STATISTICAL MODELING OF SOME FACTORS INFLUENCING STUDENT'S CHOICE OF INSTITUTION

*ONEMAYIN Kolawole Joseph, OMOSIGHO Donatus, and RAJI Yakubu Muhammed

Department of Mathematics and Statistics, the Federal Polytechnic Ado-Ekiti, Ekiti state

Abstract – Education is one of the main instruments in developing human resources. It is thus not surprising that education and skill development training are accorded high priority.It is of critical importance that factors that influence students' choices of institutions are investigated to enable effective planning of studies. The study employed a design structured questionnaire for data collection. A simple random sampling procedure was used to select a sample of 600 participants across the institutions. The result reveals that for every one-unit increase in economic factors, the odds of not changing institution increases by 0.608 times. For every one-unit increase in motivation factors, the odds of not changing institution increases by 1.313times while for every one unit increase in parental factors, the odds of not changing institution increase by 6.954 times. It is observed that both economic and parental factors are significant in the choice of the institution by students.

Keywords: influencing factors, institutional characteristics, logistic regression, undergraduate students, significantly.

INTRODUCTION

Lee 2000 believed that, in the effort to achieve a developed nation status, one of the strategies undertaken by the government is the development of human resources and it is hoped that through education, a sufficient pool of well-educated, highly-skilled and strongly-motivated labourforce can be developed.

Education can vastly be viewed as formal, semi-formal and informal. In whatever form education may come, it invariably cultivates the mind or the intellect. It brings about self-realization, ensures social reformation, love in the society and a good life (Appiah, 1994). Accordingly, education is

that which empowers man to perform in a justly, skillfully and satisfactory manner to whatever capacity he finds himself.Amoor and Aliyu (2014) asserted that education is a process of leadingand initiating people to acquire necessary skills, facts, knowledge, habits and attitudes that will make them co-exist with others as useful and productive members of the society.

According to a study carried out in Ghana by Akyina, Oduro-Okyireh and Osei-Owusu (2014) governments over the years have laid emphasis through educational reforms on the need to have programmes in schools that will train the youth to occupy positions in the society. Thus, the government is affirmative that this can be achieved through serious emphasis on guidance and counseling so that students can make right choices of programme of study; make good plans and decisions which will ultimately promote disciplines in schools. This implies that there is unarguably an influential nexus between the choice of programme of study in a University and the area of discipline or subject choices in Senior High Schools so as to enable students channel their interests, aptitudes and abilities. However in the Nigerian context, this may not always be the case as students find themselves deviating from their academic needs, aspirations and aim in life. The proper educational counseling that may guide toward making intelligent and informed decisions are somewhat not sought after and this may lead to problems of coping with a course of study, lack of interest, lack of motivation (Akyina et al, 2014) and subsequently withdrawal (Redmond, Quin, Devitt and Archbold, 2011). Therefore the essence of this research is to investigate the factors that influence students' choice of institution with particular focus on students in three different tertiary institutions, in Ekiti State of Nigeria.

Various works had been carried out, in other fields, on the factors considered in choosing a programme of study, institution and vocation. For instance, the work of Clutter (2010) explored parents' critical role in their children's career choices and aspirations. The work had, subsumed in it, a brief history of past career counseling techniques, which begins in the formative years through assessing the student's personality to determine proper occupational fit.

The researcher also stated that there has been a progression to the post-modernist view that bases vocational interest and aspirations on constantly changing liferoles. Also included were previous empirical researches that have examined parental influence on adolescent's career choices, as well as researches that border on the effects of socioeconomic status, gender, and race. The paper however concluded that career counselors and parents may use the strength of parental influence upon young adults to provide more effective career development techniques and create stronger partnerships with the young adult's primary stakeholders. This paper, although extant in its review of literature failed to empirically undertake the study.

Alika (2010) investigated into "parents and peer group influence as correlates of career choice in humanities among secondary school students in Nigeria. " Survey method was adopted with a random sample study population that comprised one hundred Senior Secondary School two (SSS2) students in Oredo andEgor local government areas of Edo State. Three research instruments, namely: the student's occupational clusters preference scale (OCPS), peerpressure assessment scale (PPAS) and the parental influence assessment inventory (PIAI) were employed. The items on the instruments were a modified 4-point Likert scale. Using the Pearson Product Moment Correlation Coefficient (PPMCC), a relationship was established between the independent variables (parental and peer group influence) and the dependent variable (career choice). Result showed that there was no significant relationship between parental and peer group influence on career choice in humanities among secondary school students. As regards career development, it recommended that counselors should work directly with parents and peers, especially with a view to enhancing the positive aspects which may eventually improve the career development prospects of our future workers. The recommendation is seemingly in harmony with the study of Akyina, etal (2014) which stated that school counselors should reinforce students' rational programme choice behaviour by intensifying counseling in schools so that students willcontinue to make rational choices of programmes in school.

