UNIVERSITY OF CAPE COAST

ANALYSIS OF FACTORS THAT INFLUENCE THE CHOICE OF SENIOR HIGH SCHOOL BY JUNIOR HIGH SCHOOL STUDENTS

BY

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A dissertation submitted to the Department of Mathematics and Statistics of the School of Physical Sciences, University of Cape Coast, in partial fulfillment of the requirements for the award of Master of Science degree in Statistics

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DECLARATION

Candidate's Declaration

I hereby declare that this dissertation is the result of my own original work and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's Signature: …………………………… Date: …………………..

Candidate's Name: FRANCIS YAO ANYAN

Supervisor's Declaration

I hereby declare that the preparation and presentation of this dissertation were supervised in accordance with the guidelines on supervision of dissertation laid down by the University of Cape Coast.

Supervisor's signature: …………………………… Date: ……………………

Supervisor's Name: BISMARK K. NKANSAH

ABSTRACT

The objective of this study has been to determine the major underlying factors that influence the choice of senior high schools. To this end, a survey of 510 BECE candidates in Junior High Schools in Nungua, a community in Accra, was conducted. The students were asked to indicate their opinions on twenty seven variables on a five-point Likert scale.

The data generated from the survey were multivariate in structure since 27 variables were recorded on 510 respondents. Factor analysis, which is a procedure for data reduction and summarization, is considered appropriate for analyzing this high dimensional data set. Initial exploration of the data, using correlation analysis and frequency distributions of the responses further informed the choice of this technique.

A four-factor solution was obtained at the end of the analysis. It was found more appropriate to extract rotated factors since, unlike the unrotated solution, all the four factors had more than one indicators. The rotated factor solution comprises the following: controlled social atmosphere, parental guidance/individual needs, quality of education given by the school, and the location of the school.

Therefore, in decreasing order of importance, controlled social atmosphere is the most influential factor that underlies the selection of senior high schools. A second most influential factor is parental guidance/individual needs. Quality of education and the location of the school are the other factors that cannot be ignored.

DEDICATION

To my family

ACKNOWLEDGEMENTS

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CHAPTER ONE

INTRODUCTION

Background of the Study

School selection can be a difficult process for many junior high school graduates and their parents. There are many factors that go into the right school selection. These reasons are reviewed extensively in the literature.

On average it takes about 16 years for a child to complete his or her education from basic to the University or Polytechnic in Ghana. Under the educational reforms implemented in 1987, they go through a three-year Junior High School System. This system prepares them to sit for the Basic Education Certificate Examination (BECE) at the end of the third year. Progression from the basic to the secondary is based primarily on the performance of the student in the Basic Education Certificate Examination .Ghana has over 12,130 Primary Schools, over 5,450 Junior High Schools, over 503 Senior High Schools, 18 technical institutions, 38 Training Colleges, 10 Polytechnics and over 12 Universities serving a population of over 20 million. This means that most Ghanaians have relatively easy access to good education.

Placement of students from Junior High School to Senior High School was done manually from 1990 to 2004. In 2005 the Government introduced a computerized system of placement. During the first placement exercise in 2005, 151,016 out of a total of 177,070 qualified candidates were placed in senior high and technical schools.4,000 candidates deferred their placements. In 2006,

308,379 BECE candidates registered with 160,119 qualifying for placement. A total of 145,961 candidates were placed and 3,031 deferred their placement. More than 188,881 candidates were placed in 2007 while 179,000 were placed in 2008.

Objectives of the Study

Senior high schools are selected based on various factors. The main objective of the study therefore is to find out the factors which influence the choice of Senior Secondary School by Junior High School students in Nungua, a suburb of Accra in the Greater Accra Region.

To achieve the main objective of the study, the following specific objectives will be pursued:

1. To find out the type of second cycle schools the students want to attend.

2. To find out the reasons why they want to attend the type of second cycle school they choose.

3. To find out the factors which influenced the selection of a particular Senior High School.

Research Questions

In order to achieve the stated objectives the following research questions were posed:

1. What type of second cycle school do students want to attend?

2. What are the reasons why students want to attend the type of second cycle school they have chosen?

3. Who selected the Senior High School for Junior High students?

4. What factors influenced the selection of a particular Senior High School?

Literature Review

This section reviews the literature on the selection of a school by students. Researchers have used different ways of grouping school choice reasons into a more manageable database by using various headings and categories. However, many similarities exist between the different groups of reasons. The following subsections detail findings reported separately for each broad group of reasons. The review covers parental reasons for school choice, academic reasons for school choice, racial reasons for the choice of school, geographical reason for school choice, non-educational reasons for school choice, family reasons for school choice and finally, the past school choice elicitation techniques.

Parental Reasons for School Choice

Parents choose a school for many reasons, and past studies have classified these into various groups. For example, Coldron and Boulton (1991) identified 30 parental school choice reasons and categorized these findings into four main groups: academic/educational (for example, better for education), security (for example, no bullying), organization (for example, school management) and source of information (for example, siblings at school).

The Organization for Economic Cooperation and Development (OECD, 1994) reviewed several school choice studies and categorized school choice

reasons into four groups: academic (for example, exam results) situational (for example, travel), ethos (for example, management) and selection (for example, all-girls school).

West et al. (1995) grouped parental reasons under five headings, according to the reasons parents thought about the first-choice school, second choice school, third choice school,particular schools and reasons parents liked their preferred schools. From these five groups, they found the top three reasons were: Good academic results, atmosphere and proximity to home.

Gorard (1999) analyzed four different studies of school choice and compiled five main groups: Academic (for example, the quality of teaching staff) situational/convenience (for example, proximity to home) organizational (for example, ethos) selective (for example, ability and religion) security (for example, discipline).

Taylor (2001) grouped the list of parental school choice reasons into four general domains: Ideological (for example, religious), Geographical distance (for example, proximity to home), Quality of education (for example, academic performance), and Non-educational characteristics (for example, school population).

Goldring and Hausman (1999) categorized 16 reasons into four groups: Academic (for example, strong academic reputation), Convenience (for example, near home), Discipline or Safety (for example, school neighborhood), and Value Community (for example, the school racial mix).

Academic Reasons for School Choice

Academic reasons contribute to the attainment of academic achievement, and forms one of the key factors and concern for all parents.

According to Bossetti (2004), most parents place a strong emphasis on academic reasons in order to select particular schools or types of schools because they perceive that their children will excel academically and have a better educational path there (Bauch and Goldring1995). Elacqua et al. (2005) found empirical evidence that parents across all school types (both public and private) rated academic reasons as the most important factor in their school choice (lower-than high school-educated parents 48.6%, high school-educated parents, 55% and college-educated parents 53.1 %.). Schneider and Buckley (2002) observed parents' search patterns of schools on an educational website and found that, on average, parents looked at schools that performed better academically(higher reading and mathematics scores) as their search progressed. In other words, parents eliminated schools with poor academic performance. Other studies confirm academic reasons as central in parental school choice(Armor and Peiser,1998; Denessen et al 2005; Goldring and Hausman, 1999; Moe, 1995; Weiher and Tedin, 2002). Another group of academic reasons include quality of education, and others focus on the attainment of academic achievement, which parents link to: Good quality teaching staff (Hammond and Dennison, 1995) ,Good choice of subjects (Woods, 1992), Good examination results (Solomon, 2003), Discipline (Goldring and Hausman, 1999), Good pupil behavior (Echols and Williams, 1995), Smaller

class size (Kleitz et al., 2000), Morals (Bussell, 1998) and attention paid to each child (Denessen et al 2005). Elacqua et al. (2005) report that almost every category of parents of different educational levels (high school and below high school and college) mentioned the importance of the quality of education in selecting a school. Out of the 17 elicited school choice reasons, Denessen et al. (2005) found that quality of education was the most important school choice reason. Examination results are an indicator of quality of education. A study on parental preference and school choice in the UK revealed that 64% of parents indicated a school's good examination results was one of the reasons for their school choice (Collins and Snell, 2000).

Racial Reasons for School Choice

Even as the strong push for school choice continues in many countries, researchers argue that choice increases the risk of stratification and segregation by race and class (Goldhaber,2000,Levin,1998). Parents of higher social demographics (that is, better education, higher income and higher socio-economic status) are more likely to exercise their choice options and send their children to a school of a similar social class. Gerwitz et al. (1995) found that parents in their UK study made choices based on class and racial composition of schools. Schools become increasingly oriented to meet these needs of the parents and result in careful selection of the right pupils. As reported by Bagley (1996), almost one-third of Caucasian parents were concerned about the presence of Asian children in a school in the UK as a major factor influencing g their choice of school.

Parents who chose a multi-ethnic school had the highest rating score for ethnic or racial reason (13%) which influenced their school choice. This racial division is evident in a study on enrolment patterns by Henig (1996) where Caucasian parents were more likely to choose schools with a higher proportion of white students, while parents of minority groups tended to choose schools with higher proportions of students from low-income minorities.

Similarly, Glazerman (1997) reports that parents who transferred their child to another school chose schools with the majority of students of the same racial ethnic background as their child. Caucasian parents avoided schools with a high minority proportion of non-Caucasian students (Saporito,2003).Weiher and Tedin (2002) found that parents who transferred their child from traditional government schools chose to send their child to a school which had a higher percentage (11-14%) of students from similar racial groups. In comparing the differences in the student demographic composition of the transferred schools, they found that on average, black students were transferred to a school which had 15% black students than their previously enrolled school.

Geographical Reason for School Choice

Geographical location refers to the school's proximity to home, geographical nearness, convenience and location. (Bussell,1998).Bridge and Blackman's study (1978) had 71% of parents mention location as a factor influencing their school choice. Similarly, Williams et al. (1983), who conducted a nationwide survey in Washington DC on parental school choice, found that

15% of parents cited transportation or convenience as one of the most important factors in their selection of a school. In a study of school choice in the UK, Hunter (1991) found proximity to home to be one of the top four reasons (good discipline 15%, good exam results 15%, single sex 13% and proximity to home 12%).West et al. (1995) report that when thinking about their first-named secondary schools, more parents cited proximity to home as a reason for selection over good academic results 19%, compared to 14%. Their results on second-named secondary schools produced similar findings 13%, compared to 10%per cent. This suggests that although most parents want the best academic school for their child, they still consider the distance factor important and are influenced by the travel time required to reach a school.

Morgan et al. (1993) found parents included convenience as one of the five main school choice determinants (alongside ideological, educational, dissatisfaction and mixed marriages). Parents indicated that they sent their child to a particular school because it was the nearest school and it was easy to reach on their way to work (Morgan et al. (993). Among four main categories of school choice reasons (academic, convenience, discipline or safety and value community), Goldring and Hausman (1999) found that convenience had the lowest mean score. Academic reasons had the highest mean score, which meant that fewer parents regarded convenience to be as important as academic reasons when choosing a school. Their research reports that only 17% of parents expressed concern about transportation when selecting a school. Although a large majority of respondents did not place high importance on convenience, a

certain percentage of parents saw this as an influencing factor, or even as a perceived difficulty. A lack of transport and other transportation issues clearly affects parents' school choice decisions (Clewell and Joy, 1990).

Non-Educational Reason for School Choice

The last category of school choice reasons is non-educational characteristics. The preference of a child for a particular school can influence the parents school choice selection (Echols and Williams, 1995, Petch, 1986). Coldron and Boulton (1991) found that 90% of children expressed a preference for a particular school, and approximately the same number of parents chose the child's preferred school. In a study on parental choice of primary school, Bussell (1998) found the happiness of a child to be the most important factor among parents, which included items such as If a child enjoys school, she or he is more likely to do well and would choose the school where they think the child would be happiest. The presence of a child's friends can also contribute to a child's happiness at school. Coldron and Boulton (1991) found that among the children who expressed a school preference, 57% also expressed that they wanted to go to a particular school because friends were going there too.

Collins and Snell (2000) found that 62% of parents indicated the presence of child's friends going to the same school as the fourth-most important school choice reason (where better general reputation, better examination results, and easier to get to were the top-three reasons). Safety (for example, schools penetrated by weapons and drugs) was another issue of concern among

parents. Kleitz et al. (2000) found that parents reported safety reasons as the third-most important factor among the five reasons: education quality, class size, safety, location and friends. Similarly, Goldring and Hausman (1999) found that discipline or safety was the second-highest concern among four school choice reasons (among: academic, convenience, discipline or safety and value community) cited by parents.

Family Reasons for School Choice

Past studies report that school choice decision was mainly a joint effort (Davis and Rigaux, 1974, Lalwani et al, 1999, Qualls, 1982, Stafford, 1996). Decision making can be classified into three types: father dominant, mother dominant and joint. Husband or wife dominant decision making occur where either party strongly influences or makes the decision. Joint decisions imply similar levels of influence from both parties in making the decision (Jenkins, ,1978); Fodness, 1992). The risk factor can be linked and perceived to be higher in services than physical goods (Zeithaml, 1981). School choice is a risky decision concerning a child's future, and involves more joint decision making to minimize the risk. The literature on family decision making about the child's school indicates that joint decision making is prevalent in most families from the 1970s to the current time. However, despite school choice decision being mostly a joint effort, the mothers have a greater level of influence in the joint decision.

In a study of decision processes about 25 economic decisions of

households, Davis and Rigaux (1974) found a high level of joint decision making in all stages of the decision making process of a child's school (problem recognition, 72%; information search, 70%; and final decision, 83%). In terms of sex role domination, wives dominated in all stages: problem recognition (wives 20%, husbands 8%), information search (wives 23%, husbands 7%) and final decision (wives 10%, husbands 7%). Qualls (1982) studied changing sex roles and its impact on family decision making. Surveys from only husbands revealed overall 82% joint influence regarding the child's education. Wives reported a similar score of 85% joint decision making. A similar analysis was conducted based on the sex role dominance, which found that out of the six products (vacations, automobiles, children's education, housing, insurance and savings), only children's education was perceived (72%) by traditional husbands as a subject for joint decision making. A credible point to take note is that this analysis was conducted separately on both sexes, which reduced gender bias. Patterns of influence across children's education were mostly joint decisions, and this view was acknowledged by both sexes. Stafford et al. (1996) examined the marital influence for four types of services (restaurant, vacation, insurance and school), and found school selection decision was mostly joint. Wives had a stronger influence over husbands in all stages of the decision making process. A possible explanation is that husbands have little knowledge in this area, or that selecting a school is perceived to be the duty of wives. This suggests that after more than twenty years, findings of school choice were very consistent in two areas: school choice continues to be a

joint decision making process by both parents and wives have a stronger influence and dominance over husbands in terms of school choice.

