Efforts in reorienting technical vocational education & training (TVET) system in Papua New Guinea (PNG) to the global economy: A case study

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ABSTRACT:
The main purpose of this study was to ascertain the efforts undertaken by the Technical Vocational Education & Training System in PNG in support of the global economy. The research conducted was limited to technical and business colleges, TVET head office and randomly selected vocational centre’s and addressed the following questions: What are the major programs and activities undertaken by TVET system in PNG in support of the global economy? What are the common challenges experienced by the TVET system in PNG and other TVET providers? What are the major achievements and best practices adopted by TVET system in PNG in support of the global economy? What are the lessons learnt and future challenges for TVET system in PNG? The main instrument for data collection was questionnaire administered to about 20% of the target population of students (N -60), teachers (N -60) and head office staff (N-20) in the TVET sector. Data were analyzed using the descriptive statistics. The findings reveal a dearth of professional and qualified staff, inadequate infrastructure and equipment, insufficient instructional materials, and generally poorly financed. The efforts undertaken by TVET system have been greatly affected by the issues enlisted. The three key recommendations are that adequate infrastructure should be provided in all TVET institutions, training of TVET teacher/instructors is given utmost priority and high investment in TVET is vital for TVETs competitiveness.

Key words: reorientation, global economy, common challenges, best practices, and future challenges.

INTRODUCTION
TVET is widely recognized as an important part of the total education and training system. The challenge is how to bring reorientation in the TVET system in PNG and to reposition it in response to the global forces driving change in a knowledge-based economy. This paper reflects on efforts undertaken, discusses challenges and other needed measures to enable TVET system in PNG to achieve its set goals.

Purpose of the Research
The main purposes of the research were to:
1. Ascertain the efforts being made by the TVET sector in PNG towards reorienting their programs and activities in support of the global economy,
2. Identify the common challenges experienced by the TVET system in PNG and the other providers,
3. Identify the major achievements and best practices adopted by TVET sector in PNG in support of the global economy, and
4. Ascertain the lessons learnt and future challenges for TVET system in PNG.
Statement of the Problem
The emerging trend on globalization has brought about new challenges in the global economy. This emerging concern poses immediate attention to the education sector in PNG, particularly in the Technical Vocational Education and Training. Many social, economic and technical issues are creating impact on TVET system and apparently, affecting the TVET trends in the workplace and the competitiveness of the workforce in the country. In contrast, this creates a major hurdle towards the technical workforce development in the global economy. This implies that educational managers, planners and other key players in PNG are faced with challenges of how to reorient TVET for the global economy.

Significance of Study
How we tackle the challenges raised by the emergence of the global economy will be a major determinant of our country’s prosperity. For this reason, it was felt that carrying out of this research was timely and necessary because this would serve as a timely intervention to reflect on where the current state of TVET system in PNG is, evaluate the priority areas in the context of development trends and chart new approaches in the context of the globalized economy.

Background
Prior to getting into the core theme of the paper, it is felt vital to outline the historical development of TVET in PNG. Historical analysis reveals that until the 1900s there was no form of Technical Vocational Education and Training (TVET) provided in PNG. Technical Vocational Education and Training in Papua New Guinea was initiated in 1927 as a result of the establishment of Malaguna Technical High School in East New Britain Province (NDOE, 1999)[4]. The formal education system embarked as an initiative of European missionaries in Papua New Guinea during the early 1900s in the colonial era. It is difficult to find credible historical evidence that formal Technical Vocational Education and Training had been operated in the country under the tribal administration in Papua New Guinea (McLaughlin, 1994)[2].

The Department of Education in PNG established TVET Division in Mid 1960s and commenced opening Vocational Training Centers, which were aimed at providing post primary training for school leavers at Grade 6 or above (NDOE, 2000)[4]. During the early stages of its development, many parties considered the VTC to be for academically less advantaged students. Indeed many believed that VTC courses were destinations for failures from the school system. This was the view until quite recently, and has been one of the reasons why the VET system failed to attain its rightful place within the school system of PNG.

