MODELLING THE FACTORS THAT INFLUENCE CAREER CHOICE OF TECHNICAL AND VOCATIONAL STUDENTS (A CASE STUDY OF TAKORADI AND HO POLYTECHNICS)

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ABSTRACT: ***The*** *study focused on modelling the factors that influence Polytechnic students' career choice of technical and vocational courses. A stratified sampling technique was used to select a total of 430 students. The researcher developed factor analytically derived questionnaire. Items one to three dealt with the bio data of the respondents. Items four and five sought after the parental occupation of the respondents. Item six examined how the respondent's career choice was influenced by close relations on a five point Likert scale and the last item on the questionnaire examined the level of importance attached to various factors influencing the career choice of technical and vocational students in the polytechnics on a seven point Likert scale. Multivariate factor analysis method was used in the analysis. The results showed that there are three salient factors that influence career choice of technical and vocational students in the Polytechnics. These were Job security factor, Gender and close family relations factor as well as Financial and societal influence factor. This results confirmed earlier researches that sought to investigate the factors that influence students' choice in Technical and Vocational courses. It is therefore recommended that entrepreneurship mindset and independent decision should be emphasized in career counselling programs for Technical and Vocational students in their course selection.*

KEYWORDS*:* Technical and Vocational Education, Influence, Decision, Communalities, Salient factors.

INTRODUCTION

The technical and vocational education prepares an individual for self reliance. This type of educations is among the key essential tools an individual can use to develop him or herself as well as the community. It's therefore provides educational training for useful employment in trade, agriculture, industries, homemaking and business etc. Basically, technical and vocational training or courses aimed at strengthening the skills base of an individual. Also, technical and vocational choices are a developmental process and length of time almost through an individual's lifetime. The choices focus specifically on related issues to the work. Experiences got in variety of work situation will enhance one to prepare for transition to a work environment or training. A research conducted by Azubuike (2011) revealed that interest, gender, socio-economic status, the qualification of teachers/ instructors and guidance counsellors were the five major factors that influence students in the Technical and vocational school.

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Korir (2012), used a sample size of 120 students and descriptive statistics for the analysis. Findings showed that majority of students are influenced by opportunity, environmental and personal factors. It was noted that students preferred hospitality careers among other alternative programs. Technical and vocational education name varies from one country to another. However, these names mean the same. Some of the names are; vocational education and training (VET) technical and vocational education training (TVET), vocational technical education (VTE), or vocational and technical education and training (VOTECT). Technical and vocational institutions require workshops, tools, equipment, and materials. The subjects also require more instruction and practical time than the arts and science education. The subjects need to be allotted enough time to satisfy their practical requirements.

A large part of the education in technical and vocational schools is hands-on training. The methods of assessing the subjects is in the form of assessment that require the training of assessors' who can assess students' competence in the classroom and in the workplace. These make technical and vocational education more expensive than other types of education. Boateng (2012) cited that Lewin (1997) revealed that, there are five justifications for governments' worldwide to invest in technical vocational education and they are:

1. To increase relevance of schooling by imparting individuals with skills and knowledge necessary for making the individual a productive member of the country.
2. To reduce unemployment as a result of provision of employable skills especially to the youth and those who cannot succeed academically.
3. To increase economic development due to the fact that it improves the quality and skill level of the working population.
4. To reduces poverty by giving the individuals who participate access to higher income occupations.
5. To transform the attitude of people to favour occupations where there are occupational prospects.

The selection of a program of study at technical/vocational institution is probably one of the most important decisions students make. It is believed that some students choose programs because of personal interest, family honours, career choice, just to mention a few. The reasons behind these vary from one individual to another. These presuppose that there are a lot of factors which influence students to choose programs from the alternatives. The reasons for this probably are due to student's perception that it does not require specialized kind of training. For example, an individual may have the feeling that even if one is at home, there is the need to learn how to prepare food, and this can be acquired without any formal training. Students who are ignorant of the significance of their choice in technical and vocational subjects could find themselves disappointed in their future life. There is therefore the need to identify the salient factors that influence student's course selection to help them to make informed decision. Also, this information will enable the students to acquire skills and abilities essential for job placement more especially in this economic difficulty in Ghana where we have unemployed graduate association. This investigation therefore is geared at some of the influential factors which compel students to choose a program in the technical/vocational institution.

Galotti (1999), found that in general students made relatively informed decisions about their major selection. It's also notable that this same study found that their influence or advice of other people had very little impact on the decision. Taken together, these findings suggest that students see the choice of a major as one that both reflects important core characteristics of them

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(including their gender role identification, interest and values, and their abilities) and has consequential implications for their futures.

