offer 2 levels of qualifications (Certificate Level 1 & 2) to maintain purpose of the system. This will minimize the students search for such training after leaving school.

**For TVET qualifications the minimum volumes of learning are non-negotiable but the maximum hours are an estimate only, as in competency based education students continue to study until they are certified as competent.

Table 2: PNF Q10 Quality Education Levels and Expected Learning Volume of Heading at Each level. Adapted from NEP (2014).

PNGQF Level	Qualification Name	Minimum Volume of Learning (Hours)	Indicative Guideline Maximum Volume of Learning (Hours)
10	Doctorate	3600	4800
9	Masters	1200	3200
8	Post Graduate Diploma	1200	1600
8	Post Graduate Certificate	600	800
8	Bachelor Honours	1200	1600
7	Bachelor	4800*	6400
6	Advance Diploma Associate Degree	3600	4800
5	Diploma	2400	3200
4	Certificate (higher education)	1200	1600
4	Certificate 4	400	2400**
3	Certificate3	400	2400**
2	Certificate 2	400	1200**
1	Certificate 1	400	1200**

Challenges

With the overwhelmed interest by all province, the registration of schools and occupational programs offered must meet the approved requirements to certify students at recognized industry competency level of the occupation. Schools capacity will need strengthening through government budgetary means.

CONCLUSION

Secondary school education should be the right of every child and equally important is the need for all students to have access to TVET in their years in Secondary School.

Papua New Guinea has a lot of student in schools but faced with limited opportunity for further education including skills training. It is rich with agriculture, mineral, oil and gas resources with development of more than 3 LNG trains under development. More attention to type of skills training including teaching resources and infrastructure from the national and provincial government's will achieve the Vision 2050.

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COUNTRY PAPER: PHILIPPINES
TVET TRAINER COMPETENCY ASSESSMENT SYSTEM IN THE PHILIPPINES

Ms. Sheryll Paramo Hofileña[1]

ABSTRACT

With the ever-increasing challenges of producing quality and skilled workforce that can compete anywhere in the world, Technical Education and Skills Development Authority (TESDA) considered Trainers as one of its most important resources. Because of increasing demand for skilled and competitive workers, the need for quality trainers is vital.

TESDA supervises 4,062 Technical Vocational Institutions consisting of 3,701 private and 361 public TVET institutions, respectively. Public TVET providers include 126 TESDA Technology Institutes (TTI) located nationwide. The other public TVET providers are state-owned universities and colleges and local colleges offering non-degree programmes; Department of Education-supervised schools; and local government units and other government agencies providing skills training programs. TESDA ensures a consistent delivery of quality service across the country through the implementation Competency Assessment and Certification for TVET Trainers for Levels I (Trainer/Assessor) and II (Trainer Designer/Developer) of the Philippine TVET Trainers Qualification System (PTTQS) at the regional and provincial levels.

Keywords: TESDA, PTTQS, TTI

INTRODUCTION

The Philippine educational system has three subsectors: basic education, higher education and the technical vocational education and training (TVET). This was the outcome of the study undertaken by the Educational Committee (EDCOM) created by the Congress in 1991 which recommends the "trifocalization" of the educational system in the country. In 1994 to 1995, education reform acts were passed creating the agencies that would supervise each of the subsectors: Department of Education (DepEd) for enhanced basic education, Technical Education and Skills Development Authority (TESDA) for technical and vocational education and training; and the Commission on Higher Education (CHED) for higher education. TVET provides education and training to trainees and other clients for employment purposes. It also provides specific skills training for those who are already in the labour market that need to upgrade or develop new competencies in order to enhance chances for employment and improve their productivity.

TESDA supervises 4,062 Technical Vocational Institutions consisting of 3,701 private and 361 public TVET institutions, respectively. Public TVET providers include 126 TESDA Technology Institutes (TTI) located nationwide. The other public TVET providers are state-owned universities and colleges and local colleges offering non-degree programmes; Department of Education-supervised schools; and local government units and other government agencies providing skills training programmes.

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Given the enormous number of Technical Vocational Institutions, TESDA ensure consistent delivery of quality service across the country through the implementation Competency Assessment and Certification for TVET Trainers for Levels I (Trainer/Assessor) and II (Trainer Designer/Developer) of the Philippine TVET Trainers Qualification System (PTTQS) at the regional and provincial levels.

TVET Trainers is one of the most critical components in ensuring quality-assured delivery of TVET programs. As of August 31, 2017, based on the records of TESDA Certification Office, there are 39, 619 accredited trainers in the country from different sectors and qualifications. With the requirements of industry experience as provided in Section 3 of the respective Training Regulations (TRs), there are estimated 10,840 certified TVET trainers (TM Level I holders), whose NTTC renewal are affected due to lack or insufficient number of years of industry work experience.