The remarkable breakthrough in Technical Vocational Education was instigated when the technical vocational division of the department of education established several technical colleges in Lae, Mt Hagen, Madang and Port Moresby and two secretarial colleges in Port Moresby and Goroka (NDOE, 2000). There are currently 9 technical and business colleges and 141 vocational centres in PNG. Lae Technical College got converted to National Polytechnic Institute in December of 2009. West New Britain Technical College was opened in 2011 and Bougainville Technical College was opened this year, 2013.

Research Questions
For the purpose of this research, the following questions are posed:

1. Main Question
What are the efforts in Reorienting Technical Vocational Education and Training (TVET) system in Papua New Guinea (PNG) for the global economy?

2. Sub Questions
What are the major programs and activities undertaken by TVET system in PNG in support of the global economy?

What are the common challenges experienced by the TVET system in PNG and other TVET providers?

What are the major achievements and best practices adopted by TVET system in PNG in support of the global economy?

What are the lessons learnt and future challenges for TVET system in PNG?

LITERATURE REVIEW
Overview of the Concept of Reorienting TVET system for global economy

We are living through a period of profound change and transformation of the shape of society and its economic underlying economic base...The nature of production, trade, employment and work in the coming decades will be very different from what it is today (Forfas, 199).[1]. Simply put reorienting TVET system for global economy calls for improvement from the old ways of doing things to the new to stay in tune with globalization. As per Sheikh (2011), reorienting TVET system for global economy requires a global change of mindset and attitude [3]. The impact of globalization has changed the regional situation to where human resources now serve as the important role of boosting the development and infrastructure of a country (CPSC, 2011)[3]. Currently, PNG and the Asia Pacific Region are facing a new economic trend based on globalization. TVET according to Khambayat (2011) has a crucial role to play as an effective tool to realize the objectives of sustainable development, social cohesion and economic growth [4]. Similarly in support of this view, Yaakub (2011) states that, TVET plays a vital role within the overall education system and process in terms of preparing the next generation workers [3].

The ten strategic action areas suggested for TVET system to complement the global economy are listed. These are:

- Technical Manpower Planning: This is seen as a vital component to bring relevance of TVET to the global economy, this ascertains that all policies as well as practices are based on certain information i.e. technical manpower planning.
- Demand Driven TVET Programs: The regions TVET system is dominantly supply driven and this often leads to programs with limited impact on the labor market. The consequences of this are skills mismatch, and so the programs offered must be based on labor market information. The focus then is to bring TVET program offers from supply driven to need-based approach.
- Building Relevance and Quality of Curricula: Building TVET system for global economy largely depends on the relevance and worth of the programs/courses of study offered by the institutions under the TVET system. There is need to ensure that the curricula of these programs/courses stay relevant and are of high quality.
- Accreditation and Quality Assurance: With the growing number of TVET providers and mobility of workforce across the region, disparities in skills standards and in the recognition of qualifications pose a major challenge in workforce mobility. There is ever-increasing concern with different levels of quality systems and qualifications frameworks of TVET. Accreditation has emerged as one of the important strategies to achieve globally accepted skills standards.
- Strengthening Public-Private Partnership in TVET system: The linkage between industry and TVET institutions is of great significance for improving degree of relevance of contents and delivery of programs. Developing public-private and
Community partnerships and maintaining close interactions with industry are necessary to overcome the skill mismatches and make TVET more market oriented.

• Prepare the workforce for Green Economy Jobs: Green workforce development will likely be a hot topic in the coming years, from the construction of solar panels and wind-powered turbines to community weatherization programs. Economists say that large-scale green projects have the potential to create millions of jobs around the Asia-Pacific region. Green jobs generally fall under two categories: the energy efficiency sector (EE) and the renewable energy (RE) sector. TVET has significant role to play in developing workforce including eco-entrepreneurship for future Green Economy.