Bosetti (2004) found that mothers were the key decision makers when it came to school choice. David et al. (1996, 1997) looked at the mother's role in school choice and found that across social class boundaries, mothers primarily did the groundwork necessary for informed decision making, such as talking to other children to find out more about how they perceived the school. Most mothers also felt that it was their responsibility to collect information and make visits to the schools, and found that fathers had little knowledge about the child's preschool experience. In a study on school choice within the family, Reay and Ball (1998) found that mothers were seen as the experts, responsible for collecting information on school choice options. One wife reported,"My husband doesn't really take part in the children's education. Not much at all, basically, it's my responsibility and his is to go out to work as far as he sees it". These findings suggest that there is limited husband dominance when making the final school choice decision and those wives have a higher level of influence in the family regarding school choice.

Data Collection

The study was conducted in Nungua a sub metro in the Ledzokuku Krowor Municipal Assembly, one of the newly created districts established on 1st November, 2007 and inaugurated on 29th February 2008, under the Legislative Instrument (LI 1815).

In order to achieve the stated objectives of the research, data was obtained from five hundred and ten (510) form three students of Junior High Schools located in Nungua using a questionnaire. Twenty-seven variables on considerations for school selection were identified and, for easy reference, the variables are defined below.

X_1 - Close to where I live

X_2 - School has boarding facilities

X_3 - School has produced my role model

X_4 - Financial constraints

X_5 - Subjects the school offers

X_6 - School has produced great men

X_7 - High disciplinary training

X_8 - My friends are in the school

X_9 - Recommended by teachers

X_{10} - School is good in extra curricula activities

X_{11} - Good academic records

X_{12} - Does not impose too much restriction on students

X_{13} - Advised by my parents

X_{14} - School that can help me achieve my future goals

X_{15} - Restrictions of computerized selection procedure

X_{16} - Health problems

X_{17} -School has day facilities

X_{18} - Able to meet my special needs

X_{19} - School is in a town where a relative lives

X_{20} - Prepare me for my future profession

X_{21} - A relation is an old student of the school

X_{22} - Can easily adapt to the environment of the school

X_{23} -Just want to attend school outside my region of residence

X_{24} -Develop other potentials apart from academics

X_{25} - Most of my friends have chosen that school

X_{26} - Located close to urban centre

X_{27} -Close to Accra

The levels of agreement or disagreement on the variables described above were measured using the following scale:

Very unimportant --- 1

Not important   --- 2

Not sure   --- 3

Important   --- 4

Very important   --- 5

Outline of the Study

This section considers the outline of the content of the five chapters of the dissertation and presents a brief description of these contents.

Chapter One focuses on the background of the study, the objectives of the study, research questions, literature review, data collection, and the outline of the study. Chapter Two consists of the review of the statistical method used for further analysis. The main statistical method reviewed is Factor analysis. Chapter Three focuses on Preliminary Analysis, whiles Chapter Four concentrates on Further Analysis. Chapter Five, which is the last chapter summarizes and discusses the results of both preliminary and further analyses.

CHAPTER TWO

REVIEW OF METHODS

Introduction

In this chapter, we review the main methods that are used in Chapter Four. In that chapter we considered factor analysis of the data. This chapter therefore considered the various methods in factor analysis.

Origin of Factor Analysis

Factor analysis was invented nearly 100 years ago by psychologist Charles Spearman, who hypothesized that the enormous variety of tests of mental ability, measures of mathematical skill, vocabulary, other verbal skills, artistic skills, logical reasoning ability, etc. could all be explained by one underlying "factor" of general intelligence that he called **g**. He hypothesized that if **g** could be measured and you could select a subpopulation of people with the same score on **g,** in that subpopulation you would find no correlations among any tests of mental ability. In other words, he hypothesized that **g** was the only factor common to all those measures (Morrison, 1990).

If any statistical method can have an embarrassing history, factor analysis is that method. Around 1950 the reputation of factor analysis suffered from over promotion by a few overenthusiastic partisans. In retrospect there were three things wrong with the way some people were thinking about factor analysis at that

time. First, some people seemed to see factor analysis as a statistical tool rather than a statistical method. Second, they were thinking in absolute terms about problems for which a heuristic approach would have been more appropriate. Third, they were thinking of overly broad sets of variables (we want to understand all of human personality" rather than "we want to understand the nature of curiosity). Thus in three different ways, they were attempting to stretch factor analysis farther than it was capable of going. In recent decades factor analysis seems to have found its rightful place as a family of methods which is useful for certain limited purposes.

Definition of Factor Analysis

Factor analysis is a multivariate statistical approach that can be used to analyze interrelationships among a large number of variables and to explain these interrelationships in terms of their common latent underlying dimensions. The interrelationships may be given by the correlations among the variables. Thus, in effect, the technique is used to explain the correlation among observed variables by means of fewer unobserved or latent variables referred to as *factors*. The observed variables are modeled as linear combinations of the factors, plus error terms. With this approach we can condense the information contained in the original variables into a smaller set of dimensions. The information gained about the interdependencies can be used later to reduce the set of variables in a dataset.

Factor analysis originated in psychometrics, and is used in behavioral

sciences, social sciences, marketing, product management, operations research, and other applied sciences that deal with large quantities of data.

Factor analysis as a multivariate statistical technique is usually used to make analysis simpler. Sets of original, unique data are replaced by a smaller number of sets. This method can be illustrated by considering a number of characteristics which often go together. For example, if we think of a typical left-wing woman we would expect her to be in favour of abortion, and gender and racial equality, and against capital punishment and stringent immigration policy. Where these views do coincide, they are said to be a factor. Factor analysis can be used to see how closely these aspects are related to the individual, or it can be used to see how far all these variables can be reduced to a smaller set; if we can be sure that all pro-abortionists are anti-capital punishment then we can save a great deal of time in an analysis.

The Purpose of Factor Analysis

The purposes of factor analysis are:

1. To identify the common factor that is responsible for the correlation among the variables.

2. To summarize a large number of variables with a small number of factored variables.

3. To test hypotheses about the structure of variables.

4. To estimate the pattern and structure loadings, communalities and the unique factors.

Steps for Conducting Factor Analysis

1. Data collection and generating a correlation matrix. Here we want to examine the correlation matrix to identify groupings among the set of original variables under study.

2. Extract an initial factor solution. Determine how many factors are needed to represent the data. Then we ascertain the fit of the model.

3. Rotation and interpretation are transformation techniques for easier interpretation.

4. Construct scales or factor scores for use in further analysis.

Factors Analysis Model

If we let p variables be $X_1, \ldots, X_p$ with the mean vector μ (which is assumed to be equal to zero) and variance ε, then the observed variables can be written as linear combination of m $(m < p)$ factors as

$$X_j = \lambda_{j1} f_1 + \lambda_{j2} f_2 + \cdots + \lambda_{jm} f_m + \varepsilon_j$$

Which may alternatively be written as

$$X_j = \sum_{i=1}^{m} \lambda_{ji} f_i + \varepsilon_j \qquad (1)$$

where λ_{ji} is the factor loading of variable j on factor i

f_i - is the score of the common factor of the ith observation

ε_j - is the specific or unique factor

In matrix notation the model in Equation (1) may be written as:

$$\mathbf{X} = \Lambda\mathbf{f} + \varepsilon \tag{2}$$

where $\mathbf{f} = (f_1, f_2, \cdots, f_m)'$, $\varepsilon = (\varepsilon_1, \varepsilon_2, \cdots, \varepsilon_p)'$ and

$$\Lambda' = \begin{pmatrix} \lambda_{11} & \lambda_{12} & \cdots & \lambda_{1m} \\ \lambda_{21} & \lambda_{22} & \cdots & \lambda_{2m} \\ \vdots & \vdots & \cdots & \vdots \\ \lambda_{p1} & \lambda_{p2} & \cdots & \lambda_{pm} \end{pmatrix}$$

The $m \times p$ matrix, Λ, is referred to as the reproduced correlation matrix using the m extracted factors.

Assumptions of Factor Analysis

A number of assumptions govern the operation of factor analysis. These assumptions are outlined as follows:

1. The observed variables are linear combination of some underlining hypothetical or unobservable factors.

2. That some of the factors are assumed to be common to two or more variables and some are assumed to be unique to each variable.

3. That the factors or unobserved variables are assumed to be independent of one another.

4. That all variables in the factor analysis must consist of at least an ordinal scale.

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Methods of Factor Extraction

There are different methods of extracting factors from a set of data. Some of these methods are:

Principal Component Analysis: This is the most common method used by researchers. Principal component analysis starts extracting the maximum variance and puts them into the first factor. After that, it removes that variance explained by the first factors and then starts extracting maximum variance for the second factor. This process goes to the last factor.

Common Factor Analysis: Common factor analysis is the second most preferred method by researchers. It extracts the common variance and puts them into factors. Common factor analysis does not include the unique variance of all variables.

Image Factoring: This method is based on correlation matrix. Ordinary Least Squares Regression method is used to predict the factor in image factoring.

Maximum Likelihood Method: This method also works on correlation matrix but it uses maximum likelihood method to determine the factors.

Suitability of Data for Factor Analysis

This section describes two rules for determining the suitability of data for factor analysis. The first rule is the Kaiser-Meyer-Olkin Measure of Sample Adequacy (KMO Measure) and the second rule is Bartlett's Test of Spericity.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO)

This rule generally indicates whether or not the variables can be group into smaller underlining factors. When values are high usually closer to 1, it indicates that the data can be analyzed using factor Analysis. On the other hand if the value is less than or equal to 0.5 then factor analysis may not be the most appropriate technique to use in analyzing the given data.

Bartlett's Test of Spericity

This test is use to determine whether or not data is suitable for factor analysis. The Bartlett's test examine the extent to which the correlation matrix departs from orthogonality. If orthogonal correlation matrix has a determinants of 1 it indicates that the variables are not correlated. For perfect correlation between two or more variables then the determinant should be close to 0. The test statistics for Bartlett's Test of Spericity is given by

$$-2\left[1-\frac{1}{6pn}\left(2p^2+p+2\right)\right]\ln\Lambda \qquad (3)$$

where

$$\Lambda=\left(\frac{\prod_{i=1}^{p}\lambda_i}{\left(\frac{1}{p}\sum_{i=1}^{p}\lambda_i\right)^p}\right)^{\frac{n}{2}},$$

and p and m are as already defined. The Bartlett's statistic follows the chi-square distribution with degrees of freedom given by $\frac{1}{2}(p-1)(p+2)$. It can be deduced from the statistic given by (3) that the Bartlett's statistic is large if the size of data

is large. This means that for large data set the Bartlett's test always leads to the acceptance of the suitability of factor analysis for the data. However, the suitability of the method may not be practically true. As a result of this weakness of the Bartlett's test, it is usually not used in isolation; we need the results of the Bartlett's test as well as the KMO measure.

Factor Rotation

Factor rotation is the process by which a simple structure can be obtained from factor analysis that can be interpreted easily. Factor rotation aid in the eliminating cases of bi-polar factors. It also aids in the removal of negative loadings. The presence of bi-polar factors and negative loadings present difficulties in the interpretation of the factors.

Basically, there are two methods of rotation:

1. *Varimax rotation*: It is an orthogonal rotation of the factor axes to maximize the variance of the squared loadings of a factor (column) on all the variables (rows) in a factor matrix, which has the effect of differentiating the original variables by extracted factor. Each factor will tend to have either large or small loadings of any particular variable. A varimax solution yields results which make it as easy as possible to identify each variable with a single factor.

2. *Quartimax rotation*: It is an orthogonal alternative which minimizes the number of factors needed to explain each variable. This type of rotation

often generates a general factor on which most variables are loaded to a

high or medium degree.

Gorsuch(1983) has indicated that a factor structure such as the one yielded by the

Quartimax rotation method is usually not helpful to the research purpose.

CHAPTER THREE

PRELIMINARY ANALYSIS

In this chapter, we first explore the data to identify the basic patterns exhibited by the variables under study. The tools used in this exploration include histograms, percentages, frequencies, scree plot and other routine techniques.

Analysis of Responses on the Indicator Variables

The following histograms (Figures 1 to 27) display the results of the analysis of data of the responses on the indicator variables. There are twenty seven indicator variables which were measured using the following scale.

Very unimportant--1, Not important--2, Not sure --3, Important--4, Very important--5.
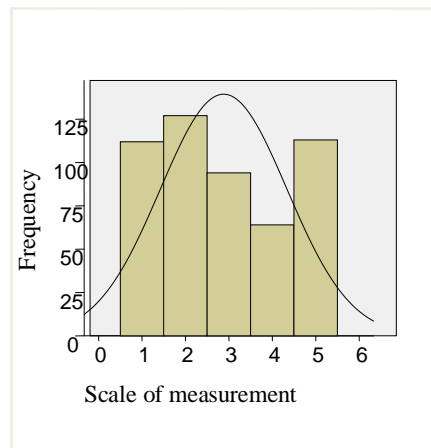
Figure 1: Distribution on X_1 - Close to where I live

Figure 1 shows the distribution of responses on the variable X_1 - Close to where I live. From the figure it can be observed that majority of the respondents disagree to (or are do not have any opinion about) the importance of where one lives in choosing a secondary school. A few people constituting about (35%) do find this variable as an important consideration for their choice of school. Thus, a consideration for the closeness to where one lives does not appear to be popular among respondents.