Lifelong Learning in Philippine TVET

In the Philippine educational system, the country embraces both formal and in-formal education. The basic education is composed of 6 years in elementary and 4 years in Junior High School plus 2 years in Senior High School with specialization in different tracks (Academic, Art and Design, Sports, TVL) which together with the tertiary education comprise the formal education system. On the other hand, non-formal education includes education opportunities even outside school premises that facilitate achievement of specific learning objectives for particular clienteles, especially the out of-school youths or adult illiterates who cannot avail of formal education.

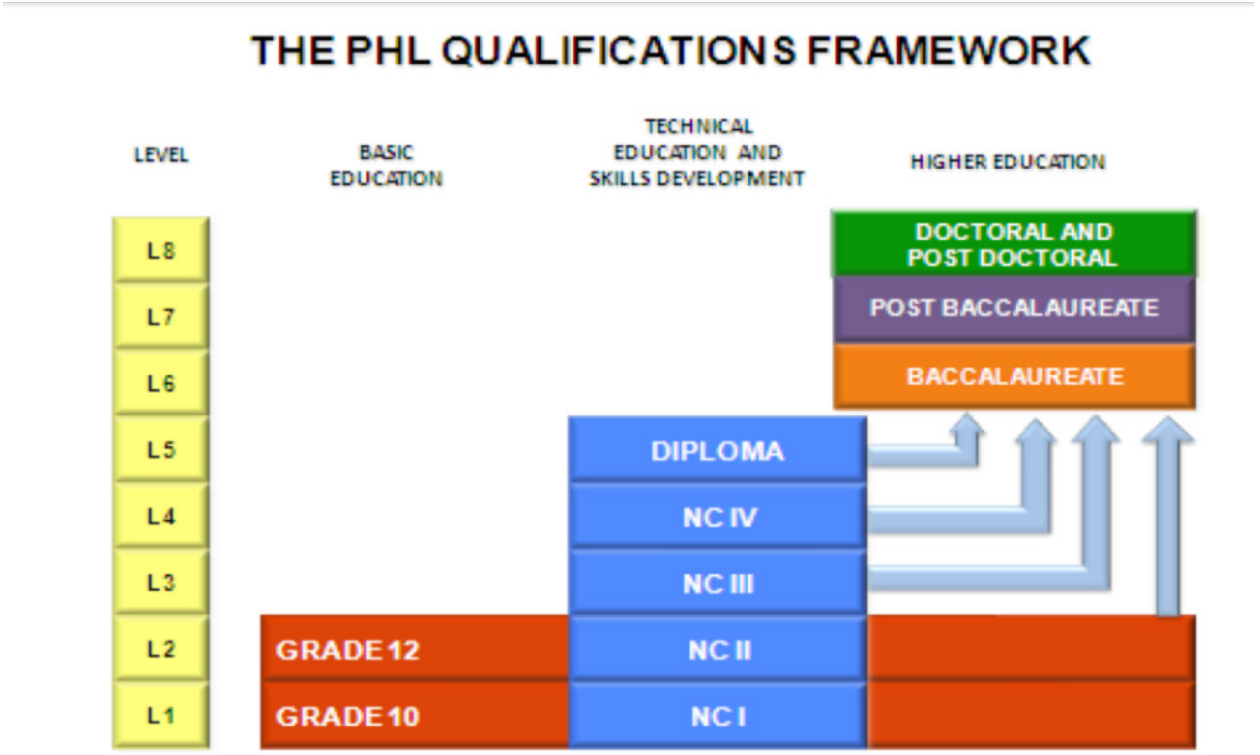

Figure 1. Philippine Qualifications Framework. Adapted from the Technical Education and Skills Development Authority (2016).

In recognition to the importance of education and training for national development, the Philippine Qualifications Framework (PQF) is institutionalized in order to;

a. Encourage lifelong learning of individuals;
b. provide employees specific training standards and qualifications aligned with industry standards;
c. ensure that training and educational institutions comply with specific standards and are accountable for achieving corresponding learning outcomes; and
d. provide the government with a common taxonomy and qualifications typology as bases for recognizing education and training programs as well as the qualifications formally awarded and their equivalents.

Tech-Voc education in the Philippines is under the directives of TESDA. Levels 3, 4 and 5 in the PQF falls under the mandates of TESDA program as it is within the level of developing middle-level manpower. Tech-voc Program bridges between basic education and tertiary education. It can link both to basic education and tertiary education.