• Promoting Entrepreneurship and Generic Skills in TVET Curricula: In view of emerging growth in service sector economy, there is huge potential for promoting entrepreneurship as a viable career option for TVET graduates. The significance of developing entrepreneurial skills has also become increasingly apparent as current trends indicate that majority of the TVET workforce are likely to be absorbed into the unorganized and informal sector in the near future. Therefore, there is a need to encourage fresh graduates to establish micro or small enterprises, or to become self-employed as these are likely to provide a better option for them to earn a livelihood than to simply be absorbed into the organized sector.

• Nurturing Instructional Effectiveness: The next significant aspect for reorientation of TVET is related to instructional effectiveness. It is influenced by a large number of factors - primary being the quality of TVET educator, quality of instruction, instructional time, and quality of instructional material, characteristics of the learner and characteristics and adequacy of physical resources.

• Establish Robust Professional Development and Staff Capacity Building System: These strategies will require workforce development, adult education and postsecondary education practitioners to do business differently. To ensure that the field is prepared to meet the challenges of a new education and workforce system, the national and provincial governments will need to invest in professional development systems.

• Invest in Education, Training, and Workforce Development at a Level Proportionate to the Need: Current programs are severely under-funded and therefore unable to meet the critical and growing need for middle- and highly-skilled workers. It is critical to increase our investments in workforce education programs and find ways to ensure that those who most need education and training can afford access. In addition, dedicated funding is needed to align programs, foster community partnerships, and enhance the capacity of education providers to carry out changes, which accelerate student learning, and strengthen connections to employers and local labor market requirements (Khambayat, 2011, pp. 57-61) [4].

The list above demonstrates that reorienting TVET system for the global economy is seen as a way forward to stay competitive in this globalized economy. It is now imperative for TVET to re-diversify its approach in providing skills development and training to be in line with technological changes. The Director-General of UNESCO, Koichiro Matsuura, (2004) had this to say in an international Experts Meeting that, For TVET programs to be part of the solution and not part of the problem; they must be reoriented so that they contribute to sustainable development worldwide [3]. On a similar note; Hafni and Ismail (2011) expressed that, … TVET plays an important role in, equipping the individuals with relevant skills and knowledge, hence enabling people to effectively participate in social, economic and technological innovative process [3].
Why Reorient TVET system for global economy?

Why is Reorienting TVET system to the global economy a useful way of talking about change approach? It is believed that this concept is most timely because it has been acknowledged that a strong TVET sector with its associated high standard of training and accreditation driven by industry standards is the backbone for a strong economy and workforce (Chand, 2011) [3]. Similarly, Khanal and Lamichhane (2011) in support emphasized that, quality and competitive TVET programs are essential to address global need [3].

The importance of TVET has been globally recognized. Majundar (2010) claimed that it is important at this stage for TVET to introduce higher order thinking skills (HOTS) and strengthen curriculum that stimulate problem solving, critical thinking and analysis and strengthen the students’ learning to learn skills to cope with technology change [2]. On the other hand, Rupert Maclean and Ada Lai (2011) expressed that education and training of knowledge workers requires different educational policies, facilities, curricula and, above all teachers [5].

All nations in the world are faced with the challenge of improving the capacity of their workforce to respond to their national development needs. PNG in this present time as a partner in this globalized economy has been challenged to focus on developing TVET system and programs which can address global needs and cope with the global technology.

The Context of PNG

The current TVET system in PNG is largely supply driven and as a result often leads to programs with limited impact on the labour market. To address the growing concern regarding skills mismatch, there is a need to offer programs based on labour market information. Consequently, this will bring focus on the TVET program offering from supply driven to need based approach.

As per Khambayat (2011), “building TVET system for global economy largely depends on the relevance and worth of the programs and courses of study offered by the institutions beneath the TVET system” (p.58) [4]. This implies that Technical and vocational training programs in PNG are poorly linked with the market demands and are not satisfactorily fulfilling the employment and earning needs of the individual and economic development needs of the country.