Igbinedion (2011) examined the "*perceived factors that influence students' vocational choice of secretarial studies in tertiary institutions in Edo State, Nigeria.*" Two research questions were raised and answered; while two hypotheses were formulated and tested. Factors that were investigated included parental, peer group, gender and interest. The study was informed by the low level of students' enrolment into secretarial education programmes acrossthe universities and college of education and the poor attitude of students with regard to their self-worth in spite of the many job opportunities and career satisfaction offered by this all-pervasive skill-oriented vocational academic program. The study was descriptive in design with a stratified sample size of 191 students randomly selected from a population study of 447 students enrolled in secretarial studies programs in public tertiary institutions in Edo State during the 2006/2007 academic session. Survey instrument was questionnaire and used to gather data from the field for analysis. The results showed that there were variations in the perceived factors that influence students' vocational choice of secretarial studies between male and female students; and also students from the universities and college of education differed significantly with regard to some of the factors that influence their choice. Based on this, it was recommended amongst others that candidates irrespective of the gender should be encouraged to enroll into secretarial studies programmes.

In Spain, **Sanchez (2012)** analyzed the *factors that influence secondary school students' choice of higher education options*. The study explored the implications and benefits of establishing provider-client relationships between universities and students; hypotheses were also formulated to guide the study. The research employed a quantitative approach with the use of questionnaires as survey instrument to achieve the stated aim and formulated objectives of the study. A closed endedquestionnaires comprising of twenty-four questions to assist with the hypotheses testing and achieve the objectives was drawn. The target population was the first-year undergraduates who enrolled in communication sciences programmes at both the public and private universities totaling 344 student-participants with 52.6 per cent and 47.4 per cent in public and private universities respectively. Results revealed that the leading criteria for Spanish students interested in pursuing studies in communication sciences were ranking, reputations, excellence and quality of the University's educational programmes. The results were in consonance with the studies by Maringe, (2006) and Holsworthand Nind, (2005). On sources of information related to and their degree programmes, respondents placed the highest value on direct and experiential sources with preference to public Universities over the privately owned universities.

Sabir, Ahmad, Ashraf and Ahmad (2013) did a comparative research of "*undergraduate Engineering and Business students on factors affecting University and course choice.*" The authors stated that in higher education environment in Pakistan, students have become consumerists due to increasing tuition fees resulting from the competitive and aggressive nature of higher institutions struggling to recruit highly intellectual students. The study's primary focus

was to uncover the factors that students deem vital related to their choice of university and desired courses. Adopting the stratified random sampling technique, a total of 226 students comprising of undergraduate Engineering and Business students from five universities in three cities of central Punjab participated in the study. Data analysis using simple descriptive statistics the study revealed that higher education commission ranking, institutional reputation, employment, and career prospects were the most important variables with respect to students' desired university and course of study.The resultant effect of this approach meant that the students consider prominence, price and programme factors mostimportant among the Universities' key elements of marketing mix. The implications of the study were that promotional tools should be designed based on students' preferences and not according to the policies the Universities deem important for the students and the need also for the Institutions to reposition themselves in intense educational markets.

In Nigeria, **Eremie (2014)** examined the "*factors influencing career choices among Senior Secondary School Students in Rivers State.*" Hypotheses for the study were all stated in the null. The sampling technique for the study was the simple random sampling that selected four hundred Senior Secondary School Students of one thousand two hundred sample frame from five Secondary Schools in Rivers State. The "Comprehensive Career Choice Survey" (CCCS) was administered to the respondents to collect necessary data. Testing for the null hypotheses at 0.05 level of significance was the t-test statistics. The findings revealed that there were significant differences among male and female secondary school students in their career choices in terms of: prestige of a profession, gender parity, and parental influence. Part of the findings on prestige of a profession is in line with the work of Ogunladeand Akeredolu (2012). The study recommended that professional career counselors should be consulted to assist students in planning and choosing their careers and professional career counselors should include the students in the selection process, considering interest, ability, skills and personality of the students.