The training delivery in Philippine TVET follows the following principles:

1. Training is based on curriculum developed from competency standard.
2. Learning is competency-based or modular in structure.
3. Training delivery is individualized and self-paced.
4. Training is based on work that must be performed.
5. Training materials are directly related to the competency standards/curriculum.
6. Assessment is based on collection of evidences of work performance based on required industry/organizational standards.
7. Training is based both on and off the job components.
8. Training program allows for recognition of prior learning (RPL) or current competencies.
9. System allows learners to enter/exit the training at different times/levels and receive an award for competencies attained at any point.
10. Approved training program are nationally accredited.

PHILIPPINE TVET TRAINERS QUALIFICATIONS FRAMEWORK (PTTQF)

The Philippine TVET Trainers Qualification Framework (PTTQF) is a system that provides competency standards of TVET Trainers and assessors involved in the training delivery, competency assessment, training design/development and training supervision. The framework design the competencies of TVET trainers at different roles and level of technical training.

The Framework shall consist of four (4) levels corresponding to the different roles assumed by trainers. These are as follows:

- Trainer Qualification Level I for Trainer/Assessors;
- Trainer Qualification Level II for Training Designers/Developers;

- Trainer Qualification Level III for Training Supervisors and Mentors; and
- Training Level IV for Master Trainer.

Trainers being certified in Levels I and II must be specialists in the areas of competencies they will facilitate while those being certified in Levels III and IV must be both specialists and generalists.

Table 1: Philippine Qualification Levels. Adapted from the Technical Education and Skills Development Authority (2016).

Qualification Levels	Trainer Qualification I: Trainer/ Assessor	Trainer Qualification II: Training Designer/ Developer	Trainer Qualification III: Training Mentor	Trainer Qualification IV: Master Trainer
Definition	Conducts technical training and competency assessments	Designs and develops curriculum, courses and instructional materials	Supervises, develops and mentors technical trainers	Extends the body of knowledge in the field of technical vocational education and training.
Entry Requirements	• BS Graduate or Equivalent • Certified in NC Level that will be handled	• BS Graduate or Equivalent • Certified in the NC Level that will be handled • With portfolio of relevant actual work outputs	• BS Graduate or Equivalent • Certified in the highest available NC Level in the Training Regulation • With portfolio of relevant actual work outputs	• MS Graduate or Equivalent • Certified highest available NC Level in the Training Regulation • With portfolio of relevant actual work outputs
Basic Competency Requirements	1. Communication 2. Apply math and science principles in technical training 3. Apply environmental principles and advocate conservation 4. Utilize IT Applications in technical tra ining 5. Work in teams 6. Apply work ethics, values and quality principles 7. Work effectively in vocational education and training 8. Foster and promote a learning culture 9. Ensure a healthy and safe learning environment 10. Maintain and enhance professional practice 11. Appreciate cost-benefits of technical training 12. Understand and analyze global labor markets			

Qualification Levels	Trainer Qualification I: Trainer/ Assessor	Trainer Qualification II: Training Designer/ Developer	Trainer Qualification III: Training Mentor	Trainer Qualification IV: Master Trainer
Core Competency Requirements	1. Plan Training Sessions 2. Facilitate learning Sessions 3. Supervise Work-Based Learning 4. Conduct Competency Assessment 5. Maintain Training Facilities 6. Utilize electronic media in facilitating training	1. Facilitate Development of competency standards 2. Conduct Training Needs Analysis 3. Develop training curriculum 4. Develop learning materials 5. Develop assessment tools 6. Design and Develop maintenance system of training facilities 7. Develop Learning Materials for e-learning	1. Facilitate development and review of training policies and procedures 2. Develop and execute training plans 3. Prepare and manage training budgets 4. Nurture and capacitate trainers/ assessors 5. Evaluate trainers/ assessors performance 6. Lead and Coordinate training/ assessment evaluation 7. Facilitate assessment moderation 8. Lead and coordinate training/ assessment	1. Institutionalize TVET systems and processes institutions/ enterprises 2. Conduct research on TVET 3. Promote, advocate and strengthen industry and TVET linkages 4. Provide professional development to TVET experts
Trainer's Curriculum	Course on Training Methodologies and Assessment	Course on Training Design and Development	Course on Supervision and Development of Trainers	Continuing Professional Education

In support to PTTQF, Training Regulations (TRs) on Trainers Methodology Levels I and II were promulgated thru TESDA Board resolution No. 2010-16 on November 25, 2010. The aforementioned TRs shall serve as bases for the registration and conduct of Trainers Methodology Levels I and II programs.

TVET Trainer Competency Assessment and Certification Arrangements

TVET trainer is one of the most critical components in ensuring quality-assured delivery of TVET programs. TESDA policies were formulated to ensure that accredited trainers are abreast with the current technologies and practices in industry of their respective qualifications.