Figure 2 is the distribution of responses on the boarding facilities of one's school of choice.
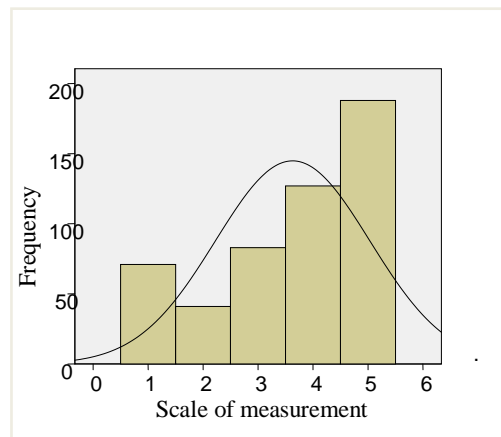
Figure 2: Distribution on X_2 - School has boarding facilities

From the figure it can be observed that majority (62%) of the students consider the variable X_2 - School has boarding facilities as very important. Sixteen percent of the respondents were not sure of considering the school's boarding facilities as a factor in the selection of school. Cumulatively, only 22%

do not find the school's boarding facilities as important. Thus, a lot of consideration is given to boarding facilities in choosing a school by respondents.

Figure 3 is the distribution on the variable, X_3 - School has produce my role model.
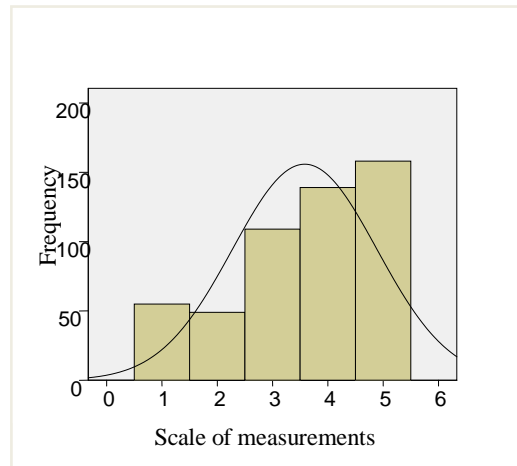
Figure 3: Distribution on X_3 - School has produced my role model

We observe from Figure 3 that about 32% considered the indicator variable X_3 as not important in the selection of the type of school to attend after JHS. 57% considered the indicator variable as important. Thus, the indicator X_3 appears to be quite popular among the respondents.

Figure 4 is the distribution of responses on financial constraints as consideration for the choice of school. The figure indicates that majority (about 73%) considers financial constraints as important in the selection of school.
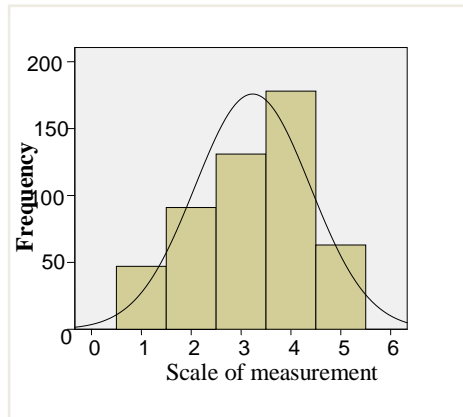
Figure 4: Distribution on X_4 - Financial constraints

Only a few (9%) of the respondents consider the variable as not important. This shows that one's financial position appear to be an issue many will not overlook in choosing a schools.

Figure 5 shows the distribution on the variable, X_5 - Subjects the school offer's.
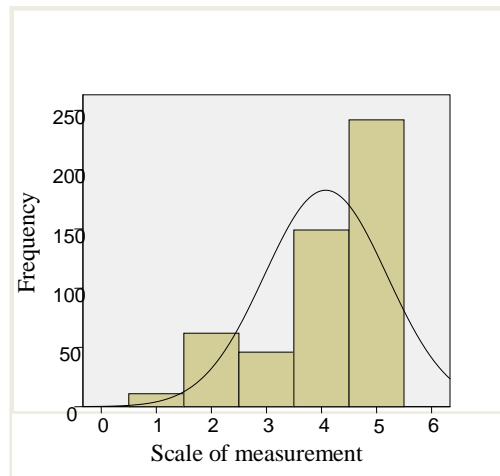
Figure 5: Distribution on X_5 - Subjects the school offers

From Figure 5 majority (77%) of the respondents consider the variable, X_5 as important. Few (9%) were not sure of considering the subjects the school offers,

and still a few (about 14%) would consider subjects the school offer as unimportant. Thus, the consideration of X_5 appears to be very crucial for respondents.

Figure 6 illustrates the distribution on the indicator variable, X_6 -School has produced great men. The diagram shows that opinions on this issue are varied.
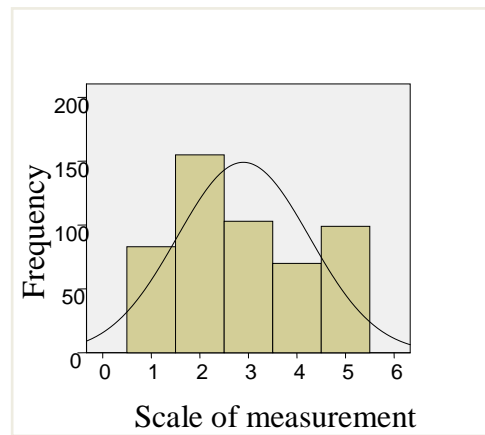
Figure 6: Distribution on X_6 - School has produced great men

From the figure, a fewer number of respondents consider this issue as important than those who do not recognize it as important. Those who considered the variable as important are in the minority. This means that the issue of being able to produce great men by the school is not popular among respondents.

Figure 7 is the distribution on the indicator variable, X_7 - High disciplinary training.
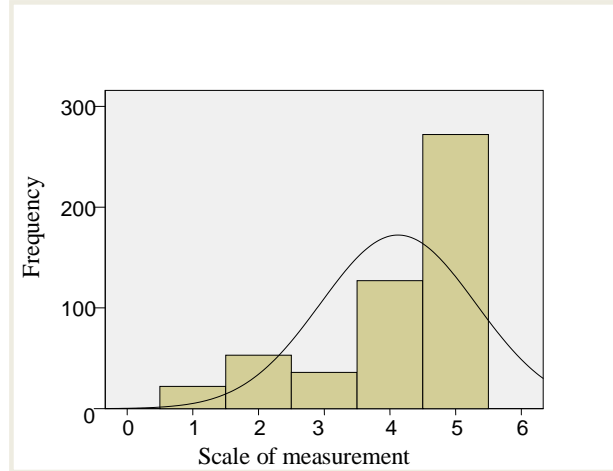
Figure 7: Distribution on X_7 - High disciplinary training

From the figure above, it can be seen that majority of respondents consider high discipline as an important factor in the selection of school. This is evident in the figure as the measurement very important and importance are the most responded to by the respondents. Thus the consideration X_7 - High disciplinary training is very popular among the respondents.

Figure 8 illustrate the distribution on X_8 -My friends are in the school.
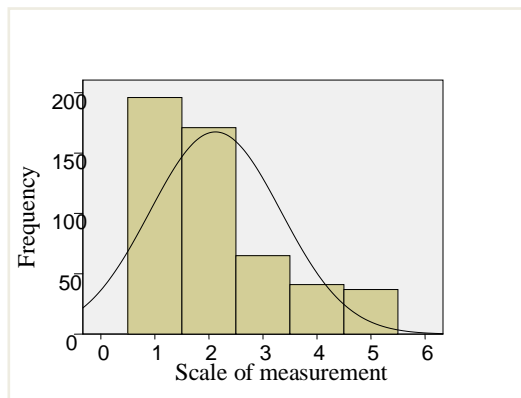
Figure 8: Distribution on X_8 -My friends are in the school

In Figure 8, it can be seen that majority (72%) of the students consider the indicator variable, X_8-My friends are in the school as unimportant factor in school selection.15% of respondents consider the variable as important. It can be concluded from figure 8 that the consideration does not appear to be popular among respondents.

Figure 9 shows the distribution on X_9 - Recommended by teachers
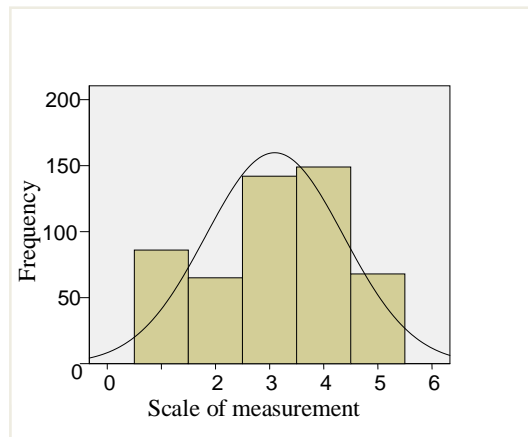
Figure 9: Distribution on X_9 - Recommended by teachers

From the figure above, it can be observed that less than half of the respondents consider the indicator variable X_9 - Recommended by teachers as important factor in school selection. On this issue, we see that close to 30% of respondents are unable to determine its significance. Generally, the distribution shows wide variability in opinions on the significance of teachers influence in school selection.

Figure 10 illustrates the distribution on X_{10} - School is good in extra curricula activities.
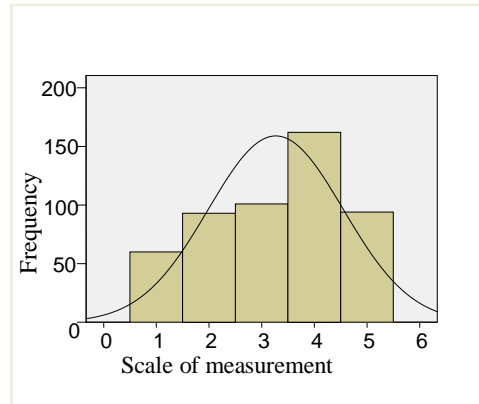
Figure 10: Distribution on X_{10} - School is good in extra curricula activities

From the figure the most observed reactions to this variable are those who agree to its importance. However, it can also be seen that almost the same number who consider X_{10} to be crucial also do not find it important or are unable to express their opinion. Thus, on the whole there exist wide differences in opinion on the relevance of being good in extra curricula activities in a school of one's choice.

Figure 11 shows the distribution on X_{11} - Good academic records.
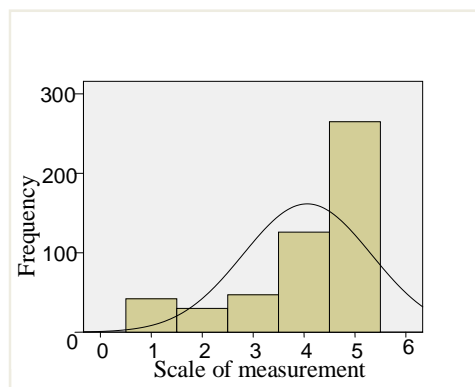
Figure 11: Distribution on X_{11} - Good academic records

The figure above indicates that majority of the respondents considers the indicator variable X_{11} - Good academic records important in the selection of the school they would attend after JHS. Only a small number of the respondents consider the variable as unimportant. Thus, the consideration of good academic records of the school appears to be very popular among respondents.

Figure 12 is the distribution on X_{12} - Does not impose too much restriction on students.
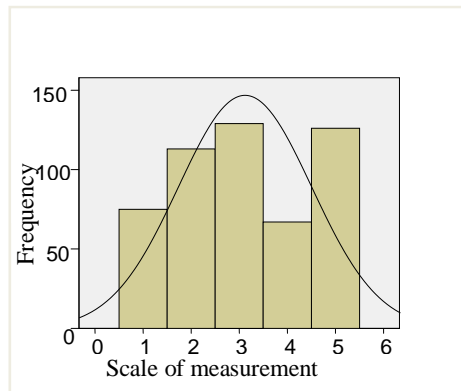
Figure 12: Distribution on X_{12} - Does not impose too much restriction on students

Figure 12 presents wide variability in opinion on the significance of imposition of restriction on students. On this issue, about a quarter (129 out of 510) of the students are undecided on its importance. It appears that on the whole, less number of respondents agrees to the issue of being strict on students than those who do not. Thus, imposition of restrictions on students appears not to be popular with respondents.

Figure 13 indicates the distribution on X_{13} - Advised by my parents
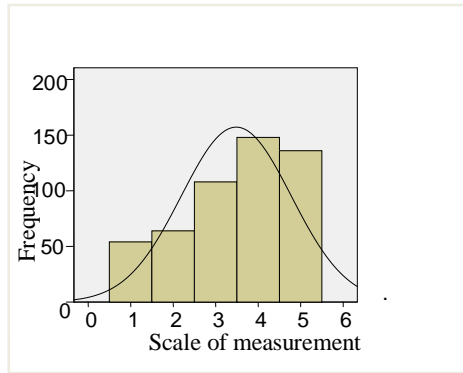
Figure13: Distribution on X_{13} - Advised by my parents

From the figure it can be seen that a little over half the number of respondents support the involvement of parents in school selection. Not a few (about 21%) of them a have not sure of the relevance of parents involvement in the selection. Thus, just a slim majority are in favour of parental guidance in school selection.

Figure 14 is the distribution on X_{14} - The only school that can help me achieve my future grades.
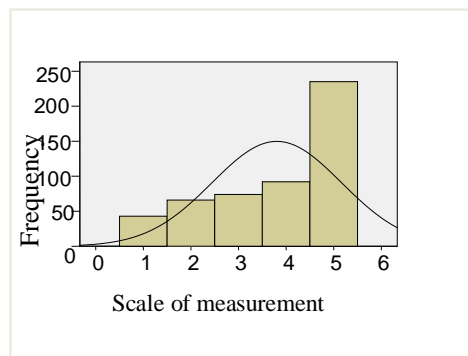
Figure 14: Distribution on X_{14} - School that can help me achieve my future goals

We see from Figure 14 that the distribution of responses on the contribution of the school to achieving one's future grade is negatively skewed. This means that a large number of respondents find it necessary to attend a school that would guarantee the future for them. We note from the graph that a number of respondents do not find this criterion necessary; a few are undecided about this variable. Thus, it is a popular consideration among BECE candidates surveyed that the senior secondary school to attend must be that which prepares the candidate to achieve set grades.