A study by **Brownsom (2014)** on "*parental influence on career choice of secondary school children in Ondo West Local Government of Ondo State*" investigated parents' influence on the career choice of their children in some selected schools in the study area. The population comprised all the Senior Secondary School II students within the study area.Random samplingwas used to administer the survey instrument to 256 SSS II students drawn from the population. The data analysis employed mean scores and t-test. Findings revealed that the influence of parents on their children's career choice was minimal as parents did not aid their children to study another course from that which they had chosen. They only advise their children on subjects to offer. Based on the findings, it was recommended that parents need to educate their children and always meet the basic needs of the children; school counsellors and teachers are also encouraged to give equal attention to all children regardless of gender on knowledge acquisition about career choice. The above findings contrast the study of Navin (2009) who found that parental attachment is positively correlated with career exploration and Jungen (2008) who found that parents greatly impact the career selection process of their children even though they seemingly are unaware of all the ways they do this.

A study carried out by **Olaosebikan and Olusakin (2014)** examined the "*effects of parental influence on adolescents' career choice on secondary schools students in Badagry Local Government Area of Lagos State.*" The study tested five hypotheses all stated in the null in order to achieve the aim of the work which was to provide clues to the extent of parental influence on career choice of adolescents affected them positively or negatively. The sample was made up of three hundred respondents who were randomly selected from ten purposefully selected secondary schools (3 Model Colleges, 4 Non-Model Colleges, and 3 Private Colleges). The survey instrument was a questionnaire which was administered to the respondents personally by the researchers. All hypotheses were tested at 0.05 level of significance with Chi-square by using analysis of contingency table on such variables as sex, class of school, and type of school as tothe effects of parental influence on adolescents' career choice on secondary schools students in the study area. Findingsfrom the study showed that about 50 per cent of the respondents agreed to parents influencing their career choice. Onthe average, 21.5 per cent of the respondents agreed that their parents' line of business had influenced their career choice, while 75 per cent disagreed. About 30per cent of the respondents agreed that they chose the family career because of the need to sustain the family business. Three of the five formulated hypotheses tested were accepted because there were no significant differences in the variables compared while the other two were rejected as there were significant differences in the variables compared. The results therefore indicated that adolescents in secondary schools in Badagry Local Government Area of Lagos State have some form of independence in making career choices. Even though the choices should be guided, it is however pertinent that students tow the career line in which they possess great passion and potentials. This work is in line with the works of Keller (2004)wherein it was stated that support, love,communication and honesty between young adolescents and

their parents are important for career development; Hairston (2000) and Otto (1989) also established the fact that of all the factors that influence career choice, parents are the most influential determinants of career plans.

Adeokun and Opoko (2015) explored the "*link between students' commitment to architectural education and their subsequent willingness to remain within the profession.*" The survey instrument was the use of questionnaires and focused on Architectural students' on a two-tier degree which were experience of architectural education with respect to coursework (industrial training and the intention to practice after graduation), experiences in professional offices andintention to practice after graduation. Of 350 undergraduate and post-graduate architecture students in the department who constituted the sample frame, 141 questionnaires were returned. Quantitative data were analyzed using descriptive statistics while qualitative data were content analyzed. Findings of the study indicated a correlation between reasons forchoosing architecture and decisions to practice architecture. It was found that there is a gradual drop in the desire topractice architecture at higher levels of study compared to the lower levels. The authors recommended that to improve retention rate in professional practice, admission process should include a request for a detailed personal statement from applicants, to establish strong congruence between course/major choice and career aspirations. Within the local context, there are no similarities as to how choice of programme was selected by the students and the factors that may have influenced the decision making of the students with regards to the built environment profession. The various studies conducted focused on secondary school students hence there is paucity of research in Nigeria on tertiary institutions. This paper intends to empirically contribute to filling this obvious knowledge gap.

Chaubey, D.S. Subramanian, K.R. Shivani Joshi. India (2011) "*factors influencing students' choice of institutionsfor higher learning.*" Understanding students' behavior in selection of institute has been of major interest for education planners and entrepreneurs of institutions. Marketing and operations decisions are significantly based on the students' preferences and likings. These decisions are also influenced by exogenous factors such as economic conditions and government policies, and market interaction among the major players like students, educational institute owners and government. The empirical study indicates that students make decision based on their own personal attributes such as age and education, and their professional aspiration as well as institute attributes such as fee structure, infrastructure and its past performance. Institutes design their courses and curriculum and set course Fee according to students' response and behavior. These components are viewed together since they are highly interdependent and together represent forces that influence how the students will react to the subject. Keeping these into consideration, an attempt was made to assess the student's satisfaction from the different factors influencing their choice.