TESDA Circular No. 13 series of 2011 was issued on June 10, 2011 to facilitate the effective and efficient implementation of the competency assessment and certification program of TVET trainers under Levels I (Trainer/Assessor) and II (Training Designer/Developer) at the provincial and regional levels.

On December 19, 2014, TESDA Circular No. 20 series of 2014 amended TESDA Circular No. 13 series of 2011 to include industry work experience as part of the requirements for National TVET Trainer Certificate (NTTC) issuance and renewal. The Cicular states that, to attain the appropriate NTTC Level I the following are required:

a. NC Level of the qualification appropriate to the training program handled but not lower than NC II;
b. Trainers Methodology (TMC) I; and
c. Industry work experience as may be provided in Section 3 of the respective TR

On June 6, 2017, TESDA Board Resolution No. 2017-31 re: Adoption of the Revised Trainee Entry Requirements for Trainers Methodology (TM) Level I was approved. One of the provisions in the resolution is that the trainee must met the number of years of relevant industry working experience required per promulgated Training Regulations of the particular qualifications to be handled.

To attain the National Qualification of NTTC I, the would-be TVET trainer must demonstrate competence in all Units of Competency identified in the promulgated Training Methodology I training regulation. Trainers Methodology Certificate I (TMC I) shall be issued to trainers who have achieved all the required units of competency identified in Level I (Trainer/Assessor) under the PTTQF. Conduct of assessment in TM Level I uses a combination of different evidence gathering methods.

Unit of Competency	Evidence Gathering Methods	Documents to be submitted to the Portfolio
COC 1 – Deliver Training Session		
• Plan Training Session	Written Report Portfolio	a. Sample of Session Plan prepared by the candidate b. Relevant Training and/or experience Certificate/s c. Other documents based on TR and CATs Requirements

Unit of Competency	Evidence Gathering Methods	Documents to be submitted to the Portfolio
• Facilitate Training Session	Demonstration Written Report	
• Supervise Work-based Learning	Written Report Portfolio	a. Sample of Training Plan b. Third Party Report Form signed by the Company Training Manager c. Relevant Training and/or experience Certificate/s d. Other Documents based on TR and CATs requirements
• Maintain Training Facilities	Written Report Portfolio	a. Sample of Shop/Training Room Layout prepared by the candidate b. Sample Maintenance Schedule (by candidate or responsible unit in the TVI or company) c. Inspection Checklist d. Relevant Training and/or experience Certificate/s e. Other documents based on TR and CATs Requirements
• Utilize Electronic Media in Facilitating Training	Demonstration Interview	a. Third Party Report Form signed by the School Administrator or Head of the Instruction. b. Relevant Training and/or experience Certificate/s c. Other documents based on TR and CATs requirements
COC 2- Conduct of Competency Assessment	Demonstration Written Report	

Conduct of Trainers Methodology I Assessment

Assessment for TM I shall be done by a Panel composed of three (3) members, they are the Regional Lead Expert Panel. During the assessment, the Trainer-candidate must demonstrate the simulation of training/assessment delivery as required in the Competency Assessment Tools (CATs) where there is/are a Learner(s)/Candidate(s) being trained/assessed. A qualified TESDA Representative trained by TESDA Regional Office shall be assigned by TESDA Provincial Director in all TM I Assessment to ensure that the assessment proceeding is in accordance with the standards set by the authority.

Organization and Appointment of TM I Expert Panel Member

The TM I Expert Panel is a team of three qualified trainers/TM Level I assessors who are authorized by TESDA Director General to assess competencies of TVET Trainers for national certification. Selection of Expert Panel Members is very crucial since members of the panel are considered to be an Assessor of the Assessors and Trainers. Therefore, the following selection criteria are considered:

a. Has a minimum of two (2) years experience in conducting training and national assessment;
b. A Holder of NTTC Level I; and
c. Must be endorsed by the Regional Director; or RTESDC; or by a TVET/industry association.

The Members of the Expert Panel for TM I shall be appointed by the Director General of TESDA for a period of one (1) year, or as specified in the appointment. The renewal of Appointment is not automatic. It shall be based on the results of the periodic performance evaluation to be conducted by TESDA Regional Office and regular participation of the Panel Members in the conduct of TM I assessment.

Issuance and Validity of Certificates

The Provincial Office shall issue the Training Methodology Certificate (TMC) and Certificate of Competency (COC), while the Regional Office shall issue the National TVET Trainer Certificate (NTTC). The Certification Office shall facilitate the printing and availability of the Certificates which shall include security features same as provided in the National Certificates.

