

Technical and Vocational Education and Training and Production of Productive Work force Graduates: **An Incubation Role of Private Sector;** A case of selected NACTVET Colleges in Mbeya, Tanzania

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Abstract

This study aim at examining the effects of TVET on producing productive workforce who are graduates under the moderation role of private sector. The study was conducted following cases of large number of graduates completing from middle technical and vocational colleges to find they are not employable. To uncover this gap, the study used quantitative research approaches. While the research design was explanatory, the sampling technique was simple random sampling. From a population of 3 NACTVET colleges comprising of 3350 unit of inquiry which was students, graduates and tutors from such selected NACTVET colleges, 357 sample of respondents was deduced. Moreover data collection from the sample obtained used survey-questionnaire. Before actual data analysis, pilot survey, data cleaning and factor analysis was conducted. The actual data analysis employed structural equation modeling from which the results were:-cognitive domain attributes found to have positive and insignificant effects on producing productive work force graduate. Also TVET psychomotor domain attributes revealed to have positive but insignificant effects on producing productive work force graduates, the same results were with behavioral affective domain skills on producing productive workforce graduates. Moreover the analysis found positive and significant effects of three factors on producing productive work force graduates under the moderation role of private sector. This either suggests to education stakeholders, policy makers, curriculum developers adopt the model this study has introduced by bringing private sector in TVET programs.

Key terms: TVET; Productive work force graduates; Private sector, NACTVET colleges

1. Introduction

Acquainting to productive work force has been the agenda in today's world of gradual changes over the labor market. Productive work force is the one with necessary skills in production (Akomah, Ahinaquah & Mustapha, 2020). These skills are confined in terms of domains i.e. cognitive, psychomotor and affective (Wang & Wang, 2018). Due to gradual changes in labor market, also the demand or needs have been changing which therefore requires also the work force now the TVET college graduates to be dynamic. This is from the fact that the professionals needed yesterday might be found not on demand today (Puschel, Costa, Reis & Oliveira, 2017).

Thus lying on certificates acquired by a graduate from classes, number of years past might be not significant. This is what has derived this study to be conducted for TVET Colleges graduates become productive work force in this labor market subjected to gradual changes. In this liberal market where economy is engineered by private sector, thus being used to this organ has proved advantageous in other countries. This also calls for schools, colleges and universities in Tanzania utilize private sector to execute on this for graduates become resourceful called productive work force.

The cognitive traits of graduate include the intellectual capability acquainted with that particular student or graduate. Cognitive attributes cover the theoretical background someone should have to observe the work is done (Deming & Kahn, 2018). Normally doing work is a procedural kind of juncture therefore requires someone to be used to those procedures (Wan, Li, Shang & Rahman, 2021). It is an application of principles, rules and guidelines to see the work is done. Cognitive domain capture for the understanding someone is to be capacitated with (Sergeeva, Sokolova, Ippolitova, Tabueva & Llinskaya, 2018). It is learnt and even if in borne then it is inherited from someone used to learn to the model or theories (Blokker, Akkermans, Tims, Jansen & Khapova, 2019). For reconstructivism of this knowledge background a graduate need to be accessed to learning materials, soft and hard ones which then need to be budgeted. Budgeting for teaching or learning materials is what then calls for private sector interventions, because the government by itself might not afford especially with these developing countries where Tanzania entails. Furnished library is the one with recent and relevant teaching and learning materials such as books, journal articles and wikipedia. The furnished library is the one automated, networked and indulged with electronic and soft materials. This then need planning where financial resources need to be easily accessed. From which say public-private partnership then the installation of quality library infrastructures become not a case.

Psychomotor attributes of a graduate is the ability of converting theories learnt into practical reality (Riggs, Franklin & Saylany, 2019). Psychomotor traits become acquainted with a student when subjected to field or real working environment (DiVece, Luciano & DeMomi, 2021). This has to begin while a student is at college and schools. This is what is called learning by doing, a competence based curriculum insists on. There is no way student can be known to certain production if not exposed to practical real environment (Huang, Chang & Chou, 2020). It is through doing practical, undertaking field excursion; undertaking study tour and research where a student is exposed to reality and become experienced (Gulen & Yaman, 2019). Creativity and innovation is built at this point of doing practical. It is at this stage where a student is exposed o challenges and capitalizes them into opportunities. It is through field excursion where a learner is leant to real environment of social problems and inverts them into opportunities.

The attitudes of a graduate being able to create, problem solving, energinism, converting challenges into opportunities, eager to learn new things, risk taking, on job pressure handling are affection attributes leant following exposures (Donlan, 2018). Leadership, team working spirit is due to exposure to practical environment Saptono & Najah, 2018). This learning activity either requires collaboration i.e. where now public-private partnership came in. It is expected that while the government is installing building infrastructures and favorable policies for liberation; the private sector is to be bringing the experts, enabling the establishment of strong research and

development unit in the NACTVET Colleges and enhancing establishment of strong and sustainable curriculum development unit.