Adebowale O.A, Adetunji A.A. (2013) "*Application of Ordinal Logistic Regression in the Study of Students' Performance.*" The problem of incessant decline in academic performance of Nigeria students in recent years cannot be overemphasized. Despite importance attached to academic performance, researchers have shown that students'performance is declining. Researches had also shown that there are a lot of factors responsible for this trend.

MATERIAL AND METHODS

The data used for this research work is a primary data obtained by the use of questionnaire method administered to the students across all the institution in Ekiti State i.eEkiti State University, The Federal Polytechnic and The College of Education.

Logistic Regression

Logistic regression analysis studies the association between a categorical dependent variable and a set ofindependent (explanatory) variables. The name *logistic regression* is used when the dependent variable has only two values, such as 0 and 1 or Yes and No. The name *multinomial logistic regression* is usually reserved for the case when the dependent variable has three or more unique values, such as Married, Single, Divorced, or Widowed. Although the type of data used for the dependent variable is different from that of multiple regressions, the practical use of the procedure is similar. Logistic regression competes with discriminant analysis as a method for analyzing categorical-response variables. Many statisticians feel that logistic regression is more versatile and better suited for modelling most situations than is discriminant analysis. This is because logistic regression does not assume that the independent variables are normally distributed, as discriminant analysis does. This program computes binary logistic regression

and multinomial logistic regression on both numeric and categorical independent variables. It reports on the regression equation as well as the goodness of fit, odds ratios, confidence limits, likelihood, and deviance. It performs a comprehensive residual analysis including diagnostic residual reports and plots. It can perform an independent variable subset selection search, looking for the best regression model with the fewest independent variables. It provides confidence intervals on predicted values, and provides ROC curves to help determine the best cutoff point for classification. It allows you to validate your results by automatically classifying rows that are not used during the analysis.

The Log Odds Ratio Transformation

The difference between two log odds can be used to compare two proportions, such as that of males versusfemales. Mathematically, this difference is written

$l_1 - l_2 = logit(p_1) - logit(p_2)$

$$= \ln\left(\frac{p_1}{1-p_1}\right) - \ln\left(\frac{p_2}{1-p_2}\right)$$

$$= \left(\frac{\left(\frac{p_1}{1-p_1}\right)}{\left(\frac{p_2}{1-p_2}\right)}\right)$$

$$= \ln\left(\frac{p_1(1-p_2)}{p_2(1-p_1)}\right)$$

$$= \ln(OR_{1,2})$$

This difference is often referred to as the *log odds ratio*. The odds ratio is often used to compare proportions across groups. Note that the logistic transformation is closely related to the odds ratio. The reverse relationship is

$OR_{1,2} = e^{(l1-l2)}$

The Logistic Regression and Logit Models

In logistic regression, a categorical dependent variable Y having G (usually $G = 2$) unique values is regressed on a set of p independent variables $X_1 X_2 Xp$, ,..., . For example, Y may be presence or absence of a disease, condition after surgery, or marital status. Since the names of these partitions are arbitrary, we often refer to them by consecutive numbers. That is, in the discussion below, Y will take on the values 1, 2, …G. In fact, **NCSS** allows Y to have both numeric and text values, but the notation is much simpler if integers are used.

Let

$X = (x_1 + x_2 …. x_p)$

$$B_P = \begin{pmatrix} B_{g1} \\ \vdots \\ B_{gp} \end{pmatrix}$$

The logistic regression model is given by the G equations

$$\ln\left(\frac{p_g}{p_1}\right) = \ln\left(\frac{p_g}{p_1}\right) + B_{g1}X_1 + B_{g2}X_2 + … + B_{gp}X_p$$

$$= \ln\left(\frac{p_g}{p_1}\right) + X B_g$$

Here, p_g is the probability that an individual with values $X_1 X_2 … X_p$ is in outcome g. That is,

$p_g = \Pr(Y = g \mid X)$

Usually $X1 \equiv 1$ (that is, an intercept is included), but this is not necessary.