The COC and TMC shall be valid for a period of five years. However, if a new Training Regulation (TR) for TM Level I is promulgated, the holder shall undergo assessment based on the new TR. The NTTC shall be valid only until the expiry date of the National Certificate (NC). Upon expiration or three months prior to expiration, the holder shall file for renewal for both the NC and the NTTC. Upon expiration of the NTTC, the name of the TVET Trainer shall be automatically delisted from the Registry of Accredited Trainers.

Sanctions and Penalties

The NTTC issued to erring TVET Trainers shall be cancelled on the following grounds:

a. Falsification of requisite documents and/or false statement in connection with the application of Trainer Certification;
b. Tampering of NTTC;
c. Violation of any defined procedure in the conduct of Training and Assessment; and
d. Any act resulting to serious injury of a person committed by the NTTC holder in the practice of his/her job as a Trainer or Assessor.

Program and Monitoring

The Regional and Provincial Offices shall be responsible for monitoring, reporting and conduct of compliance audit. The Certification Office shall maintain the Registry of NTTC Trainers, which shall be uploaded in the TESDA website on a monthly basis. The Certification Office may conduct Field Monitoring and Technical Assistance and/or compliance audit, as may be necessary.

RECOMMENDATIONS

TVET Trainer is central in the delivery of quality-assured trainings. Therefore, trainers should be abreast with the current technologies and practices in industry of their respective qualifications. Below are the recommendations:

- TVET Trainers should have the initiative to ensure that they are qualified and certified based on TESDA Circulars issued. To wit:
  a. They should involve themselves in related trainings and activities that will enhance and develop their competencies.
  b. They may scout related trainings to keep abreast of current competencies related to their qualifications.
- Staff development fund should be utilized for trainers' capability program.
- Heads of the Training Centers/TVIs should be updated on the guidelines implemented by the authority on the qualification and certification of their trainers.

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COUNTRY PAPER: SRI LANKA
SRI LANKAN EXPERIENCES IN APPRENTICESHIP TRAINING

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ABSTRACT

Apprenticeship training in Sri Lanka is done in different ways. Traditionally many people obtain apprenticeship training through imparting knowledge, skills and attitudes to their relatives. The job opportunities are automatically created by this career path. There are two other methods that provide apprenticeship training. One method is providing it after completion of institutional training and the other one is providing apprenticeship training within the institutional training.

Before the establishment of National Apprenticeship board in Sri Lanka in 1971, apprenticeship training was provided by various private firms and government ministries or departments to fulfill their own requirements. Most of the trained persons were absorbed for their own institutes after completion of the training. The establishment of the Government Technical College, the National Apprenticeship and Industrial Training Authority (NAITA), and National Vocational Qualification (NVQ) Framework has furthered TVET as a link between employers and employees in relevant training.

Keywords: Apprenticeship, Training, Vocational Qualifications

BACKGROUND OF TVET SYSTEM IN SRI LANKA

Evolution of Technical and Vocational Education in Sri Lanka had resulted in a very high standard of skills in construction, crafts, architecture and hydraulic technology during ancient times. Skills were taught by father to son or by elder relative to a youngsters to ensure a regular supply of skilled artisans. This system broke down during the period when Sri Lanka came under colonial rule, due to a change in the pattern of skills required in a colonial society with emphasis on the need of the colonial administration for producing the manpower needed for lower level white collar jobs. Formal Technical and Vocational Education and Training (TVET), as we know of it today, had its beginnings in 1893 when the first Technical College was established to train skilled workers needed for the development of physical infrastructure such as the laying of railway lines and the construction of roads. The period after independence (1948) saw a renewed interest in the development of skills required for achieving the development objectives of a newly emergent nation. Accordingly, actions have been taken to establish a network of technical colleges and many other autonomous Vocational Training Institutes under different ministries. However, this expansion did not have a focus on quality and relevance.

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Change of focus in TVET System

Since 1990, an attempt has been made to co-ordinate different training institutions to deliver training with quality and relevance according to the nationally agreed plan. This was symbolized by the establishment of the Tertiary and Vocational Education Commission (TVEC), the apex body in TVET in 1990 and the establishment of a separate ministry for TVET in 1994. This trend continued and present TVET focus is the establishment of a unified qualification system.

Institutional Structure of the TVET System currently functioning in Sri Lanka

At present, there are a number of ministries with stakes in TVET and the Ministry of Science, Technology, Research, Skills Development and Vocational Training and Kandyan Heritage is mainly responsible for development of TVET system in Sri Lanka. State Institutional Framework of TVET Sector is depicted in following diagram. Institutions under the Ministry of Science, Technology, Research, Skills Development and Vocational Training and Kandyan Heritage depicted by abbreviations of the above diagram are listed below.