A recent study by AusAID claimed that, the problems with TVET service delivery in PNG are profound and deep seated. There must be high level of political will and support from the other development partners to enhance growth and development within the sector (AusAID, 2011) [1]. From this it can now be gathered that TVET PNG need to redirect its focus towards organizational arrangements, commitment to quality and accountability, at all levels of the TVET system. Coming from a number of management roles within a number of large and recognized companies, Brown (2011) had this to say, “I have been aware for a long time of the poor regard that employers in general have of the products of the TVET system”[1]. From another perspective, globalization is said to be mobilization of skilled employees (Whitehouse, 2011). TVET system in PNG in this context is at the ‘crossroads’ (AusAid report, 2011). Thus, reorienting TVET system in PNG for global economy implies new strategies for development. This demand a new approach to update every aspect of the TVET system that must be aligned to prepare people with the new global economy skills they need to acquire to be competitive. The current environments in which TVET systems in PNG operate are discussed.

Major Programs and Activities through TVET System in support of the Global Economy
TVET system in PNG in its effort to reorient TVET to the global economy has undertaken some changes over the 15 years in line with education reform since its inception in 1991. The major changes undertaken are listed:

- The unification of Technical and Vocational Education sectors under the Technical Vocational Education and Training (TVET) Division,
- The rationalization of technical and business colleges and their courses. This involved the relocation of similar courses, equipment and teachers to “home colleges”,
- The development of the two-year broad-based (multi-skilling) Technical Training Certificate (TTC) courses, which will gradually replace the existing one-year (single-stream) Pre-Employment Technical Training (PETT) courses,
- The upgrading of higher certificate technician courses to diploma level courses,
- The adoption of a policy shift in curriculum that requires future curriculum development and delivery of training courses using the Competency Based Training and Assessment Principles,
- The development of CBT&A curricula to support the trade testing system and to ensure the high quality of training courses as required by industry,
- The introduction of National Certificate courses, and
- The restructuring of the TVET sector to accommodate these changes.

**Table: 1. Common programs offered within TVET**

<table>
<thead>
<tr>
<th>Qualification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre Employment Technical Training (PETT)</td>
<td>One year full-time programs designed for Year 10 entry providing pre-employment skills for specific trades and occupations. Provided by Technical Colleges and some Vocational Training Centres.</td>
</tr>
<tr>
<td>Technical Training Certificate (TTC)</td>
<td>Generally two year full-time programs designed for Year 12 entry providing pre-employment skills over several related trade or occupational areas. Offered by Technical Colleges.</td>
</tr>
<tr>
<td>Vocational Training Certificate (Conventional) (VTC)</td>
<td>Generally two year full-time programs designed for Year 8 or 6 entry providing pre employment skills for specific trades or occupations. Offered by Vocational Training Centres.</td>
</tr>
<tr>
<td>Extension / Apprenticeship, Levels 1, 2 and 3.</td>
<td>Block release programs providing off-job training for apprentices in certain trades recognised by the NATTB. Certification issued by NATTB. Offered by Technical Colleges.</td>
</tr>
<tr>
<td>Diploma</td>
<td>Technician or paraprofessional programs designed for Year 12 entry and generally offered over two years full-time, or part-time equivalent. Offered by Technical Colleges.</td>
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</tbody>
</table>

The national certificate courses have been currently introduced. They range from NCI - 4 and eventually to a national diploma. It is anticipated that this program will replace the TTC programs.

**Key Challenges in Building TVET for Global Economy**

TVET system, by nature according to Kambayat (2011) is dynamic. There are many challenges faced in building TVET system for global economy. They range from responding to societal needs, technological and economic changes within the local and global environment. The challenge is how to bring reorientation in TVET system and to reposition it in response to the global forces driving change in a knowledge-based economy. PNG like other global partners in the region face the similar challenges and are listed below:
Political & Industry Support: We need to engage industry and government leaders in a deeper dialogue with the global TVET community and strengthen their involvement and investment in shaping the future of industry and society through TVET system.