A number of studies have explored issues relating to indecision about future careers and the impact this can have on choices relating to course selection. Vondracek, et al (1990) stated that career indecision should be recognized as a normal stage in the career development process. Indecision may result from an inability to regard any careers viable, difficulties choosing between too many occupations or problems deciding on alternatives when the most preferred option is not a realistic possibility.

Babad and Tayeb (2003) found that "Lecturer style" was among the top two considerations when selecting a course. All these factors discussed in this study can contribute to the success or failure of the students at the technical and vocational institutions. On this same issue of course selection (Whiteley and Porter, 1998) conducted a study on student perceptions on subject selection. They found out that personal, social, socio-political factors influence students when it comes to decision regarding subject selection. The main themes related to these factors were; personal factors consisted of the students self assessment of their academic ability, level of interest and need for subjects for post-school courses and career pathways. Secondly, social themes included factors relating to their family and social networks as well as their educational experiences. Lastly, the socio-political environment of the community in which the students and the schools are located also appeared to impact on the students' decision making processes. Some students and teachers seem not to understand what it is all about and consequently, develop some contempt and not having the feeling for subjects in the technical and vocational education. As such, vocational and technical subjects remain unhealthy. Majority of the trades and occupations are regarded as not good and unbecoming. Some Ghanaian parents do not want their children to earn a living as a full time carpenter, farmer, a watch-repairer, a plumber or a house painter.

Igbinedion (2011), used a sample size of 191 students and descriptive statistics for the analysis. The hypotheses tested revealed that there were variations in the perceived factors that influence students' vocational choice of secretarial studies between male and female students from the universities and colleges of education differed significantly with regards to some of the factors that influence their choice. The influence of parents in the development of students' interest in vocational/technical subjects cannot be over emphasized this is because parents seem to have much influence on children's choice of educational career. How students see themselves in a role in which personality is a determining factor may influence a chosen career. Some careers demand that you have the personality to match the qualities of the occupation. Interest is also an important factor in students' vocational choice.

A study by Whiteley and Porter (1998), aimed at identifying the impact of school policies and practices on students as well as other influences which affects individual subject choices and career decisions. It was revealed that interviews conducted with students during their final year at school will provide further insight into perceptions of subject selection and their effect on decisions regarding post-school options and career decisions

Objectives of the study.

1. Assess the factors that influence the career choice of technical and vocational students in the Polytechnics

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2. Examine the salient factors that could best describe the influence on career choice in the Polytechnics

MATERIALS AND METHODS

Data Collection technique: The population was registered students studying Technical and Vocational courses in the polytechnics at the time of data collection. The courses were used as strata. A proportional allocation method was used to obtain the required sample size from each of the course representing a strata as shown on the table 1. The stratified sampling method reduced the sampling error. Students from all vocational and technical departments were also well represented, except that those from the Industrial Art and Design department were slightly more represented; this is as a result of the proportionate allocation method employed in the data collection.

Self administered questionnaire was used to obtain data from the respondents. A total of 430 questionnaires were administered and they were all retrieved as shown in table 1 but there were no responses on some items. It was a researcher developed factor analytically derived questionnaire. It was a five & seven point Likert scale type. It is a close-ended questionnaire. Items one to three deals with the bio data of the respondents. Items four and five deals with the parental occupation of the respondents. Item six examines how the respondent's career choice is influenced by close relations on a five point Likert scale and the last item on the questionnaire examines the level of importance attached to various factors influencing the career choice of technical and vocational student in the Polytechnics on a seven point Likert scale.

Table 1: Sample selection

Program of Study	Frequency	Percent
Art	110	25.6
Building & Civil Engineering	92	21.4
Fashion	76	17.7
Hotel Catering & Institution Management	65	15.1
Electrical & Electronic Engineering	19	4.4
Mechanical Engineering	67	15.6
Non-Response	1	0.2
Total	**430**	**100.0**

Variables in the Research

The main variables in the research are the seven-point items of the questionnaire. The first five items are classifications variables; gender, age, program of study, mother's occupation and father's occupation. The sixth item (seven sub-items) sought to measure the extent to which the occupation of family and teacher influence the student's choice of program. The seventh and the last item of the questionnaire consist of 17 sub-items which sought to measure level of importance attached to each of the 17 indicators as to how they influence student's choice of a program.

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Sharma (1996), said that, factor analysis was originally developed to explain student performance in the various courses and to understand the link between grades and intelligence. Spearman (1904) hypothesised that student's performance in the various courses are intercorrelated and their intercorrelation could be explained by student's general intelligence levels as cited by (Sharma,1996). However, the technique is generally used in recent times in business situations which require a scale or an instrument to measure the various constructs such as attitudes, image, patriotism, sales aptitude and resistance to innovation. If data is collected on a large number (n) of variables, most of which are correlated, it may be desirable to reduce the number of variables involved. This requires an examination of the interrelationship between the variables and then represented by a few (m) new underlying factors. The new fewer variables also referred to as latent factors are then used to approximate the correlations between the original variables.