Moreover, bringing in private sector as intervention organ function to foster for site/ field excursion projects when a student is still at college or school and after completing studies (Akala & Changilwa, 2018). This is what calls for the government create good environment for public-private partnership strongly stranded. The internship programs for instance play a great role in equipping graduates with real practical or production environment (Xacahoba, 2020). Internship, site works expose graduates with skills the current labor market is on demand with (Miralles-Quiros & Jerez-Barroso, 2018). This is from the fact that professionals that might acquired in class some years back may revealed un-useful in a particular moment and count for a graduate with A's in his/her certificates not productive. Calling for private sector with this study was because it assures a strong connection among graduates, the college management and employers. Another incubation role of private sector should play is that in provision of small loans/credits for graduates get started and run own businesses. Private sector also expected to be market seekers of the produces from micro and small businesses installed by the graduates from TVET Colleges.

Affective domain attributes entails punctuality, time management skills, aggressiveness, empathy, positivism, awake, visioning, working in-line with objective formulated, hardworking and ethical bound (Ratka, 2018). It is by being eager to learn from others and learn new things what call for TVET and school education/training being in form of competence based education and training (Mirza & Mahboob, 2021). Affective domain either is the behavioral outcome acquainted with a student or graduate given other factors for quality education endowment are met. It is with affection traits what differentiates a graduate who went for school and embedded with ethics and the one not learnt to such behavior. It is obvious to find someone not gone for school or college, not visional, not objective focused, not committed, exercise no due care and cannot communicate (Rusch, McCafferty, Schoening & Hercinger, 2018). These kinds of work forces are termed as truancy and dishonest and therefore not dependable.

In Sweden about 34% of graduates from technical and vocational education and training colleges found to be employed in construction and joinery industry (Maurer, 2021). This group of productive youths revealed to be experienced and creative enough to execute to tangible object or product. It was through practical, creative and constructive studies they had while in colleges what necessitated them with such necessary skills.

Theoretical TVET education revealed by Maurer (2021) in Rwanda to transform graduates mindset for them to start and run own businesses. This has been the consistent case with the behavioral attitudes acquired by form four graduates from technical and vocational colleges in Kenya who made 80% of informal sector being occupied by them (Ochieng & Ngware, 2021). This has been a reason for Kenya to be the fast growing country economically. It was moreover found that most of SMEs involved youth graduates from middle colleges who were engaging in floriculture, horticulture and food stuffs production.

From the background review above, none of the studies has said on the moderation role of private and non government institutions sector on creating productive labor force graduates.

Thus it is through this study, therefore the necessary cognitive, psychomotor and behavioral skills a labor force now a graduate from TVET colleges need to be acquainted with, to be productive would not be an issue. This is from the fact that, the required furnished school infrastructures/learning environment, library, materials and all necessary facilities would be adequately accessed and used.

It is by being used to private sector where innovative/modern learning technologies from labor market would be brought into the system. It is through private sector intrusion it has uncovered by this study that the issues of experiences, site works and creativity the graduates need to be built with them would not be a case. To address this gap, the study used to four objectives which were to determine the effect of cognitive TVET in producing resourceful graduates; to analyze the effects of psychomotor TVET on producing resourceful graduates; to examine the effects of TVET behavioral affective skills in creating productive work force graduates; and to assess the moderation effect of private/non government institutions sector in TVET system on creating productive work force graduates.

2. Literature Review

2.1 Theoretical Literature Review

The study adopted Constructivist Learning Theory found by Piaget (1980). This theory emphasizes on equipping student with necessary skills in practical doing and creation. A constructive student is assessed at its ability to produce. Constructivist Learning Theory is centered at seeing a student convert theories learnt into something tangible. But, for a learner/graduate to be constructive (built with experiences), the cognitive domain attributes are to be packed with such a student (O'Connor, 2020).

Also for a student or graduate become creative and innovative in production, there need be supportive environment for exevagation (Mattar, 2018). Either such behaviors of being creative and innovative do not come merely but there should be enabling infrastructures, facilities and technologies for sharpening students and make them realized through their creations (Gravemeijer, 2020). That is why this study has called for TVET programs to intrude private and non government institutions which would be partnering or liasoning with the government in enabling the school environment is furnished with supporting teaching and learning infrastructures, tools, materials and the technologies on demand of labor market.