Strengthen Dialogue: We need to discuss with TVET professional and industry leaders who seek to understand the issues and challenges facing TVET institutions, because building competent workers through TVET educators have become critical factors in determining a nation’s competitiveness.

Other Countries example: The countries which, made rapid economic progress in the region like Japan, South Korea, and Singapore etc, have paid great attention to the continuous development of their people and building a clear strategy and matching culture to address challenges of global economy.

Accreditation: Accreditation is of direct relevance to the policy makers and expert bodies responsible for education, training, and learning policies and systems at both the national and international level to ensure quality assurance in TVET.

Enacting of Policies: TVET policy makers that fail to gain an accurate understanding of today’s global business, economic and social context, along with the challenges and opportunities that it poses are likely to face growing demands of global economy.

Relevancy of the programs: According to Majundar (2010) it is imperative for TVET to introduce higher order thinking skills (HOTS) and strengthen curriculum that stimulate problem solving, critical thinking and analysis and strengthen the students’ learning to learn skills to cope with technology change.

Public Private Partnership: Developing public-private and community partnerships and maintaining close interactions with industry are necessary to overcome the skill mismatches and make TVET more market oriented.

Poor public perception of TVET: For many years TVET education in PNG has been considered as a career path for the less academically endowed. Worse still, the branding of vocational track is to keep ‘drop outs’ and ‘lockouts’ from the basic and secondary school system off the streets, rather than project this type of training as an effective strategy to train skilled workers for the employment market. Similar comments from Fiji by Chand (2011) and from Rwanda by Usman and Pascal (2000) [3].

TVET Facilities and Equipment: Most of the infrastructures are in dire need of urgent rehabilitation and replacement. There is a major problem associated with high cost of construction, equipment, maintenance and the provision of consumable training materials. Routine and preventive maintenance have also constituted persistent problems (Maino, 2009) [1].

Condition of teachers: TVET Teachers ‘Conditions is not the same as the other sectors of the education system and with those in academics, as such; it serves as a demotivating factor.

Teacher Upgrading: As TVET becomes increasingly more knowledge oriented; the training of teachers becomes vital in order for knowledge and skills transfer to fall in line with the global trends.

Gender Equity: The Promoting of TVET for accessibility for girls and women need to be strongly emphasized and encouraged.

A recent study that involved interviewing various industries in PNG and the institutions indicated that several industries are dissatisfied with the level of knowledge and skills possessed by contemporary TVET graduates (AusAID Report, 2011) and this would indicate that there is reluctance on their part to employ graduates. Similarly, the Secretary for Labour
and Industrial Relations reported that PNG seriously lacks skilled manpower to fully meet the construction of the multi-billion kina Liquefied Natural Gas (LNG) project (Post Courier, 2011) [1].

Major Achievements and Best Practices Adopted by TVET System in PNG in Support of the Global Economy

Addressing workforce development though TVET programs and services is one of the prevalent challenges in the developing process the country has faced. PNG like the other developing nations has been confronted with a set of underlying issues. In spite of this, there are innovative initiatives and virtuous practices embraced by various TVET institutions in the country. This part of the paper will discuss major achievements and best practices undertaken by TVET PNG in building TVET for global economy.

The major Achievements of TVET are as follows.

- This policy shift on National Trade Testing and Certification System (NTTCS) was initiated for PNG in 1997 and fully implemented in 2002,
- On the 24th March 1999, the Secretary for Education issued a Circular on Policy Change towards Competency Based Training in TVET: All the future syllabus design, developments and implementation were to be based on the CBT&A principles,
- The concept of National Qualification Framework was initiated and introduced in 2005: A means to improve the quality of TVET training and enhance employer and community confidence in qualifications gained by people,
- A TVET policy inclusive highlights the introduction of Polytechnic Institutions for all the four regions and one vocational centre in the 91 districts,
- Increased students enrolments in TVET institutions: From 3800 to 4800 (AusAid, 2011),
- Expansion of course offerings introduced in various TVET institutions: From certificate to Diploma programs,
- Restructure of TVET sector: To be managed under a separate wing within the department of education, and

Best Practices

According to (Chand, 2011) a best practice is a technique, method, process, activity, incentive or reward that is believed to be more effective at delivering a particular outcome than any other technique, method or process. The idea is that with proper processes, checks and testing, a desired outcome can be delivered with fewer problems and unforeseen complications.