Mathematically, factor analysis is somewhat similar to multiple regression analysis, in that each variable is expressed as a linear combination of underlying factors. The amount of variance the variable shares with all other variables is called communality. The covariation among the variables is described in terms of a small number of common factors plus a unique factor for each variable. These factors are not overtly observed. If the variables are standardized, the factor model may be represented by

$$X_i = A_{i1}F_1 + A_{i2}F_2 + A_{i3}F_3 +,\cdots,+ A_{im}F_m + V_iU_i \qquad 1$$

Where

X_i is i^{th} standardized variable

A_{ij} is standardized multiple regression coefficient of variable i on common factor j

F is common factor

V_i is standardized regression coefficient of variable i on unique factor i

U_i is the unique factor for variable i

m is number of common factors

The unique factors are uncorrelated with each other and with the common factors. The common factors themselves can be expressed as linear combinations of the observed variables.

$$F_i = W_{i1}X_1 + W_{i2}X_2 + W_{i3}X_3 +,\cdots,+ W_{ik}X_k \qquad 2$$

Where

F_i is estimate of i^{th} factor

W_i is weight or factor score coefficient

k is number of variables

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It is possible to select weights or factor score coefficients so that the first factor explains the largest proportion of the total variance. Then a second set of weights can be selected, so that the second factor accounts for the residual variance, subject to being uncorrelated with the first factor. This same principle could be applied to selecting additional weights for the additional factors. Thus, the factors can be estimated so that their factor scores, unlike the values of the original variables are not correlated. Furthermore the first factor accounts for the largest variance in the data, the second factor, the second largest and so on.

Principal component factor analysis

Principal Component is one of the procedures for carrying out Factor analysis. To identify the latent factors underlying the correlations between p indicator variables, $X_1, X_2, ... X_P$, the correlation matrix of the variables are examined by means of Principal Component Analysis. This is done by forming p new variables, $(y_i, i = 1,2,...p)$, where

$$
\begin{aligned}
y_i &= w_{11}x_1 + w_{12}x_2 +, \cdots, + w_{1p}x_p \\
y_2 &= w_{21}x_1 + w_{22}x_2 +, \cdots, + w_{2p}x_p \\
&\vdots \\
y_p &= w_{p1}x_1 + w_{p2}x_2 +, \ldots, + w_{pp}x_p
\end{aligned}
\qquad 3
$$

That is, the p new variables are linear combinations of the original variables. The new variables are referred to as the Principal Components. The coefficient w_{ij}, is the weight of the jth variable on the ith principal component. These coefficients are determined such that,

$$w_{i1}^{\;2} + w_{i2}^{\;2} +, ..., + w_{ip}^{\;2} = 1, i = 1,2,....p \qquad 4$$

$$w_{i1}w_{j1} + w_{i2}w_{j2} +, ..., + w_{ip}w_{jp} = 0, \forall i \neq j \qquad 5$$

These conditions ensure that the components are uncorrelated and constitute orthogonal axes with each other.

Supposing λ_i is the variance of the ith component, also called its eigenvalue, and S_j the variance of the jth variable, the corresponding coefficient defined by $l_{ij} = \frac{w_{ij}}{\hat{S}_j}\sqrt{\lambda_i}$

is the loading of the jth variable on the ith component. This value then is a measure of the correlation between the jth variable on the ith component. In this case, $(y_i, i = 1,2,...p)$ may then be generally written as

$$y_i = \sum_{j=1}^{p} l_{ij}x_j \qquad 6$$

Equation 6 may be written in matrix form as

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$$Y = \Lambda^1 X \qquad 7$$

where Y is a $P \times 1$ vector of standardized components;

Λ is a $P \times P$ orthonormal matrix of loadings;

X is a $P \times 1$ vector of indicator variables.

Thus $\Lambda\Lambda^1 = I$ is $P \times P$ identity matrix. From Equation 7, X is obtained as

$$X = \Lambda Y \qquad 8$$

That is, the original variables $x_j (j = 1,2,...p)$, now expressed in terms of the components as

$$\begin{aligned} x_1 &= l_{11}y_1 + l_{12}y_2 +,\cdots,+ l_{1p}y_p \\ x_2 &= l_{21}y_1 + l_{22}y_2 +,\cdots,+ l_{2p}y_p \\ &\vdots \\ x_p &= l_{p1}y_1 + l_{p2}y_2 +,\cdots,+ l_{pp}y_{p,} \end{aligned} \qquad 9$$

Or x_j is generally expressed as

$$x_j = \sum_{i=1}^{p} l_{ij} y_i \qquad 10$$

Since orthogonality conditions are met, the y_i accounts for the *ith* largest variation in the data and y_i here is referred to as the *ith* factor. Using the rules of factor extraction proposed by (Zwick and Velicer, 1986), the factor is interpreted by considering those high loadings (l_{ij}) indicates the factor's importance in explaining the variability in that variable.