2.2 Empirical Literature Review

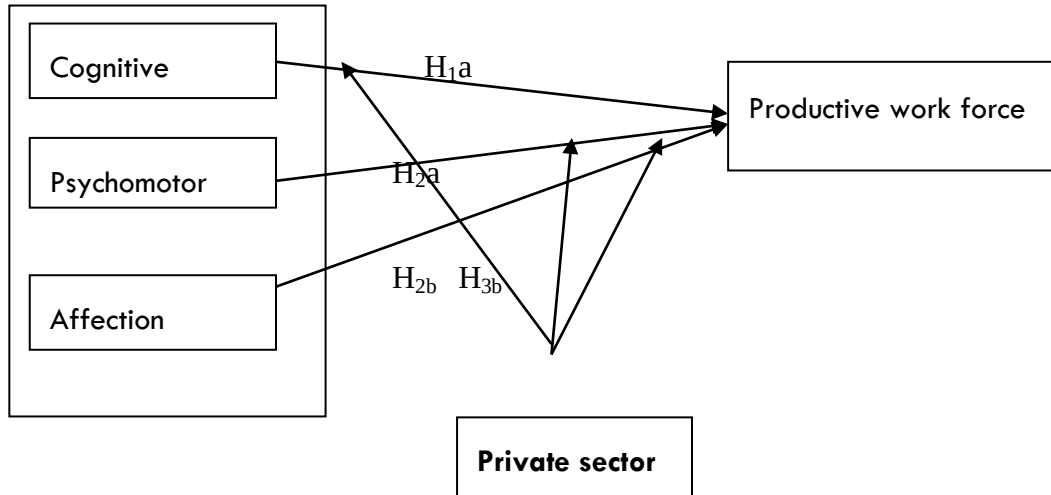
In Germany as it was reported by Oviawe (2018) found the cognitive domain attributes acquired by graduates in Middle Colleges brought revolution in productive sectors such mining. It was the knowledge and intellectual skills used in production what influenced the mining sector contribution to national output increased from 2% to 16% per annum. To reveal this fact Oviawe (2018) used grounded theory research design while the sample size of 56 respondents was derived from 4,000 population. The data collection tool being semi-structured interview, the data analysis employed was thematic analysis

In China revolution in technological industries was due to employment of technical and vocational college graduates (Dos Santos, 2019). This either was revealed to be caused by full employment of psychomotor domain skills graduates obtained from vocational education and training colleges. The revelation by Dos Santos (2019) on the impacts of psychomotor skills in technological, electronics and electrical industries was due to good alignment of colleges and employers (who are in labor market knowing to skills on demand) at a given time period. Thus, that is why this study was conducted to fulfill such a gap. Moreover the study by Dos Santos (2019) used qualitative research approach where data analysis tool was content.

In South Africa and as it was reported by Rajadurai, Sapuan, Daud and Abidin (2018) revealed that affective behavior, a graduate acquired from colleges found to change their behavior. The behavior reported to be acquainted by students–graduates found to be efficient for achieving organization sustainability included independence, objectivity, positivism, impartiality and moral arosement. This affective domain attributes found to harmonize the situation in which young graduates from colleges were the good leaders in most of telecommunication and computer technology industry.

Different from other studies revealed above, this study under discussion has burrowed private sector into the model to ensure that the skills learnt in colleges are provided in sufficient manner for graduates become productive despite of gradual change over the labor market. Thus intrusion of moderating variable (private sector) has modified the model for technical and vocational education and training system. More other differences have been over geographical, target population and methods used. This study was conducted in Mbeya which then has been new, because no other similar studies revealed to be conducted before in the area. The target group also created a difference which certified and made the results be dependable. The same with research method in which specifically the study under revelation applied SEM which assured for non biased, sufficient, relevant and material results.

Interaction of variables as it has revealed above was fostered by drawing a conceptual framework. The variables in relationship included cognitive, psychomotor, and affective domain skills which were independent. Private and non government sector was a moderating variable while productive work force was a dependent variable (See Figure 1 below).



Source: Piaget (1980); O'Connor (2020); Mattar (2018); and Gravemeijer (2020)

Figure 1: Conceptual framework

3. Methodology

The study was conducted in Mbeya region from which three NACTVET Colleges were involved. The area was chosen representing other areas in Tanzania and world at large facing the same problem of large number of graduates from colleges but to find they are not productive. It has revealed graduates from colleges having good certificates with impressing grades but not employable. This either resembled the results by Integrated Labor Force Survey (2020) which reported that 15% of 15,000,000 of Tanzania youth-graduates were economically idle and it is the same group specifically at the age of 15-35 years found non-employable.