- The TVET sector and their teachers always try to incorporate local resources to teach their students to make them realise the value of the local materials and their environment,
- Values and culture are also integrated in their subject which helps in building discipline in them and realise their potentials,
- Promoting work based learning including apprenticeships,
- New programs for TVET Teachers and Principals,
- Model for competency standards development and new demand driven courses, and
- PNG TVET Quality Assurance Framework.

Lessons Learnt and Future Challenges for TVET System in PNG

Lessons learnt
• Globalization has intensified competition which has had effects on skills, competencies and employment.
• Skills inequalities and the labour market also have grown rapidly and workers skills demand are dramatically changing and have not been fulfilled by the existing public or private training providers.
• Skills and knowledge become rapidly obsolete and therefore must be renewed continuously. As the life span of existing qualifications shortens, there is a greater and urgent need for skills up-grading, re-training, continuous education and training, as well as lifelong learning.
• There is growing demand for skilled and competent workers in high performance work organizations and new, higher technical skills & competencies for exploiting potential of advanced technologies.

**Future challenges**
Firstly, to be in line with the phase of technology existing teachers need to have access to regular up-skilling training and industry attachments. This has a direct affect on student outcomes particularly the industry relevance of training provided as teachers practical skills imparted to their students.

Secondly, TVET training is expensive and so it needs good and continuous funding support to adequately service the sector. Currently, the task of delivering effective teaching and learning for TVET is challenging.

Thirdly, there is a lack of networking with other ministries, tertiary institutions, industries and other stakeholders. TVET delivery could be improved through a coordinated strategy. A national TVET database has been recognized as a key tool to assist in planning TVET delivery.

Fourthly, the TVET curriculum needs to be competency-based, industry-driven and child-centred. In most areas it needs updating to match industry and community needs. There is also a need for the diversification of the curriculum to cater for other sectors such as mining, forestry and fisheries. This will maximize the use of local resources for gainful employment.

And also, the promotion of TVET for girls and women is a challenging issue. Attracting more female instructors and administrators into TVET will be a major challenge in the future.

Finally, the inconsistency in the TVET budget provisions by MOE over the last five years does not reflect a picture that TVET is a priority area. As the number of centres and students enrolled increase, funding per student decreases, impacting negatively on support to TVET education in PNG.

**Table 2. TVET Budget estimates & Appropriations – 2008 – 2012**

<table>
<thead>
<tr>
<th></th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
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<tr>
<td>(B/Est.)</td>
<td>13,565.54</td>
<td>13,312.4</td>
<td>13,899.4</td>
<td>18,205.0</td>
<td>21,960.6</td>
</tr>
<tr>
<td>(App/K)</td>
<td>12,200.4</td>
<td>12,663.1</td>
<td>13,382.9</td>
<td>16110.6</td>
<td>17,705.9</td>
</tr>
<tr>
<td>(Diff)</td>
<td>1,365.1</td>
<td>649.3</td>
<td>516.5</td>
<td>2,094.4</td>
<td>4,254.7</td>
</tr>
<tr>
<td>(90%)</td>
<td>(95%)</td>
<td>(96%)</td>
<td>(88%)</td>
<td>(81%)</td>
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</tbody>
</table>
Design of the Study
Participants and sampling
The Sample
- The samples for interviews, consisted of 20 persons randomly selected from the experts in the field of Technical Vocational Education of PNG, and
- The samples for the focus group consisted of 60 students randomly selected; especially year two students and 60 teachers selected from randomly selected TVET institutions around the country out of the six Technical & Business Colleges, 1 Polytechnic Institute and 141 Vocational Centres.