Some conditions for conducting factor analysis

In determining whether a particular data set is suitable for factor analysis, the sample size and the strength of the relationship among the variables are some of the main issues to consider. There is little agreement among authors concerning how large a sample should be. The recommendation generally is that, the larger, the better. In small samples the correlation coefficients among the variables are less reliable, tending to vary from sample to sample. (Tabachnik and Fidell, 2001) review this issue and suggested that it is comforting to have at least 300 cases for factor analysis. The second issue to be addressed concerns the strength of the inter-correlations among the items. Tabachnick and Fidell recommend an inspection of the correlation matrix for evidence of coefficients greater than 0.3. Two statistical measures operated by SPSS to help assess the suitability of the data are Bartlett's test of sphericity and the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy.

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It has been speculated by some Factor analysts (Zwick and Velicer, 1986) that the precision of the recommendation of the KMO measure is dependent on the number of indicators underlying a particular factor. If the number of indicators per factor is large, precision increases. By the derivation of the KMO measure, the value is high if each variable has an individual KMO. In other words, the value can be increased by deleting those variables under study whose individual KMO are small. Sometimes analysis of the data may not be possible as a result of few information on some variables that does not allow for the computation of pairwise correlations between the variables. Since the technique utilizes the correlation matrix, the variable involved in such a case might be dropped and the correlation matrix obtained for the remaining variables for the study.

Another condition on the number of variables that can be used in the study is known as the Ledermann bound. Ledermann (1937), has derived a bound for the number (m) of factors that can be extracted from p original variables. The bound is given by

$$m < \frac{1}{2}\left[(2p+1) - \sqrt{8p+1}\right] \qquad 11$$

that is, the number of common factors cannot exceed the largest integer satisfying the Equation (11). Now by definition, $m \geq 1$. It can be deduced from the range in the equation that if the number p, of variables is less than 4, the condition on m is violated. On the other hand, the source of this bound, given by the quadratic inequality $(p-m)^2 - p - m > 0$, naturally rules out the possibility of the value of m being equal to p. Therefore, factor analysis is meaningful as a dimensionality reduction technique if the number of variables under study is quite large and greater than 3. This usefulness is also true if the number of common factors extracted is strictly less than the initial number of variables under study.

Determination of the number of factors

In order to summarise the information contained in the original variable, a smaller number of factors should be extracted. Several procedures have been suggested for determining the number of factors. These include a priori determination, approaches based on eigenvalues, scree plot, percentage of variance accounted for, split-half reliability and significance test.

Sometimes because of prior knowledge the researcher knows how many factors to expect and thus can specify the number of factors to be extracted beforehand. The extraction of factors ceases when the desired number of factors have been extracted. Most computer programs allow the user to specify the number of factors, allowing for an easy implementation of this approach.

We can also determine the number of factors based on eigenvalues of extracted factors. In this approach only factors with eigenvalues greater than 1.0 are retained and the other factors excluded in the model. An eigenvalue represents the amount of variance associated with the factor. Hence only factors with a variance greater than 1.0 are included. Factors with variance less than 1.0 are not better than a single variable, because due to standardization, each variable has a variance of 1.0. If the number of variables is less than 20, this approach will end in a conservative number of factors.

The number of extracted factors can also be determined based on percentage of variance. In this approach the number of factors extracted is determined so that the cumulative percentage of

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variance extracted by the factors reaches a satisfactory level. What level of variance is satisfactory depends upon the problem. It is possible to determine the statistical significance of the separate eigenvalue and retain only those factors that are statistically significant. A drawback is that with a large sample (size greater than 200) many factors are likely to be statistically significant, although from a practical view point, many of these accounts for only a small proportion of the total variance.

The orthogonal factor model

According to Johnson and Wichern (1992), the observable random vector X with p components has mean u and covariance matrix $\sum$. The factor model postulates that X is linearly dependent upon a few unobservable random variables $F_1, F_2, ...F_m$, called common factors and p additional sources of variation $\sum_1, \sum_2, ...\sum_p$ called errors or sometimes specific factors. In particular, the factor analysis model is:

$$\begin{aligned} X_1 - \mu_1 &= L_{11}F_1 + L_{12}F_2 +, \cdots, + L_{1m}F_m + e_1 \\ X_2 - \mu_2 &= L_{21}F_1 + L_{22}F_2 +, \cdots, + L_{2m}F_m + e_2 \\ &\vdots \\ X_P - \mu_P &= L_{p1}F_1 + L_{p2}F_2 +, \cdots, + L_{pm}F_m + e_p \end{aligned} \qquad 12$$

the equivalent matrix notation is

$$X_{(p\times1)} - \mu = L_{(p\times m)}F_{(m\times1)} + e_{(p\times1)}$$

where

L_{ij} is the loading of the i^{th} variable on the j^{th} factor.