To uncover what is behind the scene the study used survey research strategy while the research design was explanatory. By using simple random sampling, 357 sample size was deduced. This computation used the Cochran formula, $n = \frac{N}{1 + N(\alpha)^2}$ where N (total population) = 3350 and $\alpha = 0.05$. The unit of inquiry was students and graduates from the three mentioned NACTVET Colleges ie VET Mbeya Zonal College, Uyole Agricultural Research Institute and Rungwe International College of Business and Entrepreneurship studies. From the three colleges at least 1,000 sampling frame was subjected into random sampling from which at least 80 respondents derived as a sample. The random sampling used to the created cards with a label 'YES' and 'NO'. It is with those who chosen the cards written 'NO' who were selected to form unit of inquiry. Using questionnaire, data were collected before being subjected into screening. The questionnaire was piloted to check for its reliability and construct validity before further analysis. It was with pilot survey where 25 respondents were involved. This number was enough as suggested by Whitehead, Julious, Cooper and Campbell (2016) recommended adequate size of responses for pilot survey to be between 10-30. Pilot survey was followed by explanatory factor analysis, later confirmatory analysis and construct validity testing. Exploratory factoring being

part of analysis, structural equation modeling was applied. With SEM, multicollinearity, linearity and homoscedasticity testing was conducted. SEM was adopted as it found suitable for a study with many to many variables operationalization where moderating/mediating variable become part of the relationship (Hair et al., 2012). Moreover SEM was found appropriate since the sample size (n) was >200 but not more than n=400 (Biddle & Martin, 2014). The structural model equations guided the study were:-

$$Pwf = \beta_0 + \beta_1 CD + \beta_2 PsCA + \beta_3 ADA + e \dots\dots\dots 1)$$

$$Pwf = \beta_0 + \beta_1 Ds + \beta_2 P + \beta_3 (Ds * Ps) + e \dots\dots\dots 2)$$

Where Pwf=productive work force; β_0 = constant factors; CD=Cognitive domain skills; PsCA=Psychomotor domain skills; and ADA=affective domain skills; Ds = education domain skills.

4. Findings and Discussion

4.1 Pilot Survey

Pilot survey was conducted to test the internal consistency of the questionnaire. Through analysis the cronbachs' alpha values were 0.74 for cognitive domain skills; 0.70 for psychomotor domain attributes; 0.76 for affective behavioral skills and 0.82 for productive work force (See Table 2 of testing results). With those results, the research instrument i.e. questionnaire was reliable to be subjected for further data analysis and discussion.

4.2 Data cleaning and normality testing results

Before factor analysis, multicollinearity and linearity testing the collected data were cleaned and tested for normality. Data cleaning involved deleting missing values, removing extreme data and testing for skewness and kurtosis. Using pair wise data deletion tool and from a data set of 8, 2% of missing values were deleted. Using Mahalanobis Distance (MD) computation, 48 multivariate outliers were removed which then derive to 280 responses retained for normality and data analysis. Moreover by applying coefficient of skewness and kurtosis the results were distributed in form of -/+3.

4.3 Exploratory Factor Analysis and Model Development

This part helped to consider if the proposed conceptual framework was indeed consistent with actual data. This is because at the beginning the conceptual framework was developed without data, in which it now not clear if the constructs are aligned with their underlined measure. To ensure constructs are aligned with their underlined measures, factor analysis of both exploratory factor analysis and confirmatory factor analysis was used as described below:-

First exploratory factor analysis with varimax rotation conducted to assess the underlying structure for the eighteen (18) items of the conceptual framework. In selecting factors to retain, four criteria were adopted namely Eigen values scree test, theoretical assumption and factors that have at least three items. Verma and Abdel-Salam (2019) recommended the use of a combination of criteria to help to offset the weaknesses of using basing on one criterion.

Given this situation, five factors were extracted based on those four criteria which explain 64.3% of the cumulative variance. The five factors had Eigen values > 1 in a scree test. All factors which were above the cutoff point were retained and those below the break/ cut off point were dropped. Finally all factors retained had at least three indicators. This means that all retained factors had met the recommendation made by Dhakal (2017).

After discovering that the five factors have met the criteria and now are qualified to be retained further analysis of indicator variables was done in order to see if this indicator really fits underlying factor. The following criteria recommended by Yongo and Pearce (2013) were adopted for retaining or dropping an item/indicator as follows:-

First, all items loaded into their associated factors were retained and those loaded into more than one factor were dropped. Second, if more than two items loaded in one factor all items were retained and if less than three items loaded in one factor were dropped. Third all items with KMO, Bar let's test, p-value greater than 0.5 were dropped. Fourth, all items with loading ranging from 0.5 or above 0.8 were dropped. As far as this part is concerned, the three to six items in each factor were retained indicating to adequately fit the model (See Table 1).