Figure 15, represents the responses on the indicator variable X_{15} - Restrictions of computerized selection procedure.
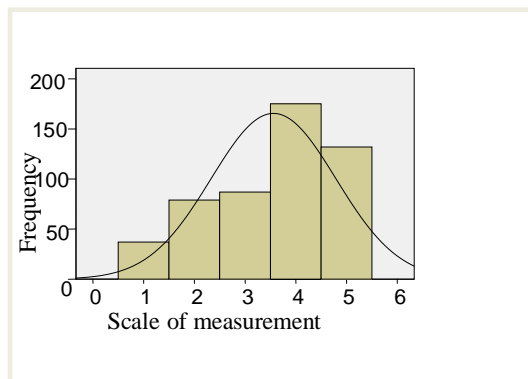
Figure 15:Distribution on X_{15} - Restrictions of computerized selection procedure

From Figure 15, it can be seen that majority of the respondents considered the variable as important in the school selection. That is, a large number of the respondents support computerized placement into schools. Thus, computerization of school selection is popular among the respondents.

Figure 16 is the distribution on the indicator X_{16} - Health problems.
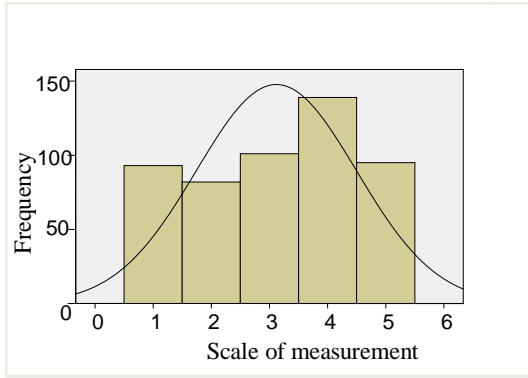
Figure 16: Distribution on X_{16} - Health problems

The figure shows wide variability in opinion on the relevance of considering health issues in the choice of a school. That is, consideration for health issues is debatable among the respondents. We also observe that on this issue, about a fifth of the respondents are undecided on its importance.

Figure 17 illustrates the distribution of responses on X_{17} - School has day facilities.
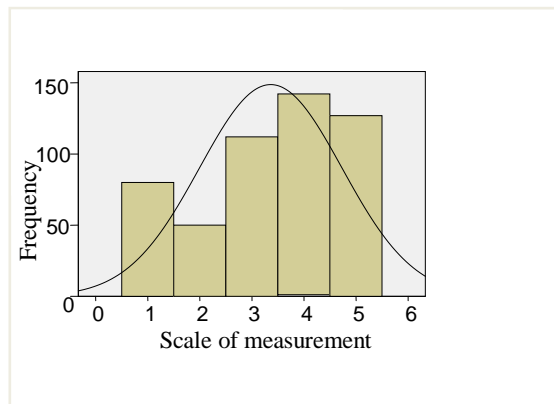
Figure 17: Distribution on X_{17} -School has day facilities

From the diagram, we observe that a slight majority (53.7%) of respondents agree that consideration should be made for day facilities in their selected school.

Of those who have contrary view, about half of them are undecided about whether or not day facilities are necessary.

''Special needs'' is also an indicator variable on which responses were measured. Figure 18 shows the distribution of responses on this variable.
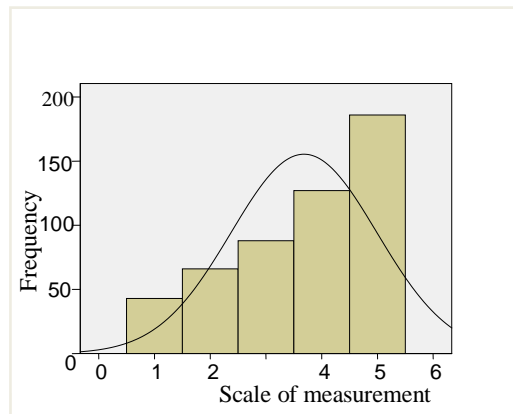
Figure 18: Distribution on X_{18} - Able to meet special needs

It can be seen from the figure that the distribution of responses on the variable is negatively skewed. This means that a large number of respondents find it necessary to consider the capability of the chosen school to provide for their special needs. Thus, consideration for one's special needs is popular among the respondents.

The next variable considered is X_{19} - School is in a town where a relative lives. Figure 19 shows the distribution of responses on this variable. We observe from the figure that wide variability exists on this consideration. A little less than half the number of respondents see closeness to a relative as necessary. Almost a fifth of the respondents strongly disagree to the relevance of selecting a school in a place where a relation lives.
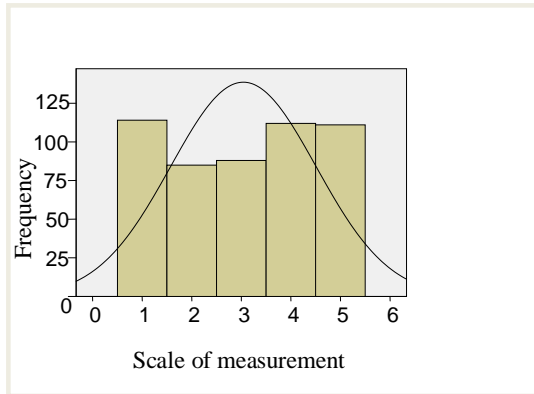
Figure 19: Distribution on X_{19} - School is in a town where a relative live

On the whole, the importance of selecting a school in a town where a relation lives is a debatable issue.

Another variable considered is X_{20} - Prepare me for my future profession. The distribution on this variable is given in Figure 20. It can be seen that response on this issue is highly negatively skewed.
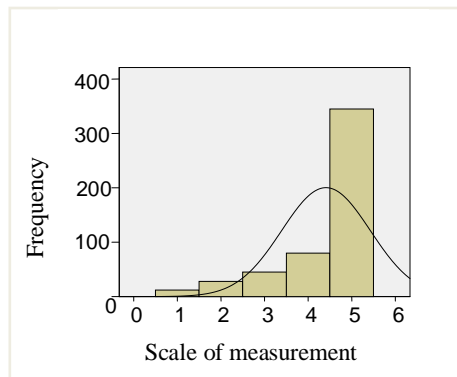
Figure 20: Distribution on X_{20} - Prepare me for my future profession

The negative skewness suggests that that an overwhelming majority of the respondents are of the view that they consider the variable as very important in

their school selection. What this means is that majority of the students would want to go to a school that would prepare them for their future profession. It is interesting to observe that a few candidates do not find this variable as important, though this group constitutes an insignificant minority.

The next variable of study is X_{21} - A relation is an old student of the school.
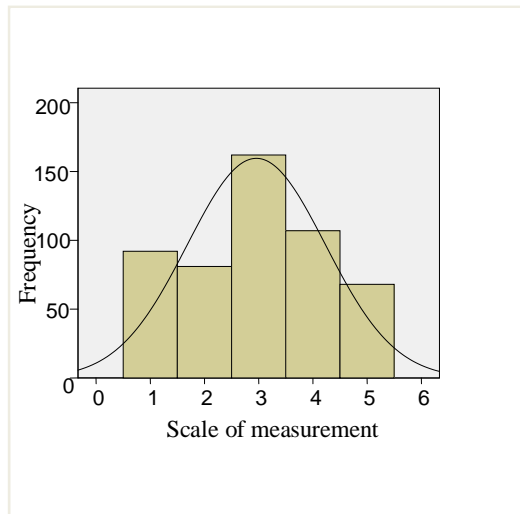
Figure 21: X_{21} - A relation is an old student of the school

The distribution shows that close to a third of the respondents are not decided on the import of giving consideration to a relation being an old student. The remaining respondents appear to be split on the importance of this variable. Almost the same number that disagree to the relevance of the variable also agree. Thus, there exists some amount of variability in opinion on the importance of considering a relation who is an old student of one's school of choice.

The other variable of study is X_{22} - Can easily adapt to the school environment.The distribution on this variable is given in Figure 22. It is clear

from the diagram that a large number of respondents were undecided on this variable.
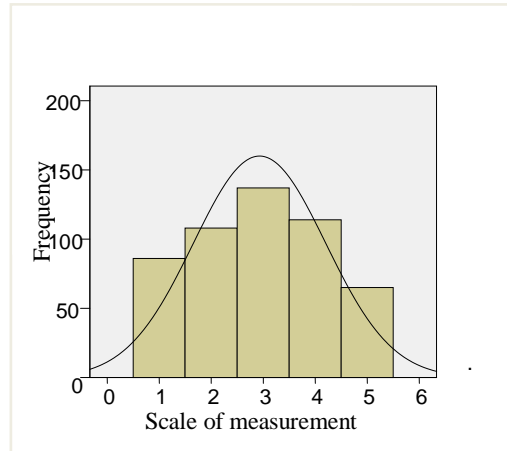
Figure 22: Distribution on X_{22} - Can easily adapt to the school environment

This number constitutes a little more than a quarter of the respondents. Generally, opinions are varied on the relevance of adaptability to environment in school selection.

In Figure 23, we see the distribution on the variable X_{23} - Just want to attend school outside my region of residence. About half of the respondents think that it is desirable to attend a school away from one's region of residence. About 19% are not decided on this issue whilst the remaining 31% think that this not an issue to consider. Thus, in general, the importance of X_{23} is acknowledged by some slight majority of the respondents.
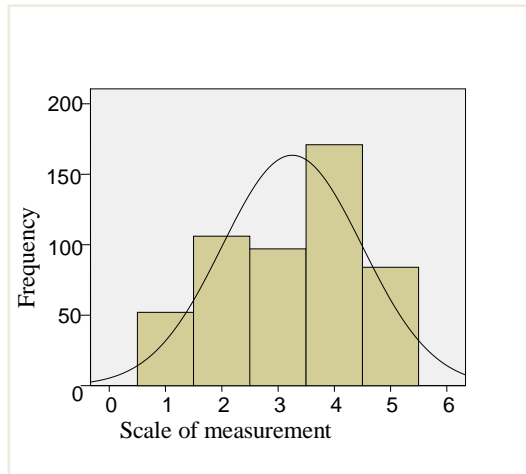
Figure 23: Distribution on X_{23} - Just want to attend school outside my region of residence

The distribution on the variable X_{24}-Can develop other potentials apart from academics is given in Figure 24. We see that majority of the respondents endorse the importance of this variable. This number is close to two-thirds.
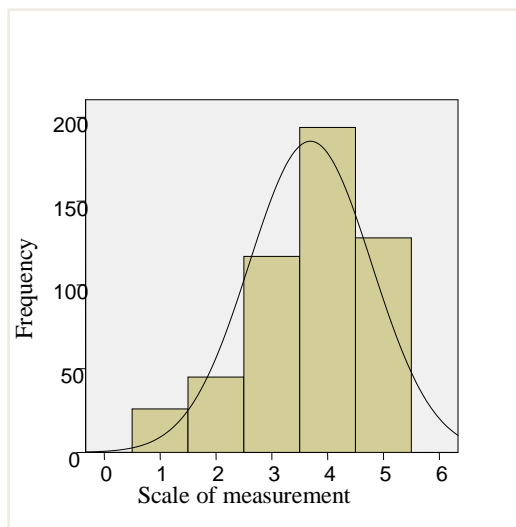
Figure 24: X_{24}-Develop other potentials apart from academics

Thus the idea of developing non-academic potentials is a laudable one for most of the candidates. Again, we observe that a large proportion (23.5%) of the

candidates have their minds not made up on the relevance of this consideration. Some 10% of the candidates do not see the need for developing other potentials apart from what would prepare them to achieve their academic grades.

In Figure 25, we see the distribution on the variable X_{25} - Most of my friends have chosen that school. We see that much more people disagree to the relevance of this variable than those who agree. The distribution therefore is positively skewed. A large number (forming about 26%) are not decided on whether or not it is important to have most friends in the same school.
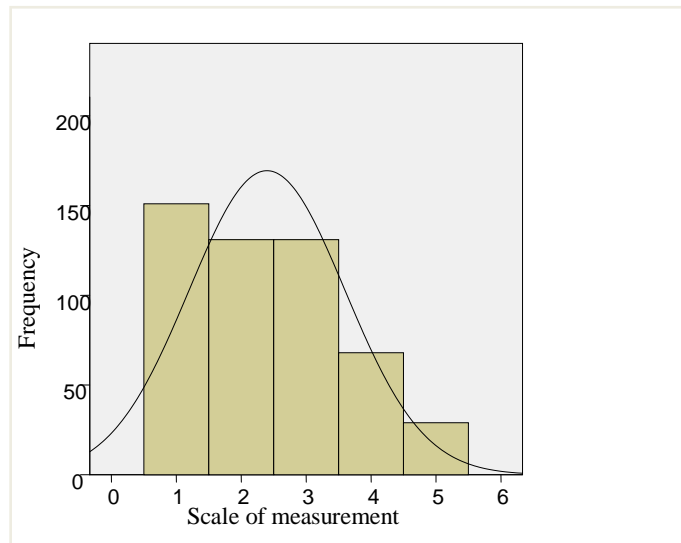
Figure 25: X_{25} - Most of my friends have chosen that school

Very few (about 5%) think that it is absolutely necessary to consider this variable. Thus, it is clear that consideration for friends in the same school is not a popular one among the respondents.