L is the matrix of factor loadings

e_i is associated only with the i^{th} response X_i

The p deviations $X_1 - \mu_1, X_2 - \mu_2, \cdots X_p - \mu_p$ are expressed in terms of $p + m$ random variables $F_1, F_2 ..., F_m$, $e_1, e_2, \cdots e_p$ which are unobservable. This distinguishes the matrix notation factor model from the multivariate regression model in which the independent variables whose positions are occupied by F in the matrix notation can be observed.

Rotation of component

Sharma (1996), stated that the objective of rotation is to achieve a simpler factor structure that can be meaningfully interpreted by the researcher. He mentioned an orthogonal rotation which is most popular, the rotated factors are orthogonal to each other, whereas in oblique rotation the rotated factors are not orthogonal to each other. The interpretation of the factor structure resulting from an oblique rotation is more complex than that resulting from orthogonal rotation. Varimax and Quartimax are the most popular types of orthogonal rotations.

In the varimax rotation the major objective is to have a factor structure in which each variable loads highly on one and only one factor. That is a given variable should have a high loading on

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one factor and near zero loadings on the other factors. Such a factor structure will result in each factor representing a distinct construct.

The major objective of this rotation technique is to obtain a pattern of loadings such that all the variables have a fairly high loading on one factor and near zero loadings on the remaining factors. Obviously, such a factor structure will represent one factor that might be considered as an overall factor and the other factors that might be specific constructs. Thus, quartimax rotation will be most appropriate when the researchers suspect the presence of general factor. Varimax rotation destroys or suppresses the general factor and is not appropriate to be used when the presence of the general factor is suspected.

RESULTS AND DISCUSSION

The results are summarized in table form and discussions beneath the tables. Conspicuous values are bolded and also form the basis of the discussions. The analysis of data was organized under two main headings – preliminary and further analyses. The preliminary analysis contains mostly descriptive statistics about the population of study while the further analysis used advance statistical tool of factor analysis to extract salient factors responsible for influencing the respondents' choice of program at the polytechnics.

Preliminary Analysis

This part of the analysis presents the data on the various classification variables in the research. It is expected that the general description of the population under study would be captured for further analysis to be carried out.

Table 2: Demographic Characteristics of Respondents ($n = 430$)

Variable	Frequency	Percent (%)
Gender		
Male	310	72.1
Female	109	25.3
Non Response	11	2.6
Age Group		
15 – 24	303	70.5
25 – 34	108	25.1
35 – 44	11	2.6
Non Response	8	1.9

Table 2 presents the demographic characteristic of the respondents; it shows that there are more male than female representation in this research. This means that the conclusions made here are

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more likely to be representing that of males than females. The age grouping of the respondents also revealed that the conclusions made for this research would many times be attributed to students within the age of 15 to 24 than those of other age group.

Table 3: Occupation of Respondents Parents ($n = 430$)

Variable	Frequency	Percent (%)
Mother's Occupation		
Trader	262	60.9
Formal Sector	71	16.5
Engineering	1	0.2
Professional/Vocational	41	9.5
Others	45	10.5
Non Response	10	2.3
Father's Occupation		
Trader	57	13.3
Formal Sector	83	19.3
Engineering	54	12.6
Professional/Vocational	112	26.0
Others Informal Occupations	102	23.7
Non Response	22	5.1

Source: Field Survey, 2014

The distribution of the occupation of respondents' mother appears to be much towards trading than to other occupations, as shown in Table 3 above. On the other hand, the distribution of the occupation of respondents' father is rather towards professional vocational sectors than to others, yet about 24% of fathers engaged in other informal occupations like farming, carpentry, masons, etc. The decision as to what course to offer at the Polytechnic level could be influenced by a number of factors; what is of interest in this research is to find whether the occupation of parent is significant in doing so.

