

**YANGON UNIVERSITY OF ECONOMICS
DEPARTMENT OF STATISTICS
Ph.D PROGRAMME**

**FACTORS INFLUENCING THE COMPLETION OF BASIC EDUCATION
PRIMARY LEVEL: A CASE STUDY OF SOME PRIMARY SCHOOLS IN
MEIKTILA TOWNSHIP MYANMAR**

**TIN TIN MAR
OCTOBER, 2019**

**YANGON UNIVERSITY OF ECONOMICS
DEPARTMENT OF STATISTICS
PhD PROGRAMME**

**FACTORS INFLUENCING THE COMPLETION OF BASIC EDUCATION
PRIMARY LEVEL: A CASE STUDY OF SOME PRIMARY SCHOOLS IN
MEIKTILA TOWNSHIP, MYANMAR**

**Submitted in Partial fulfillment of the Requirement for the Degree of Doctor
of Philosophy (PhD) of the Department of Statistics,
Yangon University of Economics**

Supervised by:

Dr. Maw Maw Khin
Professor/Head
Department of Statistics
Yangon University of Economics

Submitted by:

Tin Tin Mar
4 Paragu, Ah 1

OCTOBER, 2019

YANGON UNIVERSITY OF ECONOMICS
DEPARTMENT OF STAISTICS
PhD PROGRAMME

This is to certify that this dissertation entitled “**Factors Influencing the Completion of Basic education Primary Level: A Case Study of Some Primary Schools in Meiktila Township, Myanmar**” submitted as the requirement for the Degree of Doctor of Philosophy (PhD) has been accepted by the Board of Examiners.

Board of Examiners

Prof. Dr. Tin Win
(Chairman)
Rector, Yangon University of Economics

Prof. Dr. Ni Lar Myint Htoo
(Vice-chairman)
Pro Rector
Yangon University of Economics

Prof. Dr. San Kyi
(Referee)
Professor(Retired)
Department of Statistics
Yangon University of Economics

U Tun Hla
(Internal Examiner)
Deputy Director General(Retired)
Department of Education Training and Planning

Prof. Dr. Khin San Myint
(Internal Examiner)
Head of Department(Retired)
Department of Statistics
Yangon University of Economics

Prof. Dr. Lay Kyi
(External Examiner)
Pro- Rector (Retired)
Yangon University of Economics

Prof. Dr. Mya Thandar
(Member)
Professor
Department of Statistics
Yangon University of Economics

Prof. Dr. Maw Maw Khin
(Promoter)
Head of Department
Department of Statistics
Yangon University of Economics

October, 2019

CERTIFICATION

I hereby certify that the contents of this dissertation are wholly my own work unless otherwise referenced or acknowledged. Information from sources is referenced with original comments and ideas from writer herself.

Tin Tin Mar
4 PhD Ah- 1

ABSTRACT

The study examined factors influencing the completion of basic education primary level in Meiktila Township. The research objectives were based on parent related variables, student related variables, school related variables and community related variables that are influence on academic performance in pass grade level of primary students. The study targeted 60 public primary schools: 54 and 6 primary schools from rural areas and urban areas respectively. From those schools, 60 teachers, 507 students and 507 parents were selected by using stratified two stages sampling. The data were collected by using the structured questionnaires. Quantitative and qualitative data were coded and analyzed by using ordinal logistic regression analysis and multivariate analysis of variance. The study investigated the influence of parent related variables on completion in primary level in Meiktila Township. The findings revealed that, father's education, father's health, supporting facilities by parent, and supporting knowledgeable books were more influential than other variables on the three levels of pass grade in rural area. For urban area, mother's occupation, supporting school facilities by parent and parental encouragement were more influential. The study also investigated the influence of student-related variables on completion in public primary schools in Meiktila Township. The findings revealed that supporting from sibling, interesting in education, school attendance and interesting in study were more influential than other variables in rural area. In addition, birth order in family, interesting in education, interesting in study, parent help in school activities and cultivating in reading habit were more influential in urban area. Out of all the school related variables, gender, age, qualification, position, service and the interaction between these variables were found have impact on the percentage of pass grade level. This study also showed a strong correlation between completion of pass grade level and community-related variables. The variables of school distance, neighborhood educational level and getting advice from friends of parents were more influential than other variables in rural area. For urban area, neighborhood educational level and getting advice from friends of parents were more influential in Meiktila Township.

ACKNOWLEDGEMENTS

First and foremost, I would like to express my gratitude to Dr. Tin Win, Rector, Yangon University of Economics, for giving me an opportunity to write this thesis.

Secondly, I am highly and tremendously grateful to my supervisor, Professor Dr. Maw Maw Khin, Head of Department of Statistics, Yangon University of Economics, for reading and supervising the entire work and for providing many valuable suggestions and constant evaluation for improvement. My sincere thanks and gratitude go to Dr. Soe Win, Rector, Monywa University of Economics who willingly helped me in gathering papers and gave me other relevant information for my thesis.

I would like to express my special appreciation and thanks to Prof. Dr. Khin San Myint, Head of Department (Rtd), Department of Statistics, Yangon University of Economics, Prof. Dr. Thet Lwin, Head of Department(Rtd), Department of Statistics, Yangon University of Economics, Prof. Dr. Lay Kyi, Pro Rector (Rtd),Yangon University of Economics, Prof. Dr. San Kyi, Department of Statistics, Yangon University of Economics (Rtd), Prof. Dr. Khin May Than, Head of Department (Rtd), Daw Hta Hta, Professor (Head) (Rtd), Department of Statistics, Yangon University of Economics, Daw Mya Mya Win, Professor (Head) (Rtd), Department of Statistics, Monywa University of Economics, and Prof. U Ngwe Soe(Rtd), Department of Statistics, Yangon University of Economics for their constructive suggestion comments, expert opinions and generous editorial assistance in my thesis.