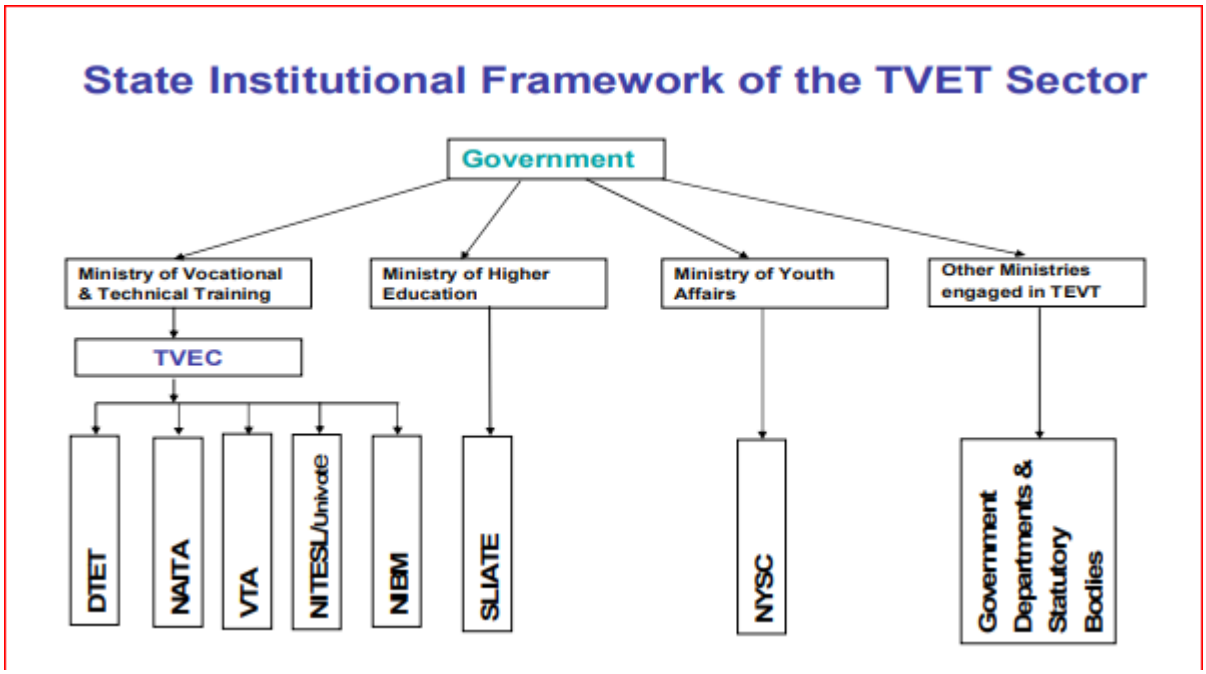


Figure 1: Framework of the TVET Sector in Sri Lanka

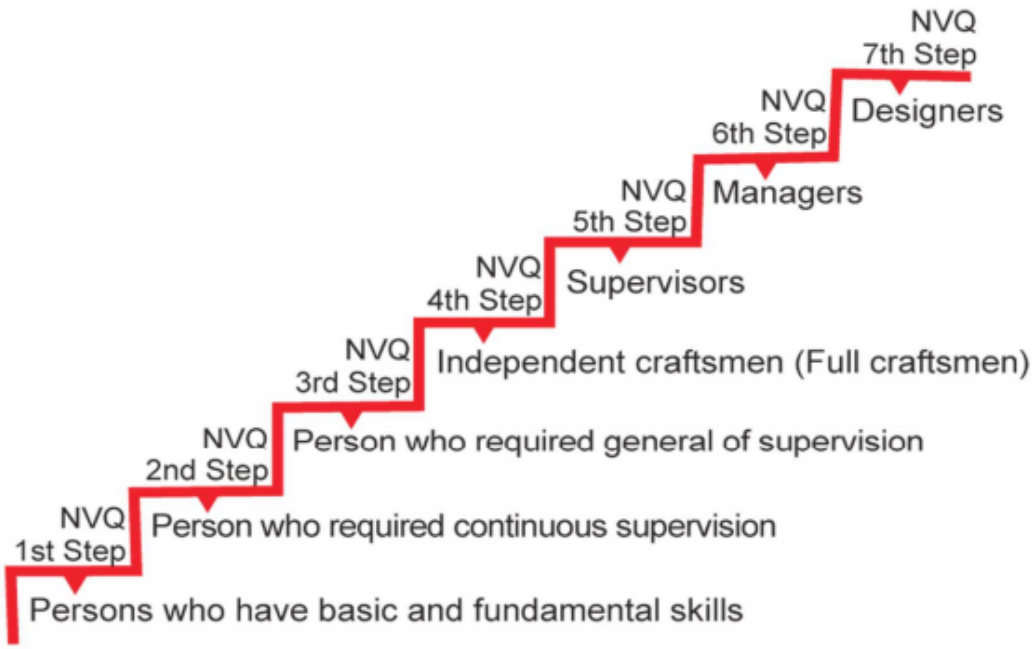
1. TVEC: Tertiary and Vocational Education Commission Established in 1990, is the Apex body in TVET sector responsible for policy formulation, coordination, planning and development and maintenance of standards through registration and accreditation of VT institutions and a unified qualification system.
2. DTET: Department of Technical Education and Training Established in 1893 as the first technical college and at present it operates with a network of 39 technical colleges with annual enrolment of about 36,000 trainees; most of them are at NVQ level 4, 5 & 6. Actions have been taken to promote 9 technical colleges in 9 provinces as Colleges of Technology to conduct diploma courses under National Vocational Qualification System.
3. NAITA: National Apprentice and Industrial Training Authority established in 1971as the National Apprenticeship Board to formalize the enterprise based apprenticeship training. It