Table 4: Extent to Which Occupation of others Influence Choice of Program ($n = 430$)

	Very Low	Low	Somehow	High	Very High	Non Response
Father	51	32	64	100	175	8
Mother	45	45	65	120	146	9
Brother	62	51	76	116	98	27
Sister	52	51	87	121	90	29
Other Relatives	76	57	130	69	71	27
Friends	55	49	108	119	75	24
Teacher	50	31	66	109	157	17

Source: Field Survey, 2014

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Table 4 Contd.: Extent to Which Occupation of others Influence Choice of Program (%)

	Very Low	Low	Somehow	High	Very High	Non Response
Father	11.9	7.4	14.9	**23.3**	**40.7**	1.9
Mother	10.5	10.5	15.1	**27.9**	**34.0**	2.1
Brother	14.4	11.9	17.7	**27.0**	**22.8**	6.3
Sister	12.1	11.9	20.2	**28.1**	**20.9**	6.7
Other Relatives	**17.7**	**13.3**	**30.2**	16.0	16.5	6.3
Friends	12.8	11.4	25.1	**27.7**	**17.4**	5.6
Teacher	11.6	7.2	15.3	**25.3**	**36.5**	4.0

Source: Field Survey, 2014

In almost all, except for "other relatives", as shown in the table 4, the respondents have indicated that the extent to which the occupation of others influences their choice of program is high or very high. This suggests that, the average technical/vocational student is quite likely to be influenced by the occupation of father, mother, siblings and teacher.

Further Analysis

The main objective of this research is to identify underlying construct, if any, that influence the choice of program of technical/vocational students at the tertiary level. Factor analysis is the tool that is mostly credited with the ability to achieve this objective. The analysis involves following a number of procedures in turns. For the purposes of clarity, the variables to be used in the factor analysis are redefined as follows.

X_1=*Personal Interest*
X_2=*Gender*
X_3=*Career Opportunity*
X_4=*Ethnicity*
X_5=*Siblings influence*
X_6=*Expected Earnings*
X_7=*Parent Preference*
X_8=*Opportunity for further studies*
X_9=*Peer Influence*
X_{10}=*Job availability*
X_{11}=*Role Model Influence*
X_{12}=*Financial Constraint*
X_{13}=*Ability/ talent*
X_{14}=*Prestige Attached to the programme*
X_{15}=*Teacher Influence*
X_{16}=*Difficulty of the Programme*
X_{17}=*Self employment*

The respondents were to indicate the level of importance attached to each of the indicators as to how they influence their choice of program using the Likert scale below:

1= Least Important

2= Less Important

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3= Little Important

4= Important

5=Much Important

6=More Important

7=Most Important

Table 5: Reliability Statistics

Cronbach's Alpha	No. of Items
0.817	17

Source: SPSS Output of Field Data, 2014

The cronbach's alpha suggests strongly that there is internal consistency in scaling the variables by the respondents, and that, about 81.7% of the time, the responses for the 17 variables were consistent. The high cronbach's alpha value here further indicates that the variables are correlated amongst themselves and that the factoring would be plausible.

Table 6: Summary Rating Statistics

	Mean	Std. Deviation
X_1	**5.94**	1.66
X_2	4.63	2.03
X_3	**5.90**	1.56
X_4	3.35	2.05
X_5	3.78	2.04
X_6	**5.31**	1.81
X_7	4.64	2.05
X_8	**5.75**	1.67
X_9	3.13	2.10
X_{10}	**5.65**	1.71
X_{11}	4.73	2.10
X_{12}	4.72	1.98
X_{13}	**5.75**	1.64
X_{14}	**5.20**	1.74
X_{15}	4.63	2.11
X_{16}	4.00	2.16
X_{17}	**5.78**	1.79

Source: SPSS Output of Field Data, 2014

Table 6 clearly highlights the average rating assigned to each variable. The variable bolded are averagely of much importance in influencing the choice of program for the students. On average, all variables are deemed to be at least, of little importance in influencing the choice of program.

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Table 7: Communalities amongst the Variables

	Extraction
X_1	.448
X_2	.490
X_3	.461
X_4	.614
X_5	.557
X_6	.463
X_7	.421
X_8	.417
X_9	.517
X_{10}	.479
X_{11}	.391
X_{12}	.482
X_{13}	.392
X_{14}	.291
X_{15}	.445
X_{16}	.385
X_{17}	.318

Source: SPSS Output of Field Data, 2014

In factoring, emphasis is placed on identifying groupings within the data set that share similar characteristics, this is called communalities. From the communality table above, the amount of variance the variables shared on each other appears to be high for three variables – ***Ethnicity***, ***Siblings influence*** and ***Peer Influence.*** Moreover, these variables, X_4, X_5 and X_9, recorded a mean rating value of around 3 in Table 6 indicating that they are of little importance when it comes to influence on choice of program. Another set of variables share quite high variance with others (in Table 7) and have mean rating of 4 or 5 showing a higher importance attached to them are; ***Gender***, ***Career Opportunity***, ***Expected Earnings***, ***Job availability*** and ***Financial Constraint.*** Yet another set of variables have low variance shared with others but have high mean rating of at least 5; they indicate higher importance attached. They are; ***Personal Interest***, ***Opportunity for further studies***, ***Ability/ talent***, ***Prestige Attached to the programme*** and ***Self employment.*** The interpretations above suggest three salient components that seek to explain the influence on career choice of technical and vocational students.