Significantly, my grateful thanks are extended to U Tun Hla, Deputy Director General (Rtd), Department of Education Planning and Training, for valuable suggestion, the required data and documents and his empathy.

I am extremely grateful to Prof. Dr. Mya Thandar, Department of Statistics, Yangon University of Economics and Prof. Dr. Cing Do Nem, Department of Statistics, Yangon University of Economics, who shared their valuable ideas and suggestions. I am also really grateful to Daw Aye Aye Than, Associate professor(Rtd), Department of Statistics, Yangon University of Economics, for her valuable advice and encouragement.

I would like to thank to all lecturers, assistant lecturers and tutors from Department of Statistics, Yangon University of Economics, who have been kind enough to advise and help me in their respective roles.

Finally, I owe great gratitude to my father, my mother, and my aunt who gave all round support to me. Without their kind encouragement, supporting and understanding, writing of this thesis would not have come to a successful completion.

CONTENTS

ABSTRACT		i
ACKNOWLEDGEMENTS		ii
CONTENTS		iv
LIST OF TABLES		viii
LIST OF FIGURES		xii
LIST OF ABBREVIATIONS		xiii
CHAPTER		Page
I	INTRODUCTION	1
	1.1 Rationale of the Study	4
	1.2 Objectives of the Study	7
	1.3 Method of Study	7
	1.4 Scope and Limitations of the Study	8
	1.5 Organization of the Study	8
II	LITERATURE REVIEW	10
	2.1 Related Studies on Asian Countries	10
	2.2 Related Studies on Western Countries	15
III	Basic Education Sector Development in Myanmar	22
	3.1 The Educational Background	22
	3.2 Formation of the Department of Education	23
	3.3 Department of Basic Education	25
	3.3.1 Education System of Myanmar	25
	3.3.2 Millennium Development Goals (MDGs)	27
	3.3.3 Legal and Policy Context	30
	3.4 Universalization of Primary Education (UPE) and Basic Education	31
	3.5 History of Education for All in Myanmar	33
	3.5.1 EFA National Action Plan (2003- 2015)	

	and Myanmar EFA Goals	34
3.6	Implementing National Education Strategic Plan (2016-21)	35
IV	SURVEY DESIGN AND METHODOLOGY	39
4.1	Questionnaire Design	39
4.1.1	Sampling Design	39
4.2	Sampling Method	40
4.2.1	Pilot Survey	41
4.2.2	Organization of the Field Work	41
4.2.3	The Design Effects	42
4.2.4	Sample Size Determination	44
4.3	Ordinal Logistic Regression	45
4.3.1	Assumptions of Ordinal Logistic Regression	46
4.4	Proportional Odds (PO) Model	47
4.4.1	Model Description of PO Model	47
4.4.2	Assumptions of PO Model	47
4.4.5	Estimation of PO Model	51
4.4.3	Residuals for PO Model	51
4.4.5	Estimation of PO Model	53
4.4.6	Describing the Fitted Model	53
4.4.7	Parallel Lines Test for Ordinal Logistic Regression	54
4.4.8	Overall Model Test for Ordinal Logistic Regression	55
4.4.9	Goodness-of-Fit Measures	55
4.4.10	Measuring Strength of Association	56
4.5	Multivariate Analysis of Variance (MANOVA)	57
4.5.1	One- way Multivariate Analysis of Variance (One-way MANOVA)	57
4.5.2	Two-way Multivariate Analysis of Variance (Two-way MANOVA)	57

V	FINDINGS AND DISCUSSIONS	60
5.1	Description of Variables	60
5.1.1	Dependent Variables of Primary Student's Completion Level	60
5.1.2	Independent Variables	60
5.1.3	Variable Coding of Independent Variables	61
5.1.4	Model Description	64
5.2	Parent Related Variables Affecting on the Completion of Primary Level	65
5.2.1	Bivariate Analysis of Pass Grade Level by Parent Related Variables in Rural	67
5.2.2	Multiple Ordinal Logistic Regression Analysis in Rural	70
5.2.3	Bivariate Analysis of Pass Grade Level by Parent Related Variables in Urban Area	76
5.2.4	Multiple Ordinal Logistic Regression Analysis	78
5.3	Student Related Variables Affecting on the Completion of Primary Level in Rural	83
5.3.1	Bivariate Analysis of Pass Grade Level by Student Related Variables in Rural Area	85
5.3.2	Multiple Ordinal Logistic Regression Analysis for Rural Area	89
5.3.3	Bivariate Analysis of Pass Grade Level by Student Related Variables in Urban Area	92
5.3.4	Multiple Ordinal Logistic Regression Analysis	96
5.4	School Related Variables Affecting on the Completion of Primary Level	101
5.4.1	Multivariate Analysis of Variance between Situation of Pass Grade Level and School Related Variables	102

5.5	Community Related Variables Affecting on the Completion of Primary Level in Rural Area	109
5.5.1	Bivariate Analysis of Pass Grade Level by Community Related Variables in Rural Area	110
5.5.2	Multiple Ordinal Logistic Regression Analysis in Rural Area	113
5.5.3	Bivariate Analysis of Pass Grade Level by Community Related Variables in Urban Area	117
5.5.4	Multiple Ordinal Logistic Regression Analysis for Urban Area	119
VI	CONCLUSION, RECOMMENDATIONS AND SUGGESTIONS	124
6.1	Finding and Discussion	124
6.2	Recommendations	128
6.3	Suggestions for Further Research	128
	REFERENCES	130