The distribution on the variable X_{26} - Located close to urban centre is represented in Figure 26. We see from the figure that apart from those who are undecided (about 23%), majority think that they would not like their school
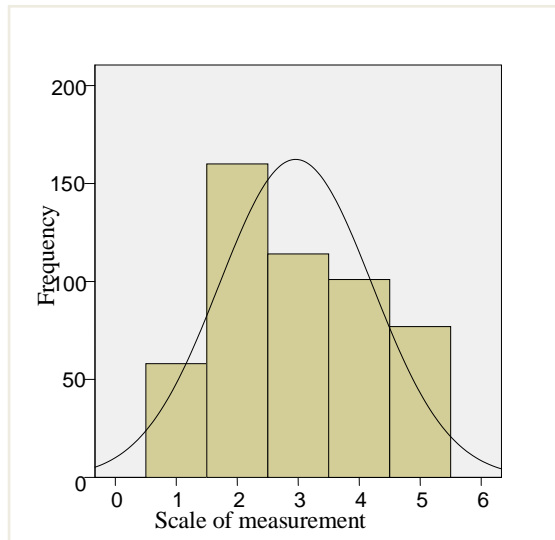
Figure 26: X_{26} - Located close to urban centre

to be sited close to urban centre. This number that disagrees constitutes about 43% of the respondents. The remaining number that supports the assertion forms about a third of the respondents. Thus, acceptance for choosing a school that is located in urban centre is not overwhelming.

Last in the list of variables examined in this study is X_{27} -Close to Accra. Figure 27 shows the distribution of responses on this variable. We see that opinion on the relevance of this variable is varied. Large number of respondents agrees to the importance of this variable; and equally large number disagrees to its relevance. About 20% of respondents are undecided.
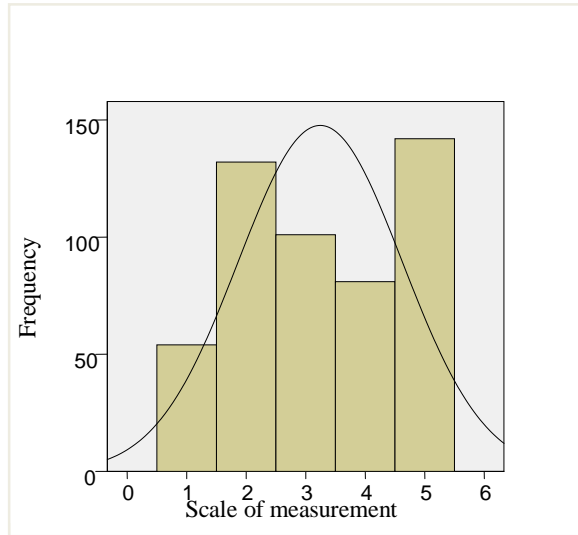
Figure 27: X_{27} - Close to Accra

Thus, the importance of attending secondary school in Accra is debatable among the BECE candidates who reside in Accra.

General Comparison of the Distribution of Responses

Responses on a number of variables exhibited large variability. These variables are listed as follows:

X_9 - Recommended by teachers;

X_{12} - Does not impose too much restriction on students;

X_{16} - Health problems;

X_{19} - School is in a town where a relative lives;

X_{22} - Can easily adapt to the school environment;

X_{27} -Close to Accra.

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It can be seen that generally, these variables are cover issues that are concerned with convenience and discipline.

The distribution on very few of the variables exhibited positive skewness; indeed, it was only on two variables that this pattern was very obvious. These variables are:

X_8 - My friends are in the school;

X_{25} - Most of my friends have chosen that school.

It is obvious that these two variables are related. It is not surprising that the distributions on them are also related. This means that opinion on the issue of having friends in the same school is consistently seen as generally not relevant.

Support for consideration of some variables was overwhelming. These variables are:

X_5 - Subjects the school offer;

X_7 - High disciplinary training;

X_{11} - Good academic records;

X_{14} - School that can help me achieve my future goals;

X_{18} - Able to meet special needs;

X_{20} - Prepare me for my future profession.

We observe that these variables are related. It is thus not surprising that the responses on them are also related. We see that generally, these variables cover issues that are concerned with academic work.

On all the variables some respondents were undecided about their relevance in school selection. For some of these variables, the number that found them difficult determining their importance was prominent. These variables are:

X_{12} - Does not impose too much restriction on students;

X_{21} - A relation is an old student of the school;

X_{22} - Can easily adapt to the school environment.

We see that these variables are concerned with convenience or discipline of the school. Thus, this group of variables is similar to the first in this section. It was observed that the variable X_{21} - A relation is an old student of the school is the one consideration on whose importance candidates are undecided the most. It will be recalled that on the issue of a relation being an old student, close to a third of the respondents were not sure of its relevance in school selection.

Correlation Analysis

Table 1 is a 27×27 correlation matrix of the variables under study. The variables labeled $X_1, X_2, \cdots, X_{27}$ have been defined in the introductory chapter. It can be observed that even though most of the correlation coefficients are low, there are some that are high. For the purposes of this study, a correlation of 0.20 will be used as a cut-off. That is, a correlation coefficient greater than the value of 0.20 will be considered as high and a correlation coefficient less than 0.20 is considered as low. The specification of this cut-off value will enable us identify variables that belong together. We first identify outstanding correlation values.

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Table 1: Correlation Matrix

Var	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}	X_{11}	X_{12}	X_{13}	X_{14}	X_{15}	X_{16}	X_{17}	X_{18}	X_{19}	X_{20}
X_2	0.11																			
X_3	0.23	0.28																		
X_4	0.03	0.24	0.23																	
X_5	-0.01	0.04	0.14	0.08																
X_6	0.04	0.24	0.10	0.25	-0.20															
X_7	-0.04	0.17	0.07	-0.02	0.13	0.08														
X_8	0.21	-0.09	0.08	0.13	0.13	0.11	-0.05													
X_9	0.25	-0.06	-0.01	0.05	-0.07	-0.05	-0.08	0.25												
X_{10}	0.05	0.07	-0.05	0.03	0.12	0.15	-0.11	0.09	-0.04											
X_{11}	-0.01	0.09	-0.24	0.03	0.14	0.06	0.22	0.02	0.14	-0.11										
X_{12}	0.01	-0.10	0.10	0.31	0.08	0.19	-0.14	0.29	0.12	0.09	-0.13									
X_{13}	0.07	0.33	0.04	0.08	0.14	0.18	0.07	0.09	0.00	0.24	0.14	0.10								
X_{14}	-0.09	0.12	0.04	0.08	0.12	0.16	0.30	-0.52	-0.12	0.22	0.13	0.15	0.29							
X_{15}	-0.21	0.14	0.23	0.20	0.27	**-0.74**	0.01	0.16	-0.02	0.02	0.00	0.35	0.20	0.09						
X_{16}	0.09	0.14	0.15	0.23	0.07	0.11	-0.18	0.35	0.12	0.05	0.08	0.40	0.35	0.12	0.23					
X_{17}	0.17	0.10	0.04	-0.05	-0.01	0.21	-0.14	**-0.61**	0.06	0.26	-0.02	0.16	0.22	0.18	-0.04	0.15				
X_{18}	0.09	0.12	0.18	0.22	0.15	0.11	0.01	0.12	-0.05	-0.15	0.05	0.26	0.24	0.10	0.24	0.39	0.06			
X_{19}	0.18	-0.09	-0.23	-0.13	-0.13	0.06	-0.17	0.23	0.13	0.24	-0.10	0.05	0.08	0.11	-0.13	0.01	0.24	-0.11		
X_{20}	0.06	0.00	-0.03	-0.13	0.07	-0.11	0.24	-0.27	0.11	-0.10	0.23	-0.34	-0.08	0.08	0.03	-0.20	0.01	0.00	0.26	
X_{21}	0.11	0.03	0.08	0.04	0.15	0.11	-0.19	0.20	0.16	-0.03	-0.16	0.27	0.23	0.16	0.22	0.28	0.01	0.21	0.28	-0.18

Table 1 continued

Var	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}	X_{11}	X_{12}	X_{13}	X_{14}	X_{15}	X_{16}	X_{17}	X_{18}	X_{19}	X_{20}	X_{21}	X_{22}	X_{23}	X_{24}	X_{25}	X_{26}
X_{22}	0.02	0.16	0.01	0.15	0.11	0.04	0.10	-0.04	0.16	0.06	0.04	0.05	0.05	0.35	-0.11	0.02	0.15	-0.08	0.06	0.01	0.07					
X_{23}	-0.13	0.28	0.15	0.22	0.00	0.27	0.12	0.20	-0.13	0.13	-0.24	0.25	0.15	0.14	0.22	0.07	-0.08	0.11	-0.11	-0.14	0.11	0.04				
X_{24}	-0.06	-0.07	0.10	-0.12	0.30	-0.04	0.15	-0.11	-0.07	0.06	0.02	-0.07	-0.20	0.14	-0.06	-0.10	0.14	-0.07	-0.16	0.21	-0.35	0.20	-0.10			
X_{25}	0.00	-0.13	0.13	0.06	0.04	0.14	-0.19	0.40	0.14	0.10	-0.32	0.37	-0.08	0.05	0.17	0.17	0.11	0.08	0.27	-0.15	0.44	-0.14	0.21	-0.15		
X_{26}	0.15	0.29	0.15	0.06	0.00	0.17	0.18	**0.74**	-0.09	0.13	0.03	-0.15	0.13	0.00	-0.01	0.01	-0.13	0.04	-0.06	0.05	-0.03	0.18	0.24	0.12	-0.11	
X_{27}	0.23	-0.50	0.04	-0.01	0.12	0.05	-0.10	0.01	0.13	-0.12	-0.16	0.05	-0.03	0.12	-0.08	0.08	0.10	0.02	0.16	0.04	0.03	0.08	0.11	0.06	0.19	0.02

The highest correlation coefficient of 0.74 is observed between the variables X_{26} (Located close to urban centre) and X_8 (My friends are in the school). Since it is a positive value it means that all those who considered the variable X_{26} (Located close to urban centre) as important also view X_8 (My friends by are in the school) as equally important variable, and the vice versa. An equally high but negative correlation coefficient of -0.74 exists between the variables X_{15} (Restrictions of computerized selection procedure) and X_6 (School has produced great men). The negative correlative between the variables means that all those who support computerized school selection do rather view the great caliber of the product of the school as unimportant. On the other hand, for those who do not support computerization of school selection, they attach importance to the great men and women that the school has produced.

The next highest correlation value of -0.61 occurs between the variables X_{17} (The school has day facilities) and X_8 (My friends by are in the school). Since the value is negative it means that all those who consider the variable X_{17} (The school has day facilities) as important do not consider the variable X_8 (My friends are in the school) as important, and the vice versa.

It can be seen from the correlation table that there exists high pairwise correlation coefficients among the variables. Variables with correlation coefficients greater than 0.20 belong together and are therefore put into a group. By this criterion, five groups can be identified. The set of variables

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(X_2, X_{23}, X_{26}) constitutes a group. Similarly, the following sets of variables also constitute different groups: (X_3, X_4, X_{15}); (X_7, X_{11}, X_{20}); (X_{10}, X_{13}, X_{14}) and (X_{13}, X_{15}, X_{18}, X_{21}). Thus, for any pair of variables in a given set, the correlation coefficient is high and greater than 0.2.

Suitability of Factor Analysis for the Data

The last two sections have identified sets of variables that have a lot in common. These observations give indication that one could use Factor Analysis method to analyse the data. However, before arriving at this conclusion there is the need for a formal test to determine suitability of using factor analysis. Measures for determining the appropriateness of factor analysis were reviewed in Chapter Two. It was indicated in that chapter that two main measures would be considered in this work. Table 2 shows the results of the two measures: The Kaiser-Meyer-Olkin Measure of Sampling Adequacy and the Bartlett's test statistic.

Table 2: Measures of Appropriateness of Factor Analysis

Methods of Measurement	Values
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.694
Bartlett's test of Sphericity Approx Chi-Square	3604.812

We recall that the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy is a rule which indicates whether variables can be grouped into small underlining

factors. If the value is high, usually closer to 1, then distinct dimensions underlie the correlations among the variables.

From Table 2, it can be observed that the Kaiser-Meyer-Olkin Measure of Sampling Adequacy value of the data under study is 0.694 which is closer to 1. It means therefore that certain dimensions can be identified to explain the correlations among the variables.

Bartlett's test of Sphericity is also a test used to determine whether or not the correlation coefficients among the variables are generally significant.For generally high correlation coefficients among the variables, the *p*-value for the test should be small (close to 0.00). From the table, the *p*-value for the Bartlett's test of Sphericity is 0.000. This means that the correlations among the variables are generally high. This further means that the correlation matrix in Table 1 is not an identity matrix.

The two results above suggest that factor analysis is a suitable method for further analyzing the data. Further analysis of the data will be considered in the next chapter.

Before we start the further analysis in Chapter Four, we examine next the eigen structure of the correlation matrix in Table 1. This will also enable us have some more ideas about the possible number of groups of variables that exists among the set of variables. It will in turn inform us about the number of factors that can be used to approximate the correlation matrix.

Eigen Analysis

Table 3 is a portion of the eigenvalues and percentage of variation in the data that is explained by each of the twenty-seven components. For the purpose of this study and for convenience, only fourteen of the components are shown in the table.

Table 3: Eigenvalues and Percentage of Variance Explained

Components	Initial Eigenvalue		
	Total	**% Variance**	**% Cumulative**
1	3.604	13.348	13.348
2	2.598	9.621	22.969
3	2.042	7.564	30.533
4	1.849	6.850	37.382
5	1.639	6.070	43.452
6	1.611	5.968	49.420
7	1.299	4.809	54.230
8	1.193	4.418	58.648
9	1.141	4.227	62.875
10	1.067	3.952	66.826
11	0.993	3.676	70.503
12	0.895	3.313	73.816
13	0.790	2.927	76.743
14	0.755	2.796	79.539

From Table 3, we see that of the twenty-seven original indicators, ten have eigenvalues greater than one. The first of these has eigenvalue that account for 13% of the variation in the data. The first, second and up to the tenth together accounts for a total of 66.83% of the variation. The table shows that, by the rule of eigenvalue-greater-than-one, the number of factors which Junior High School students consider in the selection of the type of Senior High School might not exceed ten.