has been restructured in 1990 as the National Apprentice and Industrial Training Authority with wider powers for apprenticeship training, on the job training for all tertiary level courses and for trade test. At present it has a network of training centers including three national level institutions conducting dual training based courses and island wide network of inspectorate to conduct apprenticeship programs with annual recruitment capacity of about 20,000 apprentices.

4. VTA: Vocational Training Authority of Sri Lanka Established in 2005, VTA has a network of about 215 training centers with major focus on rural sector with annual enrollment of about 20,000 students.
5. UNIVOTEC: University of Vocational Technology was established in 2009 to facilitate students in vocational training to continue their studies up to a degree programs.

This has built up with facilities of the National Institute of Technical Education of Sri Lanka (NITESL) and it has undertaken the trainer training and Curricular and training material development functions of the NITESL.

National Vocational Qualification Framework National Vocational Qualification (NVQ) Framework was established in 2005 as a unified qualification system for TVET sector in Sri Lanka. NVQ Framework has a 7 qualification levels, as depicted in following diagram.



Those qualification levels are described below.

Level	Qualification	Description
Level 1	National Certificates	Recognition for core of entry level skills
Level 2	National Certificates	Recognize the increasing level of competencies. Level 4 is the master level craftsmanship with ability to apply skill independently
Level 3	National Certificates	
Level 4	National Certificates	
Level 5	National Diploma	Recognize increasing competencies from technician to management levels
Level 6	National Diploma	
Level 7	Bachelors Degree Equivalent	This level recognizes the competencies at planning, resourcing and process management level.

Figure 2: National Vocational Qualification Framework of Sri Lanka.

REFORMS IN TVET SECTOR

Ministry of Vocational and Technical Education in cooperation with major public sector TVET institution has taken action to implement two projects with the assistance of the Asian Development Bank to introduce sustainable reforms to the VT sector in Sri Lanka. Main reforms planned and being implemented are;

1. National Vocational Qualification (NVQ) Framework based on Occupational National Skills Standards to issue VT qualifications.
2. Convert VT Courses into CBT Mode of Training and award NVQs.
3. Implement Quality Assurance in TVET system through Registration of Training centers, Accreditation of training courses and installation of Quality Management System.
4. Establishment of a Network of Career Guidance Centers and Learning Resources Utilization centers.
5. Incorporate Entrepreneurship Development into TVET.
6. Incorporate Employability Skills into TVET Curricular.
7. Recognize Private Sector Training Institutions to deliver NVQs through Registration and Accreditation
8. Develop institutional capacity to conduct research in TVET
9. Establish 9 Colleges of Technology in 9 Provinces by improving 9 Technical Colleges to conduct NVQ Level 5 & 6 Courses.
10. Establish University of Vocational Technology to conduct NVQ 7 – Bachelor Degree courses

Apprenticeship Training in Sri Lanka

National Apprenticeship Board was established in 1971. It is abbreviated as NAB. Initially 871 apprentices were recruited to 16 sectors. They had been placed in large scale government industries as well as the industries in private sector.

In 1990 National Apprentice and Industrial Training Authority [NAITA] was established under the Tertiary and Vocational Education act of No: 20 in 1990. Simultaneously, Tertiary and Vocational Education Commission was established under the same act in order to monitor the vocational training. Because of the establishment of NAITA, provision of apprenticeship training was decentralized to provincial offices. Hence, they gained the opportunity to cater the youth community island wide by giving training opportunities. Due to this decentralization, two remarkable milestones can be identified.

1. A skilled essential labor force was produced island wide to match the industry.
2. Unemployment was minimized.

Except that, NAITA has widened their industry training up to 24 sectors. They are as follows.