LIST OF TABLES

Table No.	Title	Page
3.2	Education System in Selected ASEAN Countries	36
4.1	Actual and Nominal Coverage Probability of Confidence Intervals for Different Values of Design Effects	43
4.2	Allocation of Sample Size (Number of Students and Parents) to Each Stratum	45
5.1	Variable Coding for Independent Variables	61
5.2	Description of Models for Variable	64
5.3	Association between Pass Grade Levels and Parent Related Variables	67
5.4	Distribution of Parent Related Variables	69
5.5	Consistency and Sampling Adequacy of Parental Attitude for Causes of Fail	70
5.6	Consistency and Sampling Adequacy of Parental Attitude for Causes of Success	71
5.7	Model Fitting Test of Ordinal Logistic Regression Model with Parent Related Variables in Rural	71
5.8	Goodness of Fit for Ordinal Logistic Regression Model	72
5.9	Parameters Estimates of Parent Related Variables	73
5.10	Parallelism Test of Ordinal Logistic Regression Model	75
5.11	Multicollinearity Test of Ordinal Logistic Regression Model	76
5.12	Coefficient of Determination for Ordinal Logistic Regression Model	76
5.13	Association between Pass Grade Levels and Parent Related Variables in Urban Area	77
5.14	Distribution of Parent Related Variables in Urban Area	78
5.15	Consistency and Sampling Adequacy of Parental Attitudes for Causes of Fail	79
5.16	Consistency and Sampling Adequacy of Parental Attitudes for Causes of Success	79
5.17	Model Fitting Test of Ordinal Logistic Regression Model	80

5.18	Goodness of Fit for Ordinal Logistic Regression Model	80
5.19	Parameters Estimates of Parent Related Variables	81
5.20	Parallelism Test of Ordinal Logistic Regression Model	82
5.21	Multicollinearity Test of Ordinal Logistic Regression Model	83
5.22	Determination Coefficient for Ordinal Logistic Regression Model	83
5.23	Association between Pass Grade Levels and Student Related Variables in Rural Area	86
5.24	Distribution of Student Related Variables	88
5.25	Model Fitting Test of Ordinal Logistic Regression Model with Student Related Variables	89
5.26	Goodness of Fit for Ordinal Logistic Regression Model with Student Related Variables	89
5.27	Parameters Estimation of Ordinal Logistic Regression	90
5.28	Parallelism Test of Ordinal Logistic Regression Model with Student Related Variables	91
5.29	Multicollinearity Test for Ordinal Logistic Regression Model with Student Related Variables	92
5.30	Coefficient of Determination for Ordinal Logistic Regression Model with Student Related Variables	92
5.31	Association between Pass Grade Levels and Student Related Variables in Urban	93
5.32	Distribution of Student Related Variables in Urban Area	95
5.33	Model Fitting Test of Ordinal Logistic Regression Model with Student Related Variables in Urban	96
5.34	Goodness of Fit for Ordinal Logistic Regression Model with Student Related Variables in Urban	97
5.35	Parameters Estimates of Parent Related Variables	97
5.36	Parallelism Test of Ordinal Logistic Regression Model with Student Related Variables	99
5.37	Multicollinearity Test for Ordinal Logistic Regression Model with Student Related Variables in Urban	100

5.38	Coefficient of Determination for Ordinal Logistic Regression Model with Student Related Variables	100
5.39	Distribution of Teacher by School Related Variables	102
5.40	Box's test of Equality of Covariance Matrices	104
5.41	Multivariate Tests of School Variables	104
5.42	Levene's Test of Equality of Error Variances	105
5.43	Parameters Estimation for Percentage of Good Pass Grade Level	106
5.44	Parameters Estimation for Percentage of Moderate Pass Grade Level	107
5.45	Parameters Estimation for Percentage of Low Pass Grade Level	108
5.46	Association between Pass Grade Levels and Community Related Variables	110
5.47	Distribution of Student by Community Related Variables	112
5.48	Model Fitting Test of Ordinal Logistic Regression Model	113
5.49	Goodness of Fit for Ordinal Logistic Regression with Community Related Variables in Rural	114
5.50	Parameters Estimation of Community Related Variables	114
5.51	Parallelism Test of Ordinal Logistic Regression Model	116
5.52	Multicollinearity Test for Ordinal Logistic Regression Parameter Estimates	117
5.53	Coefficient of Determination for Ordinal Logistic Regression Model	117
5.54	Association between Pass Grade Levels and Community Related Variables	118
5.55	Distribution of Student by Community Related Variables in Urban	119
5.56	Model Fitting Test of Ordinal Logistic Regression Model with Community Related Variables in Urban	120
5.57	Goodness of Fit for Ordinal Logistic Regression with Community Related Variables in Urban	120
5.58	Parameters Estimation of Community Related Variables in Urban Area	121
5.59	Parallelism Test of Ordinal Logistic Regression Model with Community Related Variables in Urban	122

5.60	Multicollinearity Test for Ordinal Logistic Regression Parameter Estimates with Community Related Variables in Urban	123
5.61	Coefficient of Determination for Ordinal Logistic Regression Model with Community Related Variables in Urban	123

LIST OF FIGURES

Figure No.	Title	Page
2.1	Conceptual Framework on the Relationship between Conceptual Determinants and Primary Students' Completion Levels	21
4.1	Conditions where the assumption holds and does not hold	55