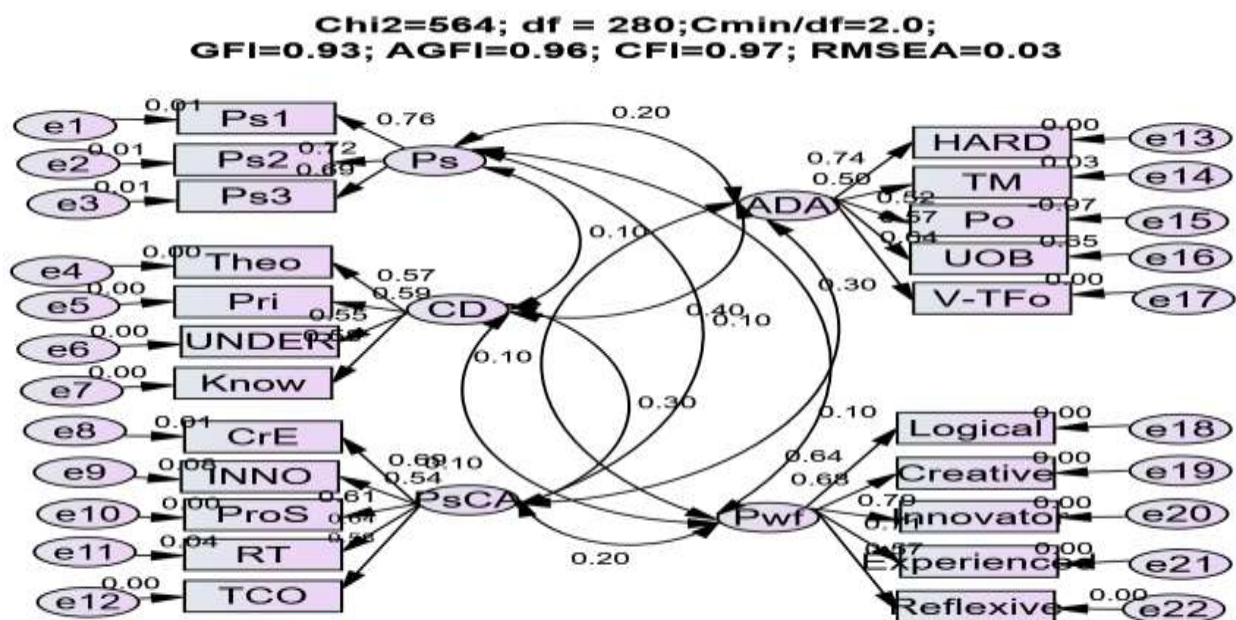
Table 1: Rotated Component Matrix

Factors	Indicators	CD	PsCA	ADA	Ps	Pwf
CD	Theo Pri UNDER Know	0.74 0.67 0.62 0.70				
PsCA	CrE INNO ProS RT TCO		0.71 0.76 0.80 0.59 0.75			
ADA	HARD TM Po UOB V-TFo			0.79 0.76 0.64 0.72 0.80		
Ps	Ps1 Ps2 Ps3				0.80 0.68 0.69	
Pwf	Logical Creative Innovator Experienced Reflexive					0.78 0.80 0.65 0.71 0.76

After exploratory factor analysis the next step was to perform confirmatory factor analysis account for measurement error, which then was not addressed in exploratory factor analysis as described in detail below:-

To carry out confirmatory factor analysis, the measurement model was developed based on the factors from exploratory model to test for measurement error. The following criteria were used to guide the model refinement process to achieve a better model fit as recommended by Barbra (2018) who asserts that a standardized regression weights (S.R.W) values should be above 0.5. Moreover it was recommended that the value $GFI > 0.90$; $AGFI > 0.9$; $CFI > 0.95$; $RMSEA \leq 0.05$. Therefore to enhance the model fitness, items with modification indices that reveal high covariance between measurement errors accompanied by high regression weights between these construct errors are dropped.

After initial run of the AMOS 25, the model performed well and therefore all items from such factors were retained. Running of CFA using AMOS 25 revealed $GFI = 0.93 > 0.90$ (accepted); $AGFI = 0.96 > 0.90$ (perfect); $CFI = 0.97 > 0.95$ (accepted); and $RMSEA = 0.03 < 0.05$ (perfect). Also all items retained had standardize regression weights (S.R.W) values cut off 0.5 or greater than the accepted level of fit, hence falling within the acceptance framework. This means that the selected observed variables (indicators) used fit the model as described in Figure 2.



Key Note

CD-Cognitive domain; **Theo**- theories; **Pri**- Principles and guidelines; **UNDER**-Understanding; **Know**-Knowing to standards; **PsCA**- Psychomotor domain; **CrE**-Creation; **INNO**-Innovation; **ProS**- Problem solving; **RT**-Risk taking; **TCO**-Turning challenges into opportunities; **ADA**-Affective domain; **HARD**-Hard working; **TM**-Time management; **Po**- Positivism; **UOB**-

Objective oriented; **V-TFo**-Vision-target focused; **Ps1**-Public private partnership; **Ps2**- Private financial resources; **Ps3**-Private experts; **Pwf** = Productive work force

Figure 2: Measurement Model

4.4 Reliability and Construct Validity

Reliability was evaluated in terms of composite reliability as described in Table 2 .The composite reliabilities (CR) in Table 2 range from 0.87 to 0.91 which were all above or equal recommended value of 0.7 suggesting adequate internal consistency(Taber, 2018). Convergent validity and discriminant validity was assessed based on the results of the measurement model as described in Table 2. Convergent validity was evaluated in terms of average variance that was measured by the measured construct in relation to the measurement error. Hair, Black, Babin and Anderson (2018) argued that convergent validity requires an AVE of not less than 0.5 . Table 2 showed that all AVE values were above the recommended value of 0.5(ranging from 0.72 to 0.84) thus demonstrating adequate convergent validity. On the other hand discriminant validity was evaluated by comparing the AVE each individual construct with the shared variances between this individual construct and all of the other constructs. A higher AVE than shared variance for an individual construct suggests discriminant validity (Hamid et al., 2019). A comparison of all the correlations and square roots of the AVE on the diagonal in Table 2 indicated adequate discriminant validity.