A plot of eigenvalues against their corresponding components is given in
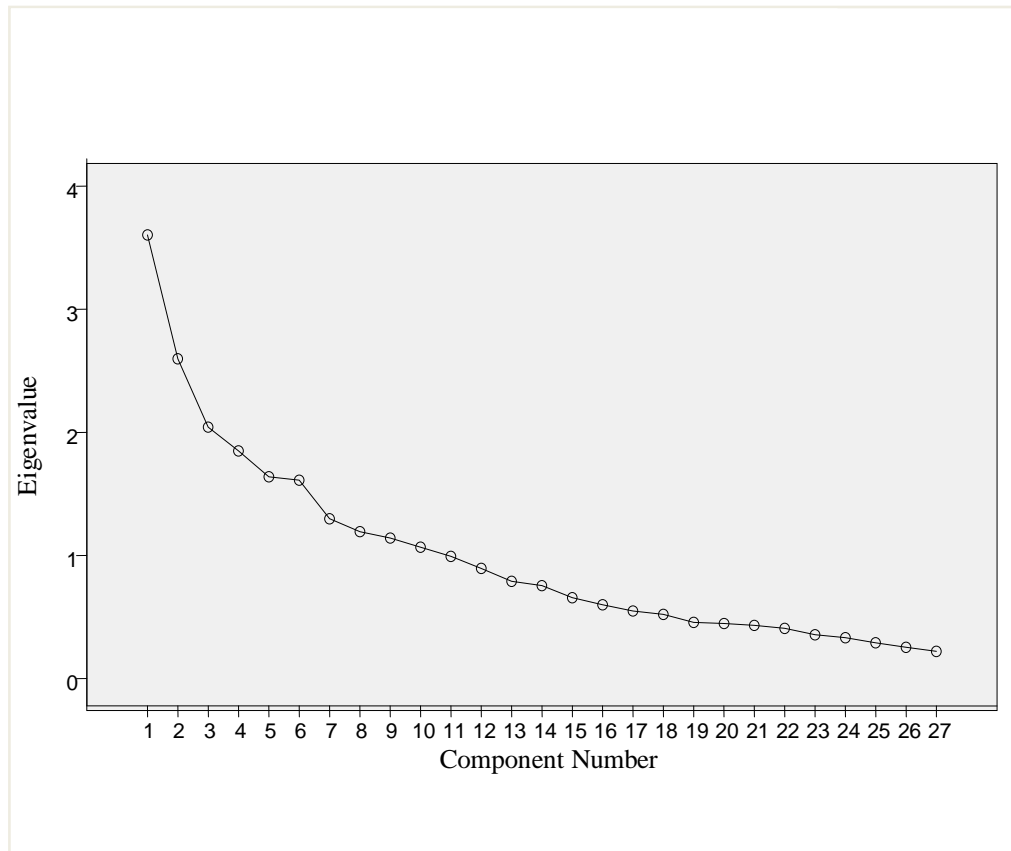
Figure 28: Scree plot of eigenvalues

the scree plot in Figure 28. We see from the figure that the elbow point of the plot is not well defined. However, it appears that considering only five or six may be appropriate.

The two routine rules of eigenanalysis: the eigenvalue-greater-than-one and the 'elbow point' of the scree plot do not give a specific range of factors to extract from: the scree plot does not provide a bound. However, it is certain that the number of factors would not exceed ten. In Chapter Four, we may have to rely on the interpretability of the factors to obtain a final factor solution.

Summary of Preliminary Results

Preliminary analyses of the data examined the distributions of responses on the twenty seven variables under study. It was realized that the patterns of the distributions on some groups of variables were similar. Two of the variables were seen as unpopular considerations in the selection of schools. These were concerned with having friends in the same selected school. There was overwhelming support for six of the variables. The six variables generally covered issues that were concerned with the academic performance in the school. Again, on six of the variables, responses on them showed that consideration for them in school selection was highly debatable. These were variables on which opinions on them varied widely. These variables generally covered issues that were concerned with convenience and discipline. It was also realized that on all of the twenty seven variables, some candidates were unable to determine their importance in school selection.

The chapter also examined the correlation coefficients between pairs of variables. The highest correlation coefficients of 0.74 and -0.74 were observed respectively between the pairs of variables X_{26} (Located close to urban centre), X_8 (My friends are in the school) and between X_{15} (Restrictions of computerized selection procedure) and X_6 (School has produced great men). There were no correlation coefficients between some pairs of variables. A cut-off value of 0.20 was used to identify variables that belong together. Five groups of variables were identified. These groups were: (X_2, X_{23}, X_{26}); (X_3, X_4, X_{15}); (X_7, X_{11}, X_{20}); (X_{10}, X_{13}, X_{14}) and (X_{13}, X_{15}, X_{18}, X_{21}). The first group consists of variables that are concerned with convenience of attending the school. The second group is made up of variables that are concerned with issues that would compel (or constrain) one to attend the school. The third group is made up of variables that are concerned with meeting future aspirations. The fourth is on general guidance for meeting future aspirations. The last group is made up of variables that are concerned with guidance or external interventions in school selection.

The distributions of responses on the variables as well as the correlation analysis suggested that groupings exist among the variables. This further suggested that factor analysis method could be used to analyse the data. Two measures for determining the suitability of the use of factor analysis were obtained. These were the value of the KMO measure of sampling adequacy and the Bartlett's test statistic. The value of the KMO measures was 0.6 and the

significance of the correlation coefficients was 0.694. This means that there exists a high degree of homogeneity within the groups of variables. The *p*-value of the Bartlett's test was 0.000. This extremely small value also that the correlations among the variables were generally high. The two results supports the use of factor analysis method in further analysis of the data.

The eigenvalue-greater-than-one and the scree plot are two routine methods of factor analysis that were used to further explore the correlation matrix. The eigenvalue-greater-than-one rule suggests that the number of factors that can be extracted cannot be more than ten. The scree plot, however, could not give a distinct number of factors. It was, however, thought that the number of factors from the scree plot could not exceed five.

CHAPTER FOUR

FURTHER ANALYSIS

The preliminary analysis of the data in the previous chapter revealed that there exist groupings among the twenty seven variables being studied in this work. Methods used in identifying the groupings in that chapter were exploratory. The groupings among the variables suggested the use of factor analysis as a method for determining the actual factors that underlie the correlations among the variables. Measures of determining the suitability of factor analysis confirmed that it was appropriate to use the method in further analyzing the data. In this chapter, we carry out further analysis of the data using a multivariate technique of factor analysis to identify the main latent factors that influence the choices of secondary schools by BECE candidates.

Extraction of Factors and Factor Interpretation

We recall in Chapter Three that the preliminary analysis suggested that the number of factors that underlie the correlation matrix could lie between five and ten. In Table 4 we have seven of the unrotated factors with their loadings on the indicator variables. In this work, a loading of 0.50 will be used as a cut-off point. Thus loadings greater than 0.50 will be considered as high and loadings less than or equal to 0.50 as low. This cut-off loading will help us to determine the influential indicators on each of the factors. The highlighted loadings correspond

to variables that are indicators of the respective factors using the cut-off point of

0.5.

Table 4: Unrotated Factor Matrix

Var	Components						
	1	2	3	4	5	6	7
X_1	0.171	-0.086	0.291	0.155	0.082	**0.734**	-0.106
X_2	0.250	**0.577**	0.091	-0.284	0.114	0.231	-0.195
X_3	0.322	0.280	-0.254	0.114	0.409	0.260	-0.234
X_4	0.421	0.270	-0.235	-0.135	0.001	0.120	0.103
X_5	0.157	0.292	-0.133	**0.593**	0.014	-0.162	0.107
X_6	0.365	0.197	0.213	-0.407	0.129	0.081	0.007
X_7	-0.191	**0.568**	0.048	0.100	0.022	0.006	0.268
X_8	**0.520**	-0.227	-0.107	0.003	-0.119	0.211	**0.542**
X_9	0.161	-0.231	0.186	0.287	-0.215	0.453	0.337
X_{10}	0.204	0.021	0.404	-0.392	-0.008	-0.327	0.162
X_{11}	-0.150	0.372	0.151	0.100	**-0.608**	0.135	0.263
X_{12}	**0.635**	-0.117	-0.161	0.118	-0.092	-0.220	0.088
X_{13}	**0.**445	0.353	0.240	-0.164	-0.350	-0.018	-0.205
X_{14}	0.240	0.422	0.440	0.130	-0.046	-0.391	0.041
X_{15}	0.470	0.196	-0.405	0.221	-0.060	-0.294	0.060
X_{16}	0.**627**	0.062	-0.099	0.030	-0.423	0.075	-0.109
X_{17}	0.306	-0.050	**0.577**	0.100	-0.016	-0.122	-0.406
X_{18}	0.445	0.226	-0.248	0.179	-0.237	0.141	-0.313
X_{19}	0.236	-0.478	**0.535**	-0.119	-0.025	-0.027	0.138

Table 4 continued

Var	Components						
	1	2	3	4	5	6	7
X_{20}	-0.328	0.316	0.072	0.406	-0.034	0.093	-0.017
X_{21}	**0.608**	-0.217	0.200	0.291	0.108	-0.060	-0.158
X_{22}	0.106	0.311	0.422	0.149	0.158	-0.067	0.287
X_{23}	0.415	0.208	-0.248	-0.345	0.359	-0.098	0.198
X_{24}	-0.192	0.267	0.195	0.435	0.324	-0.221	0.104
X_{25}	**0.556**	-0.455	-0.139	0.103	0.230	-0.141	0.156
X_{26}	0.071	0.428	0.074	-0.232	0.341	0.294	0.254
X_{27}	0.206	-0.164	0.229	0.363	0.438	0.134	-0.049

It can be observed that the first factor is highly loaded on the variables X_8 (My friends are in the school), X_{12} (Not impose too much restriction on students), X_{16} (Health problems), X_{21} (A relation is an old student of the school) and X_{25} (Most of my friends have chosen that school). Generally, these variables reflect concerns about relaxed social atmosphere of the school. In the previous chapter, we realized that the variables X_8 and X_{25} were the two most unpopular considerations among the respondents. The variable X_{21} was the one on which students were undecided the most. On the remaining two, X_{12} and X_{16}, opinions were highly varied. Thus, on the whole, the first factor might represent a *controlled social atmosphere*.

The second factor has high loadings on the variables X_2 (School has boarding facilities) and X_7 (High disciplinary training). The two variables reflect issues about a school environment that is congenial for student work. Thus, the second factor might represent *educational atmosphere*.

The third factor has high loadings on the variables X_{17} (The school has day facilities) and X_{19} (School is in a town where a relative live). These indicators suggest that the third factor might represent *convenience* to the school.

The fourth and fifth have high loadings on only variable. The fourth factor has high loading on the variable X_5 (Subjects the school offers). That is, the fourth factor is indicated by a single variable. Thus, the fourth factor might represent the *subjects* offered by the school.

The fifth factor has a highly negative loading on the variable X_{11} (Good academic records). Similar to the fourth factor, the fifth one has a single variable as its indicator. Thus, the fifth factor may represent the *academic achievements* of the school.

Similar to the fourth and fifth factors, the six and the seventh factors have single variables as their indicators. They can therefore be interpreted according to the representations of their respective indicators.

Rotated Factor Solution

It can be seen from the unrotated factor solution that after the third factor, all the remaining factors have single variables as their indicators. The final factor

solution obtained in this way might not adequately explain the correlations among the original variables. As a result of this, there is the need to rotate this initial factor solution to obtain an alternative solution for consideration. A way to obtain an alternative solution is to rotate the initial factor solution. A number of rotation methods are available. In Table 5, we use the Varimax method to obtain a rotation of the solution in Table 4.

It can be observed from Table 5 that the first factor is highly loaded on the variables, X_8 (My friends are in the school), X_{12} (Does not impose too much restriction on students), X_{15} (Restrictions of computerized selection procedure) and X_{25} (Most of my friends have chosen that school). The first factor after rotation is similar to the first factor in the initial solution. That is, the first factor under the factor rotation represents a *controlled social atmosphere*.

The second factor is highly loaded on the variables: X_{13} (Advised by my parents), X_{16} (Health problems) and X_{18} (Able to meet special needs). Generally, these variables reflect considerations based on parental guidance and individual needs of the students. Thus, we may represent this factor as *parental guidance/individual needs*.

The third factor is highly loaded on the variables X_7 (High disciplinary training), X_{11} (Good academic records) and X_{20} (Prepare me for my future profession). These indicators reflect the ability of the school to help prepare the student for the future. Thus, the third factor represents *quality of education*.