LISTS OF ABBREVIATIONS

ANOVA	Analysis of Variance
APPEAL	Asia-Pacific Programme of Education for all
BEIS	Basic Education Information System
DBE	Department of Basic Education
DESD	United Nations Decade of Education for Sustainable Development
DHE	Department of Higher Education
DMLC	Department of Myanmar Language Commission
DTAVE	Department of Technical, Agricultural, Vocational Education
ECCE	Early Childhood Care Education
EFA	Education for All
EMIS	Educational Management Information System
MANOVA	Multivariate Analysis of Variance
MDA	Mid – Decade Assessment
MDGs	Millennium Development Goals
MERB	Myanmar Education Research Bureau
MLE	Maximum Likelihood Estimation
NAP	National Action Plan
NSO	National Statistics Office
SES	Socio Economies Status
SMC	School Management Committee
TWG	Thematic Working Group
UNLD	United Nations Literacy Decade
UPE	Universalization Primary Education

CHAPTER I

INTRODUCTION

Education is not a miracle cure or a magic formula opening the door to a world in which all ideals will be attained but is one of the principle means available to foster a deeper and more harmonious form of human development and thereby to reduce poverty, exclusion, ignorance, oppression.

Education is the key to development. Education contributes to sustainable development; it is very important for the advancement of people who can address environmental and development issues. As a fundamental requirement for the development of the country's human resources, the Human Resources Development Plan is designed to develop education objectives.

The World Bank and the Asian Development Bank in the development approach and the UN agencies (UNICEF, UNDP, UNESCO, etc.) and international non-government organizations to fill the need for human rights and fundamental approach the dam and the Japan International Cooperation Jing Development aid is self-ninth of a joint venture with the design approach of the education and development cooperation in the study found.

Education can improve one's thinking, behavior and emotions. Recognizing early learning in international education, it has expanded its focus on early childhood care and development programs to address children's intellectual and physical needs, as well as physical, emotional and social development. They provide systematic, moral and social development. There is also a focus a graduation and higher education of primary level. Education should reflect the children's vision of education quality. In addition, the management of the education system has been expanded to included education, health and nutrition, parent and community involvement. In the transition to the 21st Century, international conferences aim for 2015 and address four areas of education development such as the UN Millennium Development Goals, Education for All (EFA), the UN Literacy Decade and the Decade of Education for the United Nations Sustainable Development. The World Conference on Education for All (EFA) was held from March 5 to 9, 1990 in Jomtein, Thailand. The internal community has realized that basic education is a necessary pre-condition to active participation in society today. Countries

everywhere have no alternative but to expand and improve learning facilities so that the basic learning needs of every child, adolescent and adult can be met over their lifetime.

After World Conference on Education for All (EFA), Dakar (EFA) goals were summited: (i) expanding and improving comprehensive early childhood care and education, especially for the most vulnerable and disadvantaged children; Goal: (1) ECCE; (ii) ensuring that by 2015 all children, particularly girls, children in difficult circumstances and those belonging to ethnic minorities, have access to and complete free and compulsory primary education of good quality; Goal: (2) UBE; (iii) ensuring that the learning needs of all young people and adults are met through equitable access to appropriate learning and life skills programs; Goal: (3) Life Skills; (iv) Achieving a 50 percent improvement in levels of adult literacy by 2015, especially for women, and equitable access to basic and continuing education for all adults; Goal: (4) Literacy; (v) eliminating gender disparities in primary and secondary education by 2005, and achieving gender equality in education by 2015, with a focus on ensuring girls' full and equal access to and achievement in basic education of good quality; and Goal: (5) Gender and (vi) improving all aspects of the quality of education and ensuring excellence of all so that recognized and measurable learning outcomes are achieved by all, especially in literacy, numeracy and essential life skills. Goal: (6) Quality.

This expanded vision of basic education emerged from the EFA, World Conference where delegates from 155 countries as well as representatives from some 150 organizations committed themselves to work towards basic education for all. They adopted the World Declaration on Education for All and agreed on a frame work for Action to Meet Basic Learning Needs. These two texts have guided governments and the world community in their efforts during the 1990s to universalize primary education and to reduce adult illiteracy.

Beginning in 1998, a global review of the progress achieved since the 1990 Conference is underway. The EFA 2000 Assessment involves the collection and analysis of statistical data and other information on primary schooling, early childhood development activities and a wide range of literacy and basic education programmes for adolescents and adults.

States Parties recognize the right of the child to education, and with a view to achieve this right progressively and on the basis of equal opportunity, in particular (i) make primary education compulsory and available free to all (ii) encourage the development of different forms

of secondary education, including and accessible to every child and take appropriate measures such as the introduction of free education and offering financial assistance in case of need (iii) make higher education accessible to all on the basis of capacity by every appropriate means; (iv) make educational and vocational information and guidance available and accessible to all children.

Thereafter, states parties must take all appropriate measures to ensure that school discipline is administered in a manner consistent with the child's human dignity and in conformity with the present Convention. They also must promote and encourage international co-operation in matters relating to education, in particular with a view to contributing to the elimination of ignorance and illiteracy throughout the world and facilitating access to scientific and technical knowledge and modern teaching methods. In this regard, particular account shall be taken of the needs of developing countries.

In Myanmar, a national level coordinating decision making body called the Myanmar Education Committee was established on 2 September 1991. The committee facilitates the development of an education system, which is equitable with the traditional, the cultural and the social values and also in keeping with the economic and political aspirations of the nation. This high-powered committee is chaired by the Secretary-1 of the State Peace and Development Council and ministers of the ministries that administer education are members of the committee. To stimulate reforms, seven annual seminars have been held in the basic education sector since 1998 and they were attended by administrators, teachers and education specialists. The first two held in 1998 and 1999, acted as the basis for the education promotion programmes while the 2000 seminar considered the programmes to be implemented under the special four year plan for education.