The quantities $P1, P2$,..., PG represent the prior probabilities of outcome membership. If these prior probabilities are assumed equal, then the term $(\ln\left(\frac{p_g}{p_1}\right))$ becomes zero and drops out. If the priors are not assumed equal, they change the values of the intercepts in the logistic regression equation. Outcome one is called the *reference value*. The regression coefficients β11,β12 ,□,β1p for the reference value are set to zero. The choice of the reference value is arbitrary. Usually, it is the most frequent value or a control outcome to which the other outcomes are to be compared. This leaves G-1 logistic regression equations in the logistic model. The β's are population regression coefficients that are to be estimated from the data. Their estimates are represented by b's. The β's represents unknown parameters to be estimated, while the b's are their estimates. These equations are linear in the logits of p. However, in terms of the probabilities, they are nonlinear. The corresponding nonlinear equations are

$$pg = \Pr(Y = g \mid X) = \frac{e^{XB_g}}{1 + e^{XB_2} + e^{XB_3} + \cdots + e^{XB_G}}$$

since $e^{xB_1} = 1$ because all of its regression coefficients are zero.

A note on the names of the models. Often, all of these models are referred to as *logistic regression models*. However, when the independent variables are coded as ANOVA type models, they are sometimes called *logitmodels*.

Data Analysis and Results of using Ordinal Logistic Regression

Variables in the Equation

		B	S.E.	Wald	Df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1ª	ECONOMIC_FACTORS	-.498	.169	8.701	1	.003	.608	.437	.846
	MOTIVATION	.272	.304	.803	1	.370	1.313	.724	2.380
	PARENTAL_FACTORS	1.939	.247	61.576	1	.000	6.954	4.284	11.287
	Constant	-3.944	.711	30.764	1	.000	.019		

.

From the table above, the result reveals that for every one unit increase in economic factors, the odds of not changing institution increases by 0.608 times. For every one unit increase in motivation factors, the odds of not changing institution increases by 1.313times while for every one unit increase in parental factors, the odds of not changing institution increases by 6.954times.

The ordinal logistic regression is a good fit because it allows us to model the dependent variable (institution) which is categorical and have different input (independent) variables.

The dependent variable which is institution is aptly explained by the independent variables (Parental influence, motivation and economic factors).

Economics and parental factors from the analysis contribute significantly to the choice of institution by students, while a motivational factor does not contribute significantly to the choice of institution by students.

RECOMMENDATION

Students' choice of institution should not be based on perspective alone but there should rather be an awareness that will sensitize them on the subject matter that each of the institutions are unique in their own way and their area of specialization.

The parents and guardians should also try and discover their children talent in other to guide and advise them in their choice of institution. There should also be enough motivation for the students.

Government should also remove the dichotomous among the three institutions and also make education affordable and accessible by so doing, candidates will base their choice on capability and not just perspective.

Ordinal logistic regression is also a good model for this kind of analysis with the response (dependent) variable having more than two categories.

REFERENCES

1. **Adebowale, O.A. Adetunji A.A. (2013)** "*Application of Ordinal Logistic Regression in the Study of Students' Performance.*"
2. **Adeokun and Opoko (2015)** explored the link between students' *commitment to architectural education and their subsequent willingness to remain within the profession*. Mediterranean journal of social sciences, vol6 No6 SI (191-201)

3. **Alika, (2010)** *Parents and peer group influence as correlates of career choice in humanities among secondary school students in Nigeria.* International Journal of Psychology and Educational Studies, 2016, 3 (3), 23-30

4. **Brownsom (2014).** *Parental influence on career choice of secondary school children in Ondo West Local Government of Ondo State*, Nigeria. Journal of educational and social research vol.7 No1

5. **Clutter A.R(2010)** *Parents critical role in their children's career choices and aspirations.* Mediterranean journal of social science Vol6 No 6 SL (191-201)

6. **Eremie Clever (2014).** *Factors influencing career choices among Senior Secondary School Students in Rivers State*, Nigeria.

7. **Igbinedion V.I, (2011).** *Factors that influence students' vocational choice of secretarial studies in tertiary institutions in Edo State, Nigeria.*

8. **Sierra Sanchez, J (2012)** analyzed the *factors that influence secondary school students' choice of higher education options.* Vol8 No1: 43-60 http://dx.doi.org/10.3926/ic.277

9. **Sabir, Ahmad, Ashraf and Ahmad (2013)** did a comparative research of "*undergraduate Engineering and Business students on factors affecting University and course choice.*" J. Basic. Appl. Sci. Res., 3(10)298-305, 2013

10. **Olaosebikan and Olusakin (2014)** examined the "*effects of parental influence on adolescents' career choice on secondary schools students in Badagry Local Government Area of Lagos State.*" Journal and research and method in education (IOSR-JRME) 4(4) 44-57

11. **Chaubey,D.S. Subramanian, K.R. Shivani Joshi. India (2011)** "*factors influencing students' choice of institutionsfor higher learning.*" Indira managemnent review volume-5 issue -1, jan2011 ISSN-0974-3928