Table 5: Rotated Factor Matrix

Var	Components						
	1	2	3	4	5	6	7
X_1	-0.199	0.127	-0.051	0.193	0.243	0.711	0.107
X_2	-0.188	0.426	0.037	**0.509**	0.012	0.086	0.034
X_3	0.128	0.143	-0.048	0.260	0.069	0.070	0.037
X_4	0.272	0.252	-0.120	0.033	-0.150	0.058	-0.257
X_5	0.168	0.195	0.167	0.080	0.123	-0.059	-0.061
X_6	0.188	0.137	0.123	0.211	0.072	0.002	0.204
X_7	-0.049	-0.001	**0.630**	0.332	-0.041	-0.109	-0.108
X_8	**0.620**	0.086	-0.197	0.255	-0.085	0.454	-0.024
X_9	0.167	-0.024	0.101	-0.155	0.055	**0.724**	-0.065
X_{10}	0.193	-0.053	-0.117	0.229	-0.266	-0.090	**0.691**
X_{11}	-0.121	0.288	**0.502**	-0.001	-0.338	0.231	-0.078
X_{12}	**0.663**	0.222	-0.072	-0.299	0.028	0.035	0.091
X_{13}	-0.025	**0.726**	0.009	0.269	0.035	-0.078	0.243
X_{14}	0.041	0.253	0.284	0.035	0.196	-0.251	0.306
X_{15}	**0.564**	0.346	0.112	0.031	0.017	-0.254	-0.078
X_{16}	0.314	**0.645**	-0.215	-0.097	-0.160	0.207	0.096
X_{17}	-0.073	0.221	-0.009	-0.222	0.226	0.101	**0.728**
X_{18}	0.159	**0.628**	0.087	-0.093	0.090	0.032	-0.136
X_{19}	0.063	-0.048	-0.348	0.038	0.328	0.230	0.343
X_{20}	-0.126	-0.096	**0.786**	-0.115	0.034	0.090	0.048
X_{21}	0.295	0.319	-0.183	-0.066	**0.621**	0.077	0.171

Table 5 continued

Var	components						
	1	2	3	4	5	6	7
X_{22}	-0.084	-0.066	-0.019	0.118	0.089	0.097	0.089
X_{23}	0.448	0.051	-0.057	0.453	0.104	-0.289	-0.133
X_{24}	-0.030	-0.339	0.295	0.025	-0.030	-0.032	0.364
X_{25}	**0.716**	-0.071	-0.159	-0.060	0.355	0.062	0.123
X_{26}	-0.034	-0.021	0.073	**0.773**	-0.030	0.076	0.018
X_{27}	0.044	-0.089	0.048	0.024	**0.798**	0.116	-0.081

The fourth and fifth factors are loaded on only two variables each. The fourth is loaded on the variables X_2 (School has boarding facilities) and X_{26} (Located close to urban centre) and the fifth factor is also loaded on X_{21} (A relation is an old student of the school) and X_{27} (Close to Accra). It was observed in Chapter Three that apart from X_2, the other three variables were not popular considerations for school selection. Both the fourth and fifth factors may represent the *location* of the school. Thus, in effect, a four-factor solution is appropriate under factor rotation.

Summary of Further Analysis

This chapter was concerned with further analysis of the data using factor analysis method. An initial five factor solution was identified. The first factor represented a controlled social atmosphere. The second factor was identified to be

educational atmosphere. The third factor represented convenience of the location of the school. Unlike the first three factors, the fourth and the fifth factors were indicated by single variables. The fourth factor represented the subject the school offers, whilst the fifth represented the academic achievement of the school.

It was realized that apart from the first three factors, the remaining factors had single variables as their indicators. To avoid weaknesses in a factor solution characterized by such factors with single indicators, the initial solution was rotated to obtain another factor solution. Under the rotated solution, the first factor was identified as controlled social atmosphere, the same as the first factor under the initial solution. The second factor represented a parental guidance/individual needs. The third factor represented quality of education. The fourth and the fifth factors were similar and represented the location of the school. Thus, under factor rotation, a four-factor solution was extracted.

CHAPTER FIVE

SUMMARY, DISCUSSION AND CONCLUSIONS

Summary

This study has been concerned with the study of factors that influence the selection of senior secondary schools by final year students of Nungua Junior High Schools. The data was obtained on twenty seven variables that are indicators of the latent factors of school selection.

Preliminary analyses of the data made use of routine exploratory methods such as a study of the distributions of the responses on the study variables, correlation analysis and eigen analysis of the correlation matrix of the twenty seven indicator variables. It was realized that the patterns of the distributions on some groups of variables were similar. Two of the variables were seen as unpopular considerations in the selection of schools. These were concerned with having friends in the same selected school. There was overwhelming support for six of the variables. The six variables generally covered issues that were concerned with the academic performance in the school. Consideration for six of the variables in school selection was highly debatable. These variables generally covered issues that were concerned with convenience and discipline. It was also realized that on some of all of the twenty seven variables, some candidates were unable to determine their importance in school selection.

Preliminary analysis also examined the correlation coefficients between pairs of variables. The highest correlation coefficients of 0.74 and -0.74 were observed respectively between the pairs of variables X_{26} (Located close to urban centre), X_8 (My friends are in the school) and between X_{15} (Restrictions of computerized selection procedure) and X_6 (School has produced great men). There were no correlation coefficients between some pairs of variables. A cut-off value of 0.20 was used to identify variables that belong together. Five groups of variables were identified. These groups were: (X_2, X_{23}, X_{26}); (X_3, X_4, X_{15});

(X_7, X_{11}, X_{20}); (X_{10}, X_{13}, X_{14}) and $(X_{13}, X_{15}, X_{18}, X_{21})$. The first group consists of variables that are concerned with convenience of attending the school. The second group is made up of variables that are concerned with issues that would compel (or constrain) one to attend the school. The third group is made up of variables that are concerned with meeting future aspirations. The fourth is on general guidance for meeting future aspirations. The last group is made up of variables that are concerned with guidance or external interventions in school selection.

The distributions of responses on the variables as well as the correlation analysis suggested that groupings exist among the variables. This further suggested that factor analysis method could be used to analyse the data. Two measures for determining the suitability of the use of factor analysis were obtained. These were the value of the KMO measure of sampling adequacy and the Bartlett's test statistic. The value of the KMO measures was 0.694. This value

meant that there existed a high degree of homogeneity within the groups of variables. The p-value of the Bartlett's test was 0.000. This extremely small value also meant that the correlations among the variables were generally high. The two results further informed the use of factor analysis as the most appropriate method for the analysis of the data.

The eigenvalue-greater-than-one and the scree plot are two routine methods of factor analysis that were used to further explore the correlation matrix. The eigenvalue-greater-than-one rule suggested that the number of factors that could be extracted could not exceed ten. The scree plot, however, could not give a distinct number of factors. It was, however, thought that the number of factors from the scree plot could not exceed five.

In further analysis, Factor Analysis method was used to obtain an initial five factor solution. The first factor represented a controlled social atmosphere. The second factor was identified to be educational atmosphere. The third factor represented the location of the school. The fourth factor represented the subject the school offers, whilst the fifth represented the academic achievement of the school.

It was realized that apart from the first three factors in the initial solution, the remaining factors had single variables as their indicators. To avoid weaknesses in a factor solution characterized by such factors with single indicators, the initial solution was rotated to obtain another factor solution. Under the rotated solution, the first factor was identified as controlled social atmosphere, the same as the first factor under the initial solution. The second factor

represented a parental guidance/individual needs. The third factor represented quality of education. The fourth and the fifth factors were similar and represented the location of the school. Thus, under factor rotation, a four-factor solution was extracted.

Discussion

Some of the results in both preliminary analysis and further analysis need some amount of discussions. In Chapter Three we examined the response patterns on each of the twenty seven variables under study. One thing that is worthy of discussion from this is that, on all the variables a good number of respondents were not sure of their relevance in the selection of schools. This is even surprising in the case where one would think the variable in question must be an obvious consideration in school selection. For example, one would have thought that the following variables are absolutely necessary in school selection: X_{14} - The only school that can help me achieve my future grades and X_{20} - Prepare me for my future profession. However, we observe that a number of respondents think otherwise. This brings to the fore the need for some external intervention in the selection of schools by BECE candidates.

The components of the factor solution in this work agree with findings in the literature. However, the relative importance of the factors in this work defers from those in the literature. For example, academic reasons have been identified by many researchers Coldron and Boulton, (1991) Bossetti, (2004); Bauch and Goldring, (1995), Elacqua et al., 2005) to be the most important factor in school

selection. However, in this study, we observe that the most important factor is *controlled social atmosphere*. An indication of this factor is that a student should not have (too many) friends from his former basic school in the same school. According to the respondents they are of the opinion that, perhaps, if too many ''old'' friends find themselves in the school, they may get unnecessarily distracted from their academic work. Similar to the academic reasons in the literature, this work identifies a factor that may be best referred to as *quality of education*. This factor is the third most important factor. Indicators of quality education are high disciplinary training, good academic record of the school and guarantee of obtaining the desired grade.

Proximity is another factor that has been identified in the literature as an important consideration in school selection. Similar to this factor is what has been identified in this work as the *location* factor, which is the fourth most important. By location, respondents rather mean lack of proximity to their home or those of relatives. We see that this fourth factor is consistent with that of the first. We recall that the respondents for this study live in Accra, and on the issue of selecting a school in Accra, opinions varied widely. Also, on the issue of selecting a school close to where one lives, more respondents disagreed than agreed.

Conclusions and Recommendations

The study looked at factors analysis of selection of senior high schools , using data collected from BECE candidates at the Junior High Schools at Nungua,

a community in Accra. The objective was to identify the factors, if any, that influence the choice of senior high schools. At the end of the analysis, four main factors were found to underlie the selection of secondary schools.

In order of importance, the four factors that influence school selection are: the controlled social atmosphere of the school; the parental guidance/individual needs of the student; the quality of education offered at the school and the location of the school.

Indicators of the first factor concern issues that are likely to help to eliminate destructions from the main academic on school campus. These distractive tendencies include having (too many) friends in the same school from one's former basic school. Another measure for controlling the social atmosphere is the imposition of some level of restriction on students.

The objective of this work was to identify the major latent factors of selection of secondary schools by BECE candidates. The determination of these four factors clearly realizes the main purpose of the work. Students of junior high schools and their guardians can now be guided by these findings to make informed choices of schools. Thus, by the findings of this work, the hope is to reduce the risk on a child's future that is associated with school choice

REFERENCES

Armor, D. & Peiser, B. (1998). Inter-district Choice in Massachusetts. *Learning from School Choice*, Washington D. C: Brookings Institution Press.

Bagley, C. (1996). Black and white unite or fight? The radicalized dimension of schooling and parental choice. *British Educational Research Journal, 22*, 569-580.

Bauch, P. & Goldring,E. (1995). Parent involvement and school responsiveness: Facilitating the home-school connection in schools of choice. *Journal of Educational Evaluation and Policy Analysis, 17*, 1-22.

Bossetti, L. (2004). Determinants of school choice: Understanding how parents choose elementary schools in Alberta. *Journal of Education Policy*, *19,* 387-405.

Bridge, G. & Blackman, J. (1978). A study of alternatives in American education. *Family choice in education,* 4. Santa Monica, CA: Rand Corporation.

Bussell, H. (1998). Parental choice of primary school: An application of Q Methodology. *The Service Industries Journal*, *18*, 135-147.

Clewell, B. & Joy, F. (1990). *Choice in Montclair New Jersey: A policy information paper.* Princeton, NJ: Education testing service, Policy information centre.

Coldron, J. & Boulton P. (1991). Happiness as a criterion of parents choice of school. *Journal of Education Policy, 6*, 169-178.

Collins, A. & Snell, M. (2000). Parental preferences and choice of school. *Applied Economics*, *32*, 803-813.

David, M. Davies, J. Edwards, R. Reay, D. & Standing, K. (1996). Mothering and education: Reflexivity and feminist methodology, in L. Morley & V. Walsh (Eds). *Breaking boundaries: Women in higher education,* London, Taylor and Francis.

David, M. Davies, J. Edwards, R. Reay, D. & Standing, K. (1997). Choice within constraints: mothers and schooling. *Gender and Education*, *9,* 397-410.

Davis, H. & Rigaux, P. (1974). Perception of Marital Roles in Decision Processes. *Journal of Consumer Research*, *1*, 51-62.

Denessen, E. Driessena, G. & Sleegers, P. (2005). Segregation by a study of group-specific reasons for school choice. *Journal of Education Policy, 20*, 347-368.

Echols, F. & Williams, J. (1995). Reasons for school choice in Scotland. *Journal of Education Policy, 10,* 143-56.

Elacqua, G. Gobierno, E. & Ibanez, U. (2005). School choice in Chile: An analysis of parental preferences and search behaviour. *National centre for the study of privatization in education, 2,* 1-35.

Fodness, D. (1992). The impact of family life cycle on the vacation decision making process, *Journal of Travel Research, 31,* 8-13.

Gewirtz, S. Ball, S & Bowe, R. (1995). *Markets, choice of an equity in education,* Buckingham, Open University Press.

Glazerman, S. (1997). *A conditional logit model of elementary school*: *What do parents value?* University of Chicago, Harris School of Public Policy

Goldhaber, D. (2000).School choice: Do we know enough? *Educational Researcher*, *29*, 21-22.

Goldring, E. & Hausman, C. (1999). Reasons for parental choice of urban schools. *Journal of Education Policy, 14*, 469-490.

Gorard, S. (1999). That about wraps it up for school choice research: A state of the art review. School *Leadership and Management*, *19*, 25-47.

Hammond, T. & Dennison, B. (1995). School choice in less populated areas, *Educational Management and Administration*, *23,*104-13.

Henig, J. (1996). *The Local Dynamics of School Choice: Ethnic Preferences and Institutional Responses*, In Fuller, R.F. Elmore & G. Orfield (Eds.), Who Loses? Culture Institutions and the Unequal Effects of School Choice. New York, Teachers College Press.

Hunter, J. (1991). Which school? A study of parents' choice of secondary school. *Education Research, 3,* 31-41.

Jackson, C. & Bisset, M. (2005). Gender and school choice: Factors influencing parents when choosing single-sex or co-educational independent schools for their children. *Cambridge Journal of Education*, *35*, 195-211.

Jenkins, R. L. (1978). Family vacation decision making. *Journal of Travel Research, 16*, 2-7.

Kleitz, B. Weiher, G. Tedin, K. & Matland, R. (2000). Choice, charter schools and household preferences. *Social Science Quarterly*, *81*, 846-852.

Lalwani, A. Mehta, S. & Tiong, T. (1999). Family roles in the selection of schools in multiracial Singapore: An examination of demographic differences. *Journal of Professional Services Marketing, 19,* 73-92.

Levin, H. (1998). Educational vouchers: Effectiveness, choice and costs. *Journal of Policy Analysis and Management, 17*, 373-92.

Moe, T.M. (1995). *Private Vouchers*. In T. M. Moe 5th ed, Stanford, CA: Hoover Institute Press.

Morgan, V. Dunn, S. Cairns, E. & Fraser, G. (1993). How do parents choose a school for their child? An example the exercise of parental choice. *Educational Research, 35,* 139-148.