Currently, Myanmar Basic Education System is mixed system of KG+12 and 5-4-3. It plays a crucial role in a pupil's life. Primary school curriculum is viewed as the foundation upon which the mastery of formal learning skills must be planted and this level is supposed to provide smooth transition to secondary school. Therefore, primary education is officially compulsory. It lasts five years and to continue onto secondary school, students must pass a comprehensive examination of basic subjects.

The government compulsory primary education policy consists of Grade One to Five. Grade One to Three is called the lower primary level. The children in this level learn the subjects of Myanmar and English languages, Mathematics and Science. Grade Four to Five is called the upper primary level. The children in this level also learn Geography and History in addition to those subjects of low level. According to the revised primary curriculum started from 2001, natural science, moral and civics, painting and music, physical education and school activities are added for their life skills.

1.1 Rationale of the Study

Education is a cornerstone of economic growth and social development and a principal means of improving the welfare of individuals. And also, education contributes to overall development and it directly influences the quality of life of an individual. There are such well accepted statements that no one generally questions them. However, one cannot avoid dealing with the question, whether such an assumption holds good for any kind of education or is it true only if the education provided in school is relevant to the lives and aspirations of the society.

Primary education is the foundation of education. The central purpose of primary education is twofold: (i) to produce a literate and numerate population and (ii) to lay the ground work for further education. According to the Ogula (1998), primary schools must equip pupils with knowledge, skills and attitudes necessary for effective participation in their society and to continue learning throughout their lives. Therefore, the completion of primary education is essentially an allocation mechanism into middle school education and other post primary school programs.

Basic Education Development marks the completion of primary school cycle. It is used as a yardstick for selection and placement into various institutions of higher learning. Wamai (1991) noted that examination results are taken as a valid measure of a pupil's educational achievement and that Myanmar regards examination as a trustworthy instrument of categorizing students into groups of achievers and non- achievers. Examination results are usually awaited for with a lot of anxiety because of the meaning they carry for the future of the student.

Passing the examination (scholastic achievement) is an important outcome of an educational system in any country and government expend a lot of effort to increase the achievement level. However, it is not always clear what kind of educational conditions or

educational policies are appropriate to increase academic achievement levels (pass grade levels, PGLs) because the situation differs according to country and region.

Poor performance not only leads to undesirable wastage through dropout and repeating of classes, but also denies a pupil the continuation of schooling through the formal system of education (Eshiwani, 1983). Eshiwani further noted that if any region of the country lags behind either in the number of pupils who attend school, or in the number of pupils who pass important examinations, that region cannot efficiently participate in democratization of education.

The World Bank conducted many studies in education in order to ascertain the effectiveness of investing money in schools. Heyneman and Loxley (1983) analyzed scholastic achievement scores and influencing factors in many countries including developing countries, and they found that school-related were more influential than family-related factors on scholastic achievement in low income countries. Their findings encouraged investment in education in developing countries.

It is necessary to measure the status of scholastic achievement first in order to conduct a similar study in Myanmar. But there has been no nationwide examination in Myanmar, with the exception of the matriculation examination at the end of Grade 5 which also serves as the entrance examination to higher education institutions. The usual examinations at the end of terms and the end of the year are conducted at the school level; and the results are not comparable between schools.

In this situation, a nationwide examination was conducted in February 2015 for Grade 5 and Grade 9 students by the Ministry of Education. The Grade 5 and Grade 9 are the last year of primary and middle school levels (according to old system). Some students from monastic schools also participated in the examination. The purpose of these examinations was not to investigate the current scholastic achievement level, but to confirm if individual students had retained adequate knowledge and skills to graduate from primary and middle school levels. The basic idea of this examination was to develop a graduation examination from primary school and middle school levels. All who passed these graduation examinations were seen as equivalent to graduates even if they were actually out of school, and are able to proceed to the next grade.

This study aims to understand and evaluate which variables have more influence on the completion of primary level with reference to comparison of the relationship between pass grade

levels and each related variables. The study may be helpful to the schools in Meiktila Township by providing (i) information on how to identify the variables influencing the completion of primary level, (ii) enhancement for the understanding of state holder on factors influencing on the completion of primary level, (iii) more awareness and participation of parents in the school management system, (iv) school appropriate measures concerning with schools influencing on the completion of primary level, (v) help for other researchers who will study the factors influencing on the achievement of any grades, (vi) knowledge for parents of students about the factors influencing on the completion of any school levels.

Meiktila is a city in central Myanmar on the banks of Meiktila Lake in the Mandalay Region at the junctions of the Bagan-Taungyi, Yangon-Mandalay and Meiktila-Myingyan highways. It is the most easterly of the districts in Myanmar's central dry zone. It also lies between Wundwin, Myingyan, Yamethin, and touches Shan State on the east. Because of its strategic position, Meiktila is home to Myanmar Air Force's central command and Meiktila Air Force Base. It is well-developed economically local residents in the township mainly do the agriculture. Other businesses include selling electronic devices, farming appliances, clothes and peasants' tools. Meiktila, one can go to regions across the country by land and is easily accessible town. This study supports to find out the variables which have led to good performance among primary schools in this township. According to the educational facts, Meiktila has 198 primary schools and 2,345 teachers. The number of students is 53205 and teacher-student ratio is 1:23. The enrollment rate for the school age student is 99.04.

1.2 Objectives of the Study

This study aimed to provide a better understanding of some of the variables associated with completion of primary level students in Meiktila. These data are important in making recommendations on possible focal points of students for the completion of primary level. Therefore, the objectives are

- (1) To assess determinants of parents related variables to complete the primary level for primary students,
- (2) to explore the determinants of students related variables to support completion of primary level for primary students,

- (3) to analyze the important determinants of school related variables concern with the complete of primary level for primary students, and
- (4) to explore the determinants of community related variables to complete primary level for primary students.