Table 8: KMO and Bartlett's Test

TEST		VALUE
Kaiser-Meyer-Olkin Measure of sampling Adequacy		0.846
Bartlett's Test of Sphericity	Approx. Chi Square	1574.759
	Degree of Freedom	136.0
	Significance	0.000

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The Kaiser-Meyer-Olkin Measure of sampling Adequacy (KMO) value is 0.846 as shown on the table 8. Moreover, the Bartlett's Test of Sphericity is significant (p = 0.000). These figures also satisfy the assumption of the suitability of the data for factor analysis. Here the Kaiser-Meyer-Olkin Measure of sampling Adequacy was expected to be 0.6 or above while the Bartlett's Test of Sphericity should be significant with $p < 0.05$. Thus, the data meets the requirement for the use of Factor analysis.

Table 9: Total Variance Explained

	Initial Eigenvalues		
Component	Total	% of Variance	Cumulative %
1	4.385	25.795	25.795
2	2.131	12.535	38.330
3	**1.056**	**6.209**	**44.539**
4	.974	5.729	50.268
5	.928	5.461	55.728
6	.894	5.261	60.989
7	.788	4.636	65.625
8	.732	4.304	69.930
9	.727	4.275	74.205
10	.692	4.073	78.278
11	.657	3.864	82.142
12	.603	3.549	85.691
13	.564	3.315	89.006
14	.521	3.067	92.073
15	.511	3.004	95.077
16	.462	2.716	97.792
17	.375	2.208	100.000

Source: SPSS Output of Field Data, 2014

The total variance explained by the three components is 44.5%. This suggests that 44.5% of the 81.7% internal consistency in the rating assigned by the respondents can be explained by three components. The next table would help provide a label for the new components.

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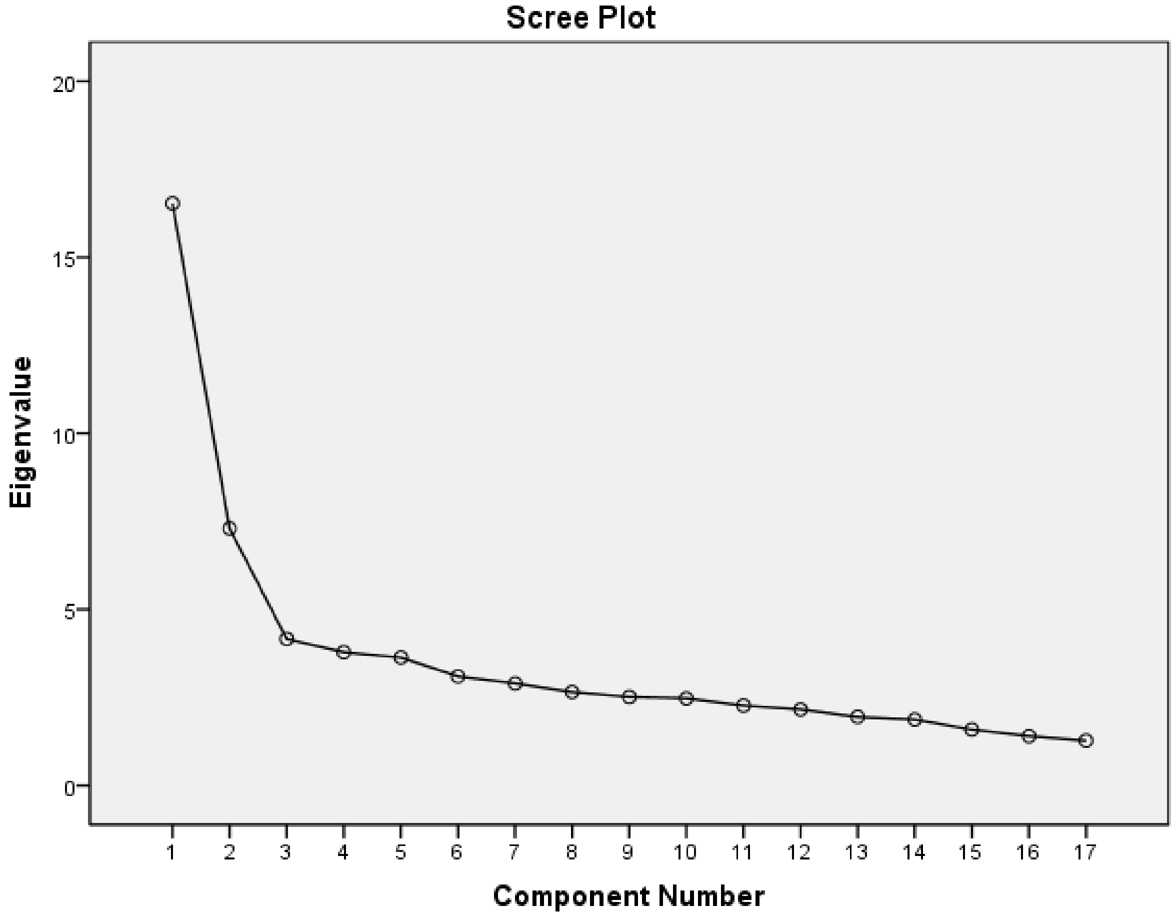