Petch, A. (1986) Parental choice at entry to primary school. *Research Papers in Education, 1*, 26-7.

Qualls, W. (1982). Changing sex roles its impact upon family decision making. *Advances in Consumer Research, 9*, 267-270.

Reay, D. & Ball, S. (1998).Making their minds up: Family dynamics of school choice. *British Educational Research Journal, 24*, 431-448.

Saporito, S. (2003). Private choices and public consequences: Magnet school choice and segregation by race and poverty. *Social Problem, 50*, 181-203.

Schneider, M. & Buckley, J. (2002). What do parents want from schools? Evidence from the internet. *Educational evaluation and policy analysis, 24*, 133-144.

Solomon, L. (2003). *How parents grade their charter schools*. Santa Monica, CA: Human Resources Policy Corporation.

Stafford, M. (1996). Marital influence in the decision making process for services. *The Journal of Services Marketing, 10*, 6-21.

Taylor, C. (2001). Hierarchies and local markets: The geography of the lived market place in secondary education provision. *Journal of Education Policy, 16*, 197-214.

Weiher, G. &Tedin, K. (2002). Does choice lead to racially distinctive schools? Charter schools and household preferences. *Journal of Policy Analysis and Management, 21*, 79-92.

West, A. David, M. Hailes, J. & Ribbens, J. (1995). Parents and the process of choosing Secondary Schools: Implications for school. *Educational Management and Administration, 23,* 28-38.

Williams, M. Hancher, K. & Hunter, A. (1983). Parents and school choice: A household survey. Washington D.C: Office of Educational Research and Improvement.

Woods, P. (1992). Choice, class and effectiveness. *School Effectiveness and School Improvement*, *7*, 324-341.

Zeithaml V. (1981). How consumer evaluation processes between goods and services. *Marketing of Services*, *4*, 186-190.

APPENDIX   A: QUESTIONNAIRE

UNIVERSITY OF CAPE COAST

DEPARTMENT OF MATHEMATICS AND STATISTICS

I am a Master of Science (MSc) Statistics student of the University of Cape Coast and need information to carry out a study on the topic: *Analysis of Factors that Influence the Choice of Senior High School by Junior High School Students*. This is for Academic purposes only and every information provided will be treated as confidential. It will be appreciated if you could spend some time to complete the questionnaire.

Please **tick [√]** where appropriate

1. Age

10-14years [1]   15-19 years   [2]   20-24 years   [3]   25 years   and above [4]

2. Sex

Male   [1]   Female   [2]

3. Which region do you come from?

Greater Accra [1]   Eastern   [2]   Ashanti [3] Western [4]   Central [5]

Northern [6]   BA   [7]   Upper West   [8]   Upper East   [9]   Volta   [10]

4. What is your father's (or male guardian) highest level of education?

Never been to school   [1]   Primary School   [2]

Middle School   [3]   GCE 'O' Level   [4]

GCE 'A' Level   [5]   Vocational   [6]

Technical School   [7]   Tertiary   [8]

Others (specify)   [9]   Don't know   [10]

If your father (or male guardian) has never been to secondary school, please continue straight from question 8, otherwise continue from question 6.

5. What is your mother's (or female guardian) highest level of education?

Never being to school   [1]   Primary School   [2]

Middle School   [3]   GCE 'O' Level   [4]

GCE 'A' Level   [5]   Vocational   [6]

Technical School   [7]   Tertiary   [8]

Others (specify)   [9]   don't know   [10]

If your mother (or female guardian) has never been to secondary school, please continue straight from question 8, otherwise continue from question 7.

6. Which region did your father (or male guardian) attend secondary school?

Greater Accra [1]   Eastern [2]   Ashanti [3]   Western [4]   Central [5]

Northern   [6]   BA   [7]   Upper East [8] Upper East   [9]   Volta   [10]

7. Which region did your mother (or female guardian) attend her secondary school?

Greater Accra [1] Eastern [2] Ashanti [3] Western [4] Central [5]

Northern [6] BA [7] Upper East [8] Upper East [9] Volta [10]

8. What is the occupation of your father (or male guardian)?

Business/Trader   [1]   Doctor/Nurse /Health personnel   [2]

Teacher   [3]   Farmer   [4]

Military Officer   [5]   Police Officer   [6]

Prison Officer   [7]   Customs Officer   [8]

Journalist   [9]   Others (specify)… [10]   Not applicable [11]

9. What is the occupation of your mother (or female guardian)?

Business/Trade   [1]   Doctor/Nurse /Health personnel   [2]

Teacher   [3]   Farmer   [4]

Military Officer [5]   Police Officer   [6]

Prison Officer   [7]   Customs Officer   [8]

Journalist   [9]   others (specify)………[10] Not applicable   [11]

10. Which of the following type of school will you want to attend after Junior High School?

| Senior High School | [1] | Technical School | [2] |
| Vocational School | [3] | Others (specify) ………………… [4] |

11. Who selected/will select the type of school you want to attend after Junior High School for you?

Yourself	[1]	Mother	[2]
Father	[3]	Teacher	[4]
Friends	[5]	Guardian	[6] Others …… [7]

12. In which region do you want to attend the type of school you have selected in Question 10?

Greater Accra [1] Eastern [2]   Ashanti   [3]   Western   [4] Central [5]

 Northern   [6]   BA   [7]   Upper East [8]   Upper East [9] Volta   [10]

13. If you are offered admission to the school you have selected which of the following do you think can prevent you from taking the offer?

| Distance from home | [1] | Health Problems | [2] |
| Financial Problems | [3] | No Problem | [4] |

14. Which of the following is your dream profession?

| Teacher | [1] | Doctor /Nurse | [2] |
| Engineer | [3] | Farmer | [4] |

Military Officer	[5]	Police Officer	[6]
Prison Officer	[7]	Customs Officer	[8]
Business /Trader	[9]	Others (Specify)	[10]

15. In choosing the type of school you want to attend which of the following do you consider? (Please rank according to importance from '1' to '5' where '1'= *very unimportant 2=Unimportant*, *3=Least important*,*4=Important, 5= very important)*

Popularity	[ ]
Proximity to relatives	[ ]
Financial constraints	[ ]
Academic performance	[ ]
Recommendation by relatives/teachers	[ ]
Others (specify)………………….	[ ]

16. Please indicate the level of importance attached to each of the following considerations in the selection of the type of school you want to attend after Junior High School. **(tick √ as appropriate)**

	CONSIDERATIONS	Very unimportant	Not important	Not sure	important	Very important
1	Is close to where I live	1	2	3	4	5
2	The school has boarding facilities	1	2	3	4	5
3	The school has produced my role model	1	2	3	4	5
4	Financial constraints	1	2	3	4	5
5	Subjects the school offers	1	2	3	4	5
6	Because the school has produced great men	1	2	3	4	5
7	High disciplinary training	1	2	3	4	5
8	Most of my friends are in the school	1	2	3	4	5
9	Recommended by my teachers	1	2	3	4	5
10	The school is good in extra curricula activities	1	2	3	4	5
11	Good academic records	1	2	3	4	5
12	It does not impose too much restrictions on students	1	2	3	4	5
13	Advised by my parents	1	2	3	4	5
14	It is the only school that can help me achieve my future goals	1	2	3	4	5
15	Restrictions of computerized selection procedure	1	2	3	4	5
16	Health problems	1	2	3	4	5
17	The school has day facilities	1	2	3	4	5
18	Special needs	1	2	3	4	5
19	The school is in a town where a relative live	1	2	3	4	5
20	Can prepare me for my future profession	1	2	3	4	5
21	A relation is an old student of the school	1	2	3	4	5
22	I can easily adapt to the environment of the school	1	2	3	4	5

23	I just want to attend school outside my region of residence	1	2	3	4	5
24	I can develop other potentials apart from academics	1	2	3	4	5
25	Most of my friends have chosen that school	1	2	3	4	5
26	Should be located close to urban centre	1	2	3	4	5
27	Should be close to Accra	1	2	3	4	5

APPENDIX B: TABLES FOR PERSONAL DATA OF RESPONDENTS

AGE

Age	Frequency	Percent	Valid Percent	Cumulative Percent
10-14	125	24.5	24.5	24.5
15-19	373	73.1	73.1	97.6
20-24	12	2.4	2.4	100.0
Total	510	100.0	100.0	

SEX

Sex	Frequency	Percent	Valid Percent	Cumulative Percent
Male	199	39.0	39.0	39.0
Female	311	61.0	61.0	100.0
Total	510	100.0	100.0	

REGION

Region	Frequency	Percent	Valid Percent	Cumulative Percent
Greater Accra	187	36.7	36.7	36.7
Eastern	100	19.6	19.6	56.3
Ashanti	52	10.2	10.2	66.5
Western	32	6.3	6.3	72.7
Central	33	6.5	6.5	79.2
Northern	1	.2	.2	79.4
BA	21	4.1	4.1	83.5
Upper East	15	2.9	2.9	86.5
Upper West	4	.8	.8	87.3
Volta	65	12.7	12.7	100.0
Total	510	100.0	100.0	

FATHER'S HIGHEST LEVEL OF EDUCATION

Father's Level of education	Frequency	Percent	Valid Percent	Cumulative Percent
Never Been To School	21	4.1	4.1	4.1
Primary	9	1.8	1.8	5.9
Middle	205	40.2	40.2	46.1
GCE O Level	40	7.8	7.8	53.9
GCE A Level	49	9.6	9.6	63.5
Vocational	17	3.3	3.3	66.9
Technical	92	18.0	18.0	84.9
Tertiary	26	5.1	5.1	90.0
Others	3	.6	.6	90.6
Don't Know	48	9.4	9.4	100.0
Total	510	100.0	100.0	

MOTHER'S HIGHEST LEVEL OF EDUCATION

Mother's Level of education	Frequency	Percent	Valid Percent	Cumulative Percent
Never Been To School	45	8.8	8.8	8.8
Primary School	90	17.6	17.6	26.5
Middle School	161	31.6	31.6	58.0
GCE O Level	37	7.3	7.3	65.3
GCE A Level	49	9.6	9.6	74.9
Vocational	41	8.0	8.0	82.9
Technical	10	2.0	2.0	84.9
Tertiary	15	2.9	2.9	87.8
Don't know	62	12.2	12.2	100.0
Total	510	100.0	100.0	

OCCUPATION OF FATHER

Occupation	Frequency	Percent	Valid Percent	Cumulative Percent
Business/Trader	296	58.0	58.0	58.0
Doctor/Nurse/Health personnel	16	3.1	3.1	61.2
Teacher	48	9.4	9.4	70.6
Farmer	36	7.1	7.1	77.6
Military Officer	11	2.2	2.2	79.8
Police Officer	9	1.8	1.8	81.6
Prison Officer	13	2.5	2.5	84.1
Custom officer	11	2.2	2.2	86.3
Journalist	5	1.0	1.0	87.3
Other's	57	11.2	11.2	98.4
Not applicable	8	1.6	1.6	100.0
Total	510	100.0	100.0	

OCCUPATION OF MOTHER

Occupation	Frequency	Percent	Valid Percent	Cumulative Percent
Business/Trader	408	80.0	80.0	80.0
Doctor/Nurse/Health personnel	20	3.9	3.9	83.9
Teacher	18	3.5	3.5	87.5
Farmer	3	.6	.6	88.0
Prison Officer	1	.2	.2	88.2
Custom Officer	17	3.3	3.3	91.6
Journalist	1	.2	.2	91.8
Other's	16	3.1	3.1	94.9
Not Applicable	26	5.1	5.1	100.0
Total	510	100.0	100.0	

TYPE OF SCHOOL TO ATTEND AFTER JHS

Type of school	Frequency	Percent	Valid Percent	Cumulative Percent
Senior High School	382	74.9	74.9	74.9
Technical School	77	15.1	15.1	90.0
Vocational School	50	9.8	9.8	99.8
Other's	1	.2	.2	100.0
Total	510	100.0	100.0	

WHO SELECTED TYPE OF SCHOOL TO ATTEND

	Frequency	Percent	Valid Percent	Cumulative Percent
Yourself	175	34.3	34.3	34.3
Mother	90	17.6	17.6	52.0
Father	159	31.2	31.2	83.1
Teacher	41	8.0	8.0	91.2
Friends	11	2.2	2.2	93.3
Guardian	25	4.9	4.9	98.2
Other's	9	1.8	1.8	100.0
Total	510	100.0	100.0	

REGION TO ATTEND THE TYPE OF SCHOOL SELECTED

Region	Frequency	Percent	Valid Percent	Cumulative Percent
Greater Accra	215	42.2	42.2	42.2
Eastern	120	23.5	23.5	65.7
Ashanti	53	10.4	10.4	76.1
Western	35	6.9	6.9	82.9
Central	47	9.2	9.2	92.2
BA	14	2.7	2.7	94.9
Upper east	1	.2	.2	95.1
Volta	25	4.9	4.9	100.0
Total	510	100.0	100.0	

WHAT PREVENT YOU FROM GOING TO SCHOOL

	Frequency	Percent	Valid Percent	Cumulative Percent
Distance from home	54	10.6	10.6	10.6
Health Problem	11	2.2	2.2	12.7
Financial Problem	136	26.7	26.7	39.4
No Problem	309	60.6	60.6	100.0
Total	510	100.0	100.0	

DREAM PROFESSION

Dream Profession	Frequency	Percent	Valid Percent	Cumulative Percent
Teacher	34	6.7	6.7	6.7
Doctor/Nurse	106	20.8	20.8	27.5
Engineer	55	10.8	10.8	38.2
Farmer	23	4.5	4.5	42.7
Military Officer	10	2.0	2.0	44.7
Police Officer	27	5.3	5.3	50.0
Prison Officer	1	.2	.2	50.2
Custom Officer	25	4.9	4.9	55.1
Business/Trader	48	9.4	9.4	64.5
Other's	181	35.5	35.5	100.0
Total	510	100.0	100.0	