1.3 Method of Study

Cross-classification, bivariate analysis and ordinal logistic regression analysis were used to investigate the student, parent and community related variables to complete primary level by using Statistical Package of Social Science (SPSS) and dependent variables for this analysis is pass grade level of primary students. Multivariate Analysis of Variance (MANOVA) was used for school related variables to find out the effect variables on pass grade level. In this analysis, percentage of each pass grade level was used as dependent variables. The data used in this study are collected by interviewing the participants with questionnaires using the sampling technique called a stratified two stage random sampling. The target population consists of all primary school, Grade 4 students and their parents of 2015-2016 Academic Year (AY) living in Meiktila Township and all primary school teachers. Socio-economic and educational-related information of students were collected by interviewing selected primary students and their parents at their homes. School information was collected from the school teachers at selected primary schools in Meiktila Township.

1.4. Scope and Limitations of the Study

In Myanmar, there is no nationwide education examination at each level of school except the matriculation examination at the end of Grade 10, which is also the entrance examination to higher education institutions. The usual examinations at the end of each term and at the end of each school year are conducted at the school level. Nowadays, a newly nationwide examination system was introduced in February 2015 for Grade 4 and Grade 8 students under the Ministry of Education. At that time, the examination questions were developed at district level for Grade 4 and at the state/regional level for Grade 8.

The purpose of these examinations was not only to investigate current achievement levels but also to confirm if individual students had retained adequate knowledge and skills to graduate from primary and middle school levels. In 2014-2015 AY and 2015-2016 AY, supplementary examinations were held for the students, who did not pass the examination to proceed to the next

grade in 2016-2017 AY . The system was changed in 2016-2017 AY. Previously there were no supplementary examinations. Therefore, the researcher chooses the 2015-2016 AY for this study to identify those factors affecting the completion of primary level. List of the needed data will be collected before supplementary examination in 2015-2016 AY.

1.5 Organization of the Study

The study has been organized into six chapters as follows: Chapter 1 is the introduction which is comprised of five sub- headings: rationale of the study, objectives of the study, method of study, scope and limitation of the study and organization of the study. Chapter 2 deals with the related literature review. In Chapter 3, the Establishment of Department and the Evolution of Basic Education are discussed. Research design and methodology are discussed in Chapter 4. The factors associated with completion of primary level in Meiktila Township are investigated in Chapter 5. Summary, conclusions, and suggestions for further research are presented in Chapter 6.

CHAPTER II

LITERATURE REVIEW

This section reviews the literature on factors influencing the completion of the primary level education in various parts of the world. The international perspectives on factor influencing students' completion of the primary level education are discussed under the following sub-headings; school related factors, family related factors, student related factors and community related factors. From the various studies that have been reviewed the researchers have established various factors influencing completion primary level.

2.1 Related Studies on Asian Countries

Nonglak (1980) studied Influence of Physical facilities, Teaching and Learning Materials on Academic Performance Variations in Academic Achievement between and within Primary Schools in Thailand. The study examined the variations in educational inputs and achievement both among and within schools. The educational production function methodology was utilized to estimate between- school, within- school and contextual effects of educational inputs on level of achievement and achievement gain. The data for the study came from the joint project conducted by the National Education Commission, the Ministry of Interior and the Ministry of Education in Thailand. The sample consisted of 27,897 third-grade students from 987 schools. The results indicated that in Thailand, unlike developed nations, differences in achievement of primary school students occur because of differences in students' background and in schooling inputs both among and within schools. The high-scoring schools are big urban schools and these schools located in wealthy, densely-populated communities. And also, they have better school facilities in terms of a high percentage of qualified teachers, low pupil-teacher ratio, high unit recurrent cost and proximity to upper primary schools. Their students come from high family background and are well prepared. Therefore, the estimation of educational effects shows that different schooling inputs have different effects on student outcome. Father's occupation, student ability, absenteeism and kindergarten experience have greater between-school effects while student age and grade repetition have stronger within-school effects. School factors show weak between-school effects. School size shows moderate effects on total achievement and a

trivial effect on achievement gain. School location and level of teacher training show a moderate effect only on achievement gain.

Masashi (2003) conducted a study to clarify factors influencing academic achievement of primary students in mountainous areas of Vietnam. The data collection was done by the use of questionnaires administered to 95 primary school students in mountainous areas. This was statistically analyzed and the result showed that three factors had a direct effect on students' self-reporting of academic achievement. The strongest factor is students' proficiency in Vietnamese, and the next is parents' interest in child's study followed by the existence of close friends in school. In this study only one instrument was utilized.

Ming Ming Chiu (2005) conducted a study on Effects of Resources, Inequality and Privilege Bias on Achievement: Country, School, and Student level Analyses. The data was collected by using stratified sampling with respect to neighborhood Socio Economics Status (SES) and student intake. After that, they sampled about 35 students from each selected schools and at least 4,500 students from each country. Single question with limited numbers of possible response (e.g. yes/ no or a simple Likert scale) probably measure underlying constructs coarsely, resulting in substantial measurement error. Traditional ordinary least squares regression tends to underestimate standard errors in clustered data and hence can improperly yield significant findings. The found that students with higher parent and schoolmate parent SES enjoy greater learning opportunities and capitalize on them to learn more. Students might benefit from schoolmates with higher and social resources or through schoolmates', parents' greater school participation or social networks. Students scored higher when their schools had a sufficient number of teachers, sufficient teaching materials, proportionately more teachers with subject relevant university degrees.