Table 2: Reliability and Validity testing results

Factors	CR	AVE	MSV	Max R(H)	CD	PsCA	ADA	Ps	Pwf
CD	0.88	0.74	0.10	0.92	0.89				
PsCA	0.90	0.72	0.09	1.02	0.21	0.81			
ADA	0.92	0.81	0.12	0.94	0.11	0.41	0.83		
Ps	0.87	0.80	0.11	0.87	0.30	0.51	0.40	0.84	
Pwf	0.91	0.84	0.12	0.91	0.36	0.29	0.22	0.23	0.86

4.5 Hypothesis Testing

4.4.1-1 Cognitive domain attributes for production

With this subtitle, the study aimed at examining the effects of cognitive skills, a graduate is to be acquainted with for production. The cognitive skills that a student /graduate should acquire include i) being known to the theories (models) ii) being used to principles and guidelines iii) being used to standards in producing a certain product/service. Cognitive attributes are graduate attributes which define his knowledge background or professionalism in production (Sweller, 2016). From the field it was found that the intellectual background knowledge someone is learnt with has a positive effect on production though insignificantly revealed (H_{1a}). To un reveal such insignificance, the moderation effect of private /non government institutions came in (H_{1b}) (See Table 3)

Table 3: Cognitive domain attributes and productive work force graduates under moderation effects of private and non government institutions

Hypothesis	Relationships	Estimate	Error	CR	p	Remarks
H _{1a}	Pwf<----CD	0.64	-0.01	0.91	0.00	REJECTED
	CD<-----Theo	0.57	-0.10	1.90	0.04	-
	CD<-----Pri	0.59	0.05	-2.00	0.00	-
	CD<-----UNDER	0.55	0.42	4.01	0.00	-
	CD<-----Know	0.58	0.00	-1.96	0.00	-
H _{1b}	Pwf<--CD<---Ps	0.76	-0.09	2.00	0.01	ACCEPTED

With S.R.W =0.64, CR=0.91 at p =0.00 it indicates positive relationship but insignificant between cognitive traits and productivity of work force as for now the TVET graduates. Cognitive traits imply knowledge necessary for a graduate to produce the same fact reported by Sweller (2020). A knowledge is the embark of theories someone need to be acquainted with for production. It is with the theories someone is to be built with which are to be converted into actual thing i.e. product. A productive laborer use principles and guidelines in production which need knowledge acquired during learning process.

4.4.1-2 Moderation effect of private sector in cognitive-TVET system

The results under H_{1a} showed the positivism (S.R.W =0.64) though insignificant given,CR =0.91 at p=0.00 but that over H_{1b} had a modified positive and significant results. With S.R.W =0.76, CR=2.00 at p=0.01 showed that by burrowing the new variable (private sector/non government institutions), the effect was further manipulated. Given S.R.W =0.76 after moderation against 0.64 (before moderation) indicate that intrusion of private sector in TVET system modified the model by 0.12. Consistent results was over the significant critical ratio =2.00>1.96 (recommended level) while p=0.01<0.05. This from the fact that private sector assume to incubate the TVET programs by injecting in fund, human resources (experts) which make teaching and learning materials, infrastructures become available and accessible.

4.4.2-1 Psychomotor domain attributes for production

With this subtitle, the study was motivated to analyze the effects of psychomotor domain attributes a graduate is to be equipped with for production. The psychomotor domain attributes included i) creation ii) innovation iii) problem solving iv) risk taking v) turning challenges into opportunities. The results of the relationship was found and presented in Table 4 before and after moderation.

Table 4: Psychomotor domain attributes and productive work force graduates under moderation effects of private and non government institutions

Hypothesis	Relationships	Estimate	Error	CR	p	Remarks
H _{2a}	Pwf<-----PsCA	0.69	-0.90	0.92	0.00	REJECTED
	PsCA<-----CrE	0.54	0.01	0.72	0.01	-
	PsCA<-----INNO	0.59	0.80	1.45	0.08	-
	PsCA<-----ProS	0.61	0.12	-3.00	0.00	-
	PsCA<-----RT	0.64	-0.70	1.57	0.04	-
	PsCA<-----TCO	0.58	-0.62	1.00	0.00	-
H _{2b}	Pwf<--PsCA<---Ps	0.72	0.04	1.98	0.03	ACCEPTED