Procedures for collecting data
There were two processes used to approach the data collection procedures:
Procedures used for entry. Firstly, a letter seeking approval to conduct the research was sent to the a/Assistant Secretary – TVET. The heads of institutions, selected vocational centre managers, selected head office staff, selected staff of the institutions and the students were provided with the copies of the approval letters and also their approval was sought to take part in this study.
Collecting of data. Data collection methods included interviews with institutional heads, lectures, instructors, head office staff and students. Interviewees who took part were experienced in the field of TVET and had sound understanding of the issue under investigation. Furthermore, the students who took part were either final year or year 2 students. Timetables were made available to conduct the study with the participants.
Moreover, an open-ended question sheet was handed to the selected staff and students to complete. Teachers’ response to the questionnaire was in detail and direct. In doing so, the responses received provided valuable information putting into account the researcher had no contact to collect the data. Probing and direct questions were later asked for clarification purposes. All written and interview responses were analyzed to figure out the relevant information that was in line with the research questions.

Procedures for analyzing data
Data Analysis
- Documents were analyzed by sorting and grouping them on the basis of the subject-matter studied,
- The opinions from the experts were analyzed given through interviews and were grouped according to the research problems, and
- The opinions from the staff and students who participated in the focus group were also analyzed.

RESULTS AND DISCUSSIONS

Research Findings
Question 1. Reorienting TVET system in PNG means aligning with others in the global economy
Results presented in graph 1 indicate the following: that staff do agree that for the TVET System in PNG to progress, reorienting the sector is vital with a percentage of (79%); and the students also expressed the same concern as indicated in graph 2 with a percentage of (67%). The high level indications by the two graphs (SA - Strongly Agree) & (A - Agree) reflects that TVET is a global activity and in alignment with others becomes unavoidable. The staff knowledge about TVET is clearly reflected in graph 1 whilst on the other; the implication is that students should be made full aware of the importance of vocational education at the respective institutions as their level of agreements are at lower range; (31%) & (2%) respectively.

Questions 2. What are the major programs and activities undertaken by TVET system in PNG in support of the global economy?

TVET system in PNG has also had its share in providing programs and engaging in activities which are in support of the global economy; table 1 highlights programs and activities that are conducted in various TVET institutions in the country. It now implies that TVET system in PNG still has a long way to go in more program offerings and interest manifestations.
Question 3. What are the common challenges experienced by the TVET system in PNG and other TVET providers?

Inadequate Curriculum Resource

Information gathered from some of the teachers consulted showed that inadequate curriculum resources were one of the main challenges experienced in most Institutions.

One of the senior instructors had this to say; “materials are a constant problem for the colleges as they attempt to keep up to date with the latest technology. The colleges are characterized by having large quantities of old equipment that require maintenance and repair; this is an unfortunate reality”.

It was further explained that; “curriculum section at head office needs to outsource and acquire current and up dated teaching textbooks and resource materials for most of the subjects taught at the colleges”. It can be concluded that no effective training can take place without the adequate provision of learning facilities. These include textbooks, classrooms, workshops, library, tools, and equipment.

Funding and Financing

The research found that PNG like Nigeria is rich in mineral resources but a similar problem the countries have is a development plan for financing education.

One of the officers consulted in head office had this to say; “TVET in PNG is a neglected sector because as far as funding is concerned there is no comparison with other higher learning Institutions in the country”.

Whilst from the vocational education’s perspective a comment from a student is reflected; “there is hardly any funding and the way it is we are really way back, we are just surviving”.

The indications are that there is very little support given to TVET sector in PNG and this hinders the sectors progress.

Human capital development

Respondents emphasized that the NDOE through the TVET Division should upgrade the instructor qualifications in various skill areas.

One instructor responded, “Upgrade instructor’s qualification from certificate to diploma, diploma to degree and skills upgrading to meet the technological changes.”

Another added, “There is very little professional development happening in the institutions at present”.