Dalisay,& et.al, (2010) analyzed that the education outcomes in the Philippines. This study used two major sources (i) the 2002, 2004 and 2007 Annual Poverty Indicator Survey conducted by the National Statistics Office (NSO) and (ii) administrative data obtained from the Basic Education Information System (BEIS) combination of the longitudinal analysis (cross-section and time-series analysis) is used in this study. The result of modeling the individual, school and quality of education outcomes showed that although school resources such as pupil-teacher ratio is a key determinant for both individual and school outcomes, and a significant factor in determining quality of education outcomes, socioeconomic characteristics are stronger

determinants of education outcomes. Children of families in the lower-income deciles and with less educated household heads are vulnerable and less likely to attend school. Females have better odds of attending school than males. Working children especially males are less likely to attend secondary school.

Daniel Suryadarma (2010), the two factors that significantly influence demand for education is household wealth and child cognitive skills in developing countries. In this study, the Indonesia Family Life Survey and Village Census dataset were used. The results from this were analyzed by using correlated two-equation and sequential probit model. The result found that the positive effect of skills is as large as the negative effect of poverty at the junior secondary level. This implies that a child's cognitive skills at the end of primary school are a key factor that compensates for the detrimental effect of poverty on education attainment. Moreover, they found that poverty has no effect on senior secondary completion.

Rasiah and Hassan (2011) studied on poverty and student's performance in Malaysia. A sample survey with a cross-sectional design was carried out. It covered 1742 form four students from 25 secondary schools in four state of Peninsular Malaysia. Schools were selected randomly by location. Data were collected using questionnaires and analyzed using descriptive statistics and the regression techniques to estimate the impact of educational expenditure on students' performance based on Penilaian Meninges Ronda Examinations. They found that strong effects of total schooling expenditure on education, particularly on extra tuition and books matters as it likely to produce students with better educational outcome.

Sopha Soeung & et.al (2011) analyzed that 'Factors Influencing Student Achievement in Rural Cambodia Primary Schools' to investigate the factor influence on the achievement of the fourth-graders in Cambodian rural primary schools. There are three main factors in this study, namely family, individual and community factor analysis and multiple linear regression analysis was used in this study. The results showed that student self-esteem, student motivation, frequency of homework completion and teacher-student interactions were positively related to the achievement whereas student absenteeism negatively affected math achievement. And then, the amount of times the students had spent helping their families lowered their math test scores on family level. However some forms of child labor increased their achievement on both math

and kramer test. They found that high levels of maternal education and parental motivation improved children's achievement children living without parents or with mothers only tended to perform well on tests, compared with the children staying with both parents. On community level, this study was found that certain characteristic hundred children's academic progress.

Nath (2012) conducted a study on Factors Influencing Primary Students' learning Achievement in Bangladesh. Education watch dataset created in 2008 was utilized. It is a civil society initiative to monitor progress in education in Bangladesh. Socio- economic and education-related information of the students were collected from the school heads at their offices. They also collected social-economic and education-related information from the parents through interviewing them at home and school information from the school heads at their offices. Learning achievement was analyzed with the help of bivariate analysis and multivariate regression analysis. This study found that teachers' length of experience contributed the most, followed respectively of SMC meetings, class size and student- teacher ratio. Student-teacher ratio had a negative relationship with learning achievement and the rest had a positive relationship. No contribution of teacher training and distance between schools was found.

Selina Akhter (2012) examined indirect benefits of women's education from Bangladesh. This study focus to examine two important relationships of mother's education with; i) children's school attendance and ii) nutritional status from the perspective of human capital theory. In this study, the Socio-economic context and the household level data of Bangladesh were used to analyze by using multiple regression models. This study found that child nutrition is unambiguously improved by mother's education holding all other variables constant. This finding is not sufficiently supported by the statistical analysis using probit model rather both father's and mother's education equally play an important role in acquiring children education.

Muta conducted the factors affecting scholastic achievement of Grade 5 and Grade 9 in Chin State (2015) and in Mandalay region (2016). The data was available from the registered of student who passed all of the subjects for Grade 5 and Grade 9. Linear regression analysis was used in these studies. These studies were found that educational conditions such as "student/teacher ratio," "quality of teachers," and "number of students" can contribute to

increasing the pass rate more significantly than the type of school or school ranking, which is considered to be proxy variables of student motivation and socioeconomic status.

Kaoru Ishiguro (2017) conducted the Determinants of Learning Achievements: Empirical Analysis of Seven Schools in Cambodian Primary school to examine the determinants of learning achievements in Cambodian primary school. In this study student factors and family factors are evaluated. The data was collected from a field survey in seven primary schools. The respondents to the survey are 420 third-grade students. The family factors are classified into the family attributes (educational background of father, parent's occupation, number of siblings, domestic assets such as motorcycles and /or cows, and sources of drinking water. The student factors contained their attributes (age and gender), school attendance (enrollment age and repeat experience), and willingness to learn (homework completion and question to ask in class). Factor analysis and regression analysis are used in this study. This study concluded that both student factor and family factors influence the learning.

2.2 Related Studies on Western Countries

Sanders, Horn and Wright (1997) conducted a study on a teacher and classroom context effects on student's achievement: implications for teacher evaluation. Using statistical mixed model methodologies, the study conducted multivariate longitudinal analysis of student achievement, made estimate of school, class size and teacher. The study established that teacher effects are dominant factors affecting student's academic gain and that the classroom context variables of heterogeneity among students and class sizes have relatively little influence on academic gain. This study was a longitudinal study.