With S.R.W estimate =0.69, this indicated that psychomotor domain attributes a graduate should be acquired at TVET colleges had positive effect on production. Though these positivistic results showed insignificance but by intruding private sector in the model the relationship became strong given S.R.W= 0.72 and significant by C.R =1.98>1.96, p=0.03<0.05. It was through moderation effects of private sectorialization what this study suggest and assures the concerned stakeholders in establishing strong research and development unit within the college compound. More over it is through the revealed obsolete (old) curricula used in TVET colleges. This would not be a case because through research (discoveries) unit new programs would be introduced in order to capitalize on the new skills (professionals) coming in (not existed) and therefore accommodated in the renewed curricula. With this innovation brought in, it is expected that a strong and sustainable curriculum development unit would be established within NACTVET colleges.

4.4.2-2 Moderation effects of private sector on psychomotor-TVET system

The results with H_{2a} indicated positivistic results (S.R.W=0.69) between psychomotor attributes and production of productive work force (TVET graduates) though the effect was insignificant with C.R =1.92 at p=0.00. This either was different from that one with S.R.W=0.72 at C.R =1.98 and p=0.03. This was an indication that including private sector and non government institutions in the model modified it where the relationship now became strong and significant. The strong positive results and significance shown was found to be due to the incubation role of private sector in enhancing the practical education/trainings. It is through liasoning with private and non government institutions where TVET public colleges would be accessed to teaching materials and facilities (Avis, 2018). Also site works, field excursion studies would be certain, thus develop fresher's (graduates) with necessary (relevant) skills which are on demand of labor market what was said the same by Unterhalter (2019). It is through private sectorialization where graduates would be supported with finances; small loans for them start and run their own enterprises. It is through privatization in which it was found that access to the market of the produces from these small business firms to be established would be certain. Furthermore modification or value addition shown by bringing in private sector in the model is the strong connection that would be made among colleges, graduates and employers (labor market).

4.4.3 Affective domain attributes for production under the moderation effects of private sector

Under this subtitle, the study aimed at determining the effects of affective domains attributes the TVET graduates should possess on production. The affective domain attributes included i) hardworking ii) time management iii) positivism iv) used to objective v) vision/target focused. The results from the field were revealed and presented in Table 5. The Table 5 had responses before and after moderation effects of private sector and non government institutions intrusion on the model.

Table 5: Affective domain attributes and productive work force graduates under moderation effects of private and non government institutions

Hypothesis	Relationships	Estimate	Error	CR	p	Remarks
H _{2a}	Pwf<-----AD _A	0.70	-0.80	2.00	0.00	ACCEPTED
	AD _A <-----HARD	0.74	0.07	0.97	0.00	-
	AD _A <-----TM	0.50	-0.60	0.42	0.03	-
	AD _A <-----Po	0.52	-0.54	1.96	-0.97	-
	AD _A <-----UOB	0.57	0.22	1.02	-0.65	-
	AD _A <-----V-TFo	0.64	-0.01	2.10	0.00	-
H _{2b}	Pwf<--AD _A <---Ps	0.69	0.04	1.99	0.01	ACCEPTED

With S.R.W = 0.70 at C.R =2.00, p=0.01 from H_{3a} indicated that the affection attributes acquired by TVET graduates had a positive and significant effects on his/her productivity at work. Acceptance of null hypothesis (H_{3a}) against alternative hypothesis showed favoritism existed between the two variables. The same responses were with the indicators (observed variables) and its latent constructs (unobserved variables) though with insignificant relationship. It is with TVET affective behavior a graduate acquired, what cause his/her become a productive work force. The manipulated variable, productive work force graduate was found to be due to the learnt hardworking spirit indeed in terms of effective time management which help to reveal the daily operation targets being met. The revealed productive graduates' work force were moreover found to be caused by positivism and ability to handle pressure at work place; focused to objective on hand and by being vision oriented.

The acceptance remarks with H_{3a} (before moderation) were the same as that after moderation effects of private sector. With S.R.W=0.69>0.5, C.R=1.99>1.96 and p<0.05 shows the indemped results that involving private sector in TVET education and training enhances the process by acquainting graduates becoming vision oriented, focused to meet objective underhand and adopt the hardworking spirit which are the skills needed for production consistent results reported by Liu, Yi and Wang (2020).

5. Conclusion

Productive work force is an individual with intellectual ability. Productive work force is a labor with all necessary skills in producing product or service. Productive labor force is the expertise personnel to execute in extractive sector say agriculture, mining, gas and oil, act in manufacturing sector, construction, trade and service sector. It was either found that cognitive domain attributes (skills) what makes a laborer be productive. Moreover it was revealed that psychomotor domain behavioral attributes count positively and significantly on productive labor

force. Also affective behavioral attributes found to be positive and significant determinants of productive work force. The positive and significant relationship between variables was more following the moderation effect of private and non government organization into the model.