And the other summed it well, “teachers, who are the major operators of the educational systems or programs, are expected to effect and impart the needed knowledge to the trainees. This can only be effective if the teachers are given the appropriate education, training and skill development”.

Questions 4. What are the major achievements and best practices adopted by TVET system in PNG in support of the global economy?
Results in graph 3 indicate the following; the students do agree that there were some achievements and some best practices adopted by the TVET system in PNG in support of the global economy with percentages of 39% and 43% respectively; Whilst the graph 4 - 6 reflect the staff responses and they are also in agreement with the students and this is also indicated by the percentages shown in the graphs. However though, the indications show that some still think that there is still more to be done concerning best practices.
Question 5. What are the lessons learnt and future challenges for TVET system in PNG?

Graph 6. Level of agreements amongst the staff at Bau vocational Centre

Graph 7. Level of agreement amongst the students of the three Institutions - BVC, TVC & MTC

Graph 8. Level of agreements amongst the staff of the three Institutions - BVC, TVC & MTC
From graph 7 it can be learnt that; from the students point of view there is a need to improve quality and offer quality skills programs as reflected with a percentage of 66%; as for the staff it is reflected with the percentage of 76% in graph 8 and making provisions for adequate resources to support the operations of all TVET Institutions as reflected by 24% respectively. From the indications, it can be gathered that quality and standards are two key areas yet to be fully embraced by TVET system in PNG. It was clear that in as far as promoting equity, justice and equal opportunity is concerned within TVET it had a indication of 4% (D – Disagree), and this poses as the future challenge for TVET in PNG.

**Principal Findings**

From the results obtained in the tables of analysis of the data, the following principal findings are presented:

1. Student and staff are in agreement that reorienting TVET System in PNG is the way to go if we are to be competitive with other partners in the global economy;
2. A lack of inadequate curriculum resources and training facilities is one factor affecting the implementation of Technical Vocational Education and Training programs in PNG;
3. Inadequate human resource development affects the implementation of Technical Vocational Education and Training programs in PNG;
4. Inadequate provision of finance and funding contributes to problems in the implementation of Technical Vocational Education and Training programs in PNG;
5. Although Technical Vocational Education and Training programs are being implemented in PNG, more work is still required to be in line with others in the global economy; and
6. Promoting of equity, justice and equal opportunity within the TVET system in PNG.

**CONCLUSION**

In this study, an effort was made to examine some of the activities undertaken by the TVET sector of National Department of Education in reorienting TVET system in PNG to the global economy. From the findings of the study the researcher concludes that for any planned change or for change efforts for that matter should not be undertaken for the sake of formality, but should be implemented effectively and successfully. Those efforts which have been undertaken by the TVET sector to reorient the TVET system in PNG in support of the global economy should be accorded with appropriate recognition, which it deserves to be competitive in the globalized economy.

It has been proven that for any country to experience advancement in technology lies in the implementation of their educational policies. Therefore, the government should invest more in TVET and vigorously emphasize technology transfer through its educational policies. Global competition also means that we need to learn more each day, as technology places more demands on us. It is imperative therefore that, TVET system must keep up with the rapid pace of change in technology.

This research has highlighted some of the issues encountered by the TVET sector in their efforts in reorienting the TVET system in PNG to the global economy. The researcher provides the following recommendations stated below with the intention of facilitating vigorously the efforts undertaken by the TVET sector in reorienting TVET system in PNG to the global economy, and potentially in the PNG setting more broadly.
RECOMMENDATIONS

The following recommendations are made based on the findings of the present study;

- Improve quality and offer quality skills training programs to meet the market requirements and ongoing development needs of the country,
- Provide adequate resources to support the operation of all TVET institutions,
- Design, develop and implement human resource development programs for TVET personnel consistent to mission requirement,
- Promote equity, justice and equal opportunity in expanding and providing TVET and other services, and
- Maintain and implement participative budgetary system and profit centre concept and controls to provide financial resources for TVET services.

REFERENCES