1. Auto mobile sector
2. Construction sector
3. Electrical sector
4. Electronic and telecommunication sector

5. Fisheries sector
6. Fittings and fabrication sector
7. Gem and Jewelry sector
8. Metal fabrication and machining sector
9. Operation sector
10. Office equipment and fine equipment sector
11. Printing sector
12. Painting and finishing sector
13. Rubber and plastic products processing sector
14. Footwear sector
15. hotel and Restaurant sector
16. Textile and garment sector
17. Wood related sector
18. Clerical sector
19. Information technology sector
20. Nursing and health sector
21. Construction machinery sector
22. Plantation sector
23. Automation sector
24. Arts and crafts sector

Evolution of National Apprenticeship Programs

As evident in the surviving ancient monuments as well as the extended irrigation network, ancient Sri Lanka claimed a skill base of a very high level, which was supposedly sustained through a skills training in the workplace. However, in the process of development of the TVET sector in Sri Lanka, more focus has been given to the development of institutional training. Nevertheless workplace training has been the more preferred mode of skill acquisition as studies have revealed that only 16% of the labor market has received formal training certificates which means that 84% of the labor market has acquired skill through workplace training. In the past, skill acquisition has happened through a cast based skill training system. With growth of industrialization and plantation, big companies had established company based training systems to develop skilled people for employment in respective companies. Here engineering based companies had introduced company based apprenticeship schemes with two levels of apprenticeship programs as listed below.

- Craft apprenticeship to train craft persons
- Special apprenticeship to train technicians

Skill Training in the Workplace can be considered as real apprenticeship training. Because there is no waste of material used for training and no time is wasted by trainers to train the apprentices.

CURRENT WORKPLACE TRAINING PROGRAMS

Enterprise Based Apprenticeship Programs

Enterprise Based Apprenticeship program is a 100% workplace training conducted based on a structured curriculum. Theoretical knowledge is provided through postal distance education lessons and from time to time supplementary instruction classes are organized to assist them to get sort out questions encountered in postal lessons. The apprentices are required to maintain a Training Diary and NAITA has employed Training Inspectors to visit the workplaces and give some supervisions. At the end of training, NAITA conduct an assessment and award certificate of apprenticeship. There are three types of Enterprise Based Apprenticeship programs conducted by NAITA as details given below.

Enterprise Based Craft Apprenticeship

NAITA conducts Enterprise Based Craft Apprenticeship programs for widely practiced matured occupations in the industry which are identified as national level occupations in the country. These apprenticeship programs are introduced with the well developed curricula prepared with the participation of relevant industrialists in curriculum development panels. These curricula outline the facilities required in the industry to facilitate the apprenticeship programs. These occupations are called categorized occupations of apprenticeship and at present NAITA have categorized more than 220 occupations for apprenticeship training.

Enterprise Based Situational Apprenticeship

In a developing economy, many new and emerging occupations could be found in growing industries. These emerging occupations may be practiced in a few companies. These occupations are identified as situational occupations which are specific to a few companies. As these occupations are not widely practiced in the industry, trainees are enrolled with employment guarantee in respective companies. If number of situational apprentices in particular occupation show a sign of growth, NAITA takes actions to categorize such an occupation as a national level occupation. In that respect, Situational apprenticeship is method of identifying training needs of the industry.

Enterprise Based Village level Apprenticeship

Many workshops and business enterprises in rural areas do not have facilities to cover a national level curriculum fully. In fact rural workshops need artisans who could work with a narrow range of skills relevant to the rural workshops. Village level apprenticeship scheme has been launched by NAB in 1970s to train village artisans. The village level apprenticeship scheme has widely practiced in 70s and 80s; in early period of national apprenticeship program but now it is being phased out.

Dual (Sandwich type) Training Programs

NAITA has a network of training centres based on dual training concept. Different Dual Training models are practiced by different training centres as explained below.

Institute of Engineering Technology (IET) (Formerly Technician Training Institute) Katunayake of NAITA

This institute has been established with UNDP / ILO assistance in 1985 to formalize the company based special apprenticeship programs in engineering disciplines. This is a thick sandwich type course where Institutional Training and Industrial Training are provided by step by step as details given below.

Basic Instruction programme	6 Months	At the Institutions, IET, Katunayake
Basic Industrial Training	9 Months	In the Industry
General Instruction programme	6 Months	At the Institutions, IET, Katunayake
General Industrial Training	9 Months	In the Industry
Specialized Instruction programme	6 Months	At the Institutions, IET, Katunayake
Specialized Industrial Training	12 Months	In the Industry

Figure 3: Sample of a company-based apprenticeship programs

This course is conducted in 9 engineering disciplines and on successful completion; National Diploma in Engineering Sciences is awarded. This is a very successful course with 100% employability.

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