Thus it was from these blessing results what this study calls for the following recommendations for different target groups in the TVET education model. To policy makers, the study has been a reminder to continue making education environment being fair for private sector execute in. The exit and entry barriers, unfair policies which hinder liberalization should be avoided and many incentives should also go to education infrastructures sustainability. The government should ensure good school infrastructures such as ICT infrastructures, materials and facilities in enhancing quality and relevant theoretical and practical trainings. The NACTVET Colleges management should be aligning with private sector (employers) in order to align education curricula with the demand labor market pre-requisites. It is through this study where tutors are reminded to be also productive by being used to appropriate teaching methodology indeed in this competence based curriculum paradigm shift. Tutors are reminded to be updating to their old ways of teaching, attending seminars and workshops so as to be adapted to new ways or new technologies of teaching.

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APPENDIX

**Chi2=564; df = 280; Cmin/df=2.0;
GFI=0.93; AGFI=0.96; CFI=0.97; RMSEA=0.03**

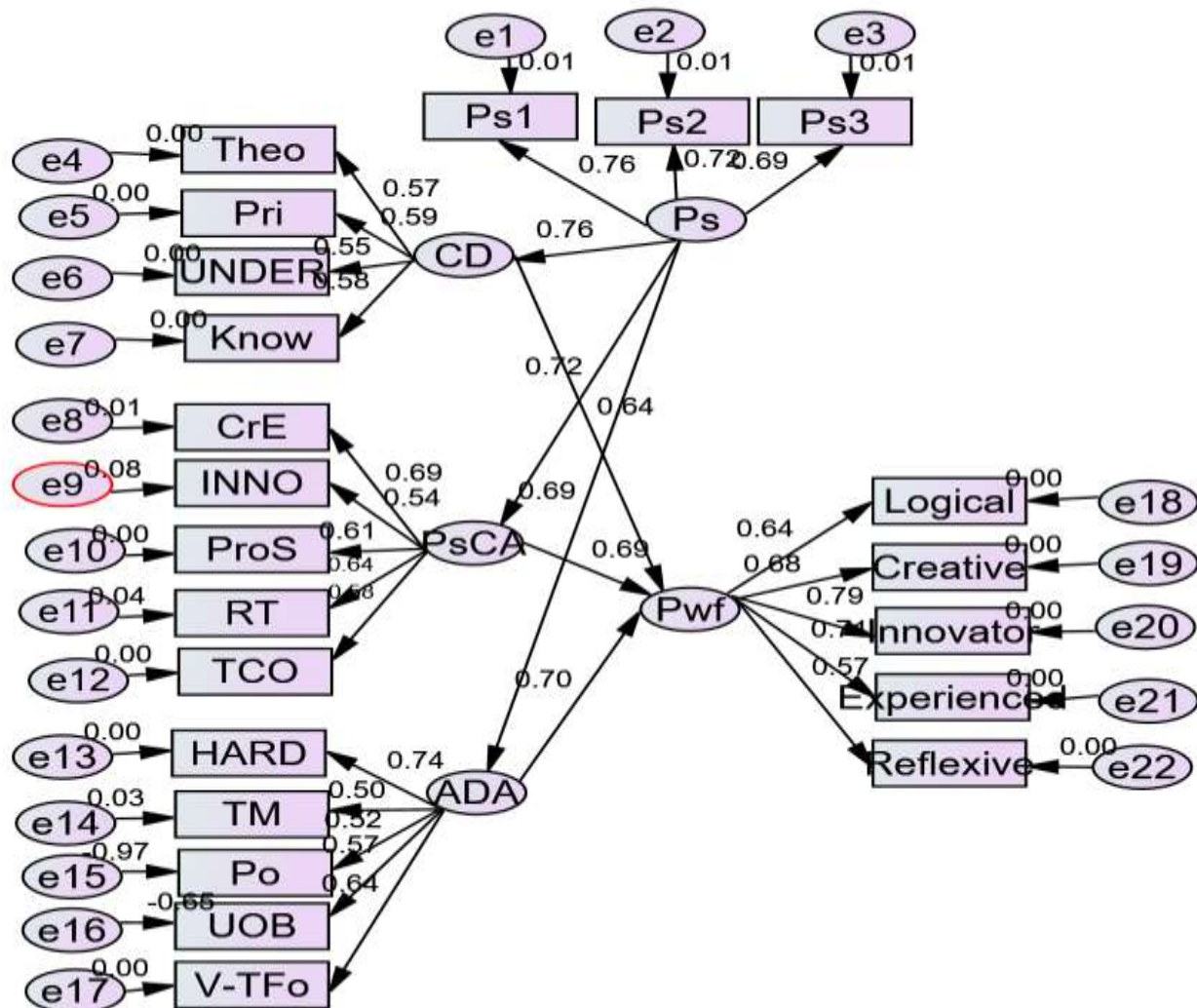


Figure 3: Structural Model

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