Figure 1: Scree plot of adding Eigenvalue against Component Number

It is important to also look at the scree plot as shown on the figure1. What is needed on the scree plot is to look for a change or elbow in the shape of the plot. It reveals a quite break between the second and the fourth components. Hence the first three components are to be retained because they capture a reasonable proportion of the total variance. This is in support of the use of the initial eigenvalues.

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Table 10: Rotated Component Matrix

	Component		
	1	2	3
X_1	.638	.155	-.133
X_2	.325	.620	.004
X_3	.644	.207	-.062
X_4	-.074	.694	.355
X_5	.057	.711	.220
X_6	.568	.370	-.056
X_7	.198	.545	.291
X_8	.638	.021	.101
X_9	-.121	.470	.531
X_{10}	.585	-.148	.339
X_{11}	.361	.089	.503
X_{12}	.142	.107	.671
X_{13}	.592	.080	.186
X_{14}	.465	.139	.235
X_{15}	.211	.332	.539
X_{16}	-.011	.231	.576
X_{17}	.529	-.079	.179

Source: SPSS Output of Field Data, 2014

From Table 10, the 17 original indicators can be put into three groups base on their loading on the new components. At a cut off loading of at least 0.5, we have the following sets

$$Set\ A = \{X_1, X_3, X_6, X_8, X_{10}, X_{13}, X_{14} and X_{17}\}$$

The indicators are

X_1=Personal Interest
X_3=Career Opportunity
X_6=Expected Earnings
X_8=Opportunity for further studies
X_{10}=Job availability
X_{13}=Ability/ talent
X_{14}=Prestige Attached to the programme
X_{17}=Self employment

The indicators above are describing the individual's quest towards having job security in the future. The first component could therefore be labelled as the ***job security factor***. This support Korir (2012) findings which showed that majority of students are influenced by opportunity and environmental factors and influenced by personal factors.

$$Set\ B = \{X_2, X_4, X_5, and\ X_7\}$$

The indicators are

X_2=Gender
X_4=Ethnicity
X_5=Siblings influence

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X_7=Parent Preference

The indicators in this category seek to relate the individual's sex with close family relations. The second component could also be labelled as the ***gender and close family relations factor***. A research conducted by Azubuike (2011) revealed that the interest, gender, socio-economic status, the qualification of teachers and instructors and guidance counsellors were the five major factors that influence students in the Technical and vocational school.

$$Set\ C = \{X_9, X_{11}, X_{12}, X_{15}\ and\ X_{16}\}$$

With indicators

X_9=Peer Influence
X_{11}=Role Model Influence
X_{12}=Financial Constraint
X_{15}=Teacher Influence
X_{16}=Difficulty of the Programme

Here too, financial constraint appears to be linked with influence from vital societal perspectives. The third component could hence be labelled as the ***financial and societal influence factor.*** Galotti (1999), found that in general students made relatively informed decisions about their major selection. It's also notable that this same study found that their influence or advice of other people had very little impact on the decision. The new revelation here is the financial constraints. These findings suggest that students see the choice of major as one that both reflects important core characteristics of them.

CONCLUSIONS

The study has revealed that there are three salient factors that influence career choice of technical and vocational students in the Takoradi and Ho Polytechnics. These are; Job security factor, Gender and close family relations factor and Financial and societal influence factor.

Interestingly the results suggest that job security is a very important consideration in course selection in the technical and vocational program, there is therefore the need to either establish more industries or equip the graduate to set up their own businesses after their training. The Gender and close family relations factor shows that there is the need to give adequate counselling to students to have their independent opinion to study the technical and vocational programs that is of interest to them. Financial and societal influence factor indicate and support the opinion that some Ghanaian parents do not want their children to earn a living as a full time farmer, a watch-repairer, carpenter, a plumber or a house painter. For many Ghanaians, these jobs are for the poor and those who have less money and fewer opportunities. Students also takes financial consideration very important in making a choice in the technical and vocational program.

RECOMMENDATION

Stake holders in education should show more interest in the area of Technical and Vocational Education with emphasis on student's course selection. It is also recommended that

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entrepreneurship mindset should be emphasizes in career counselling programme for Technical and Vocational students in their course selection. This will enable the students to have informed decision on their course selection.

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