Tremblay, Ross & Berthlot (2001) studied on factors influencing Grade 3 student performance in Ontario by using a multilevel regression analysis. This study used an ecological conceptual approach to examine factors influencing academic performance of Grade 3 students in Ontario. The data come from Ontario's Education Quality and Accountability Office, which administered Ontario-wide standardized tests to some 115,000 English-speaking Grade 3 students from more than 3,200 schools in 1997. Multilevel

regression analyses were used because of the nested structure of the data. They found that teachers, classrooms, schools and neighborhoods are important for student achievement. At the student level, girls outperformed boys, students from higher-SES backgrounds performed better than those from lower-SES backgrounds, and those with parents involved at school performed better than those with non-involved parents. Class-level variables that positively affected performance included lower numbers of students in the classroom and experienced teachers who were comfortable with the curriculum. At the school level, achievement was higher in schools located in higher-SES neighborhoods, and students in urban schools outperformed those in rural schools.

Considine and Zappala (2002) analyzed the factors influencing the educational performance of students from disadvantaged backgrounds. In this study Family structure, type of school, absences, gender, ethnicity, geographical location and housing type are used as independent variables and the educational performance as the dependent variable. The data for this study is a sample of 3329 students who were on the Smith Family Learning for Life program in 1999. Two different analyses were employed: (1) odd ratio analysis and (2) multivariate analysis. Results from both analysis indicated that sex, unexplained absences, ethnicity, parental educational attainment, housing type and student age are reflected by school level were all statistically significant variables and predictors of academic performance. In contrast, family structure, the main source of family income and geographical location did not significantly predict variation in school performance once other factors were controlled for.

Chevalier (June, 2004) analyzed that effect of parental education on child education. In this study, to achieve a reasonable sample size, nine cross-sections from the Family Resources Survey (FRS) (1994-2002) are pooled leading to a sample of 18715 individuals aged between 16 and 18 at the time of the interview. The data were analyzed by using probity regression analysis. The result found that a larger impact of maternal education than parental education, consistent with the common wisdom that mothers spend more time with their children than fathers do. Although parental education becomes close to nil for girl, whilst maternal education increases, both parental education attainments increase the probability of post- compulsory education for boy. However, when focusing on the sample of children living with both natural parents, paternal effect on son's education is greatly increased.

Smits (2007) examined the role of family background and context effects on educational participation in five Arab countries. The data used in this study are nationally representative samples of households and collect information on all households' members, including information on the educational enrollment of children. The effect of family background characteristics and regional characteristics on the participation in education was studied using bivariate cross tabulations and multilevel logistic regression analyses. In this study, the results showed that the father had more than primary education or the mother had attended primary education, the chances that a child is in school are much higher than if the parents have less education. Household wealth also played a major role. If the parents were uneducated or the household was in the lowest wealth quintile the chances that children are in school decrease strongly for both boys and girls at both levels. Employment of the mother turned out to play only a role for participation of younger girls and there the effect was contrary to expectations. Children of employed mothers tend to be less in school. In adaptation, the result found that father's and mother's education, household wealth and father's occupation also play a major role in the educational attainment processes in the MENA regions.

Dutta (2008) examined the attitude of students in primary schools towards school infrastructure and its relationship with school effectiveness in West Bengal. Multistage random sampling was used to obtain a sample of 572 students from different schools in 6 different districts of West Bengal. Questionnaires were used to obtain data. The study revealed that though attitude and school infrastructure perception play important roles in school attendance motivation, they fail to show any predictable change in academic performance of students.

Arshad (2009) showed that misallocation of student teacher ratio, class size and per student expenditure lead to the wastage of school resource inputs and lower academic achievement in Punjab, Pakistan. The population comprised all secondary and higher secondary schools, secondary teachers and secondary students in Punjab. Overall, a total of 288 schools then, 20 students and 10 teachers from each school were randomly selected as the sample of the study. The longitudinal data of academic achievement in the form of aggregate marks of the annual examinations of the classes: VI, VII, and VIII as prior achievement and that of the class X as academic achievement of the same students through "Result Sheet". Data were summarized at school level and then analyzed collectively stepwise

regression analysis with linear function was used to find out the differential impact of student teacher ratio and class size on the academic achievement. The study found that misallocation of student teacher ratio, class size and per student expenditure lead to the wastage of resources and lower level of academic achievement. Reduction in student teacher ratio and class size, and addition in per student expenditure were very expensive, therefore, policy could be decided considering the found constraints. However, allocation of student teacher ratio, class size and per student expenditure could be equalized within the source funds. This equal location of these resource inputs might lead to the effective use of school resource inputs and produce higher level of academic achievement.

Chaturvedi (2009) conducted a study on school environment, achievement motivation and academic achievement. The study investigated the effect of school environment and certain demographic variables on achievement, motivation and academic achievement of young adolescents. The sample consists of 300 students in the age range of 12-15 years, selected by stratified sampling method from various schools of Bhopal. School environment was measured with the help of "School Environment Scale" and "Doe Mohan Achievement Motivation Scale" was used to measure achievement motivation. Percentages of marks obtained by the subjects in last three years were used as a measure of academic achievement. The scores of the subjects were analyzed with the help of product moment correlation and regression analysis, 't' test and 'F' test were used to compare the scores on gender, father's occupation and type of school. This study found that all the six sub-scales of school environment had significant effects on academic achievement. The scores on achievement motivation as well as academic achievement differed significantly in case of gender grade and father's occupation. In type of schools the difference was significant on academic achievement only. It concluded that school environment played a significant role in achievement motivation as well as academic achievement of young adolescents.

Michael and Corporation (2011) studied on Detrimental Effects of Missing School: Evidence from Urban Sibling noted that absence negatively relates to academic achievement. Employing a model of family fixed effects on a longitudinal sample of siblings within the same household in a large urban district school and over six years of observation. The results indicated a strong, statistically significant negative relationship between absences and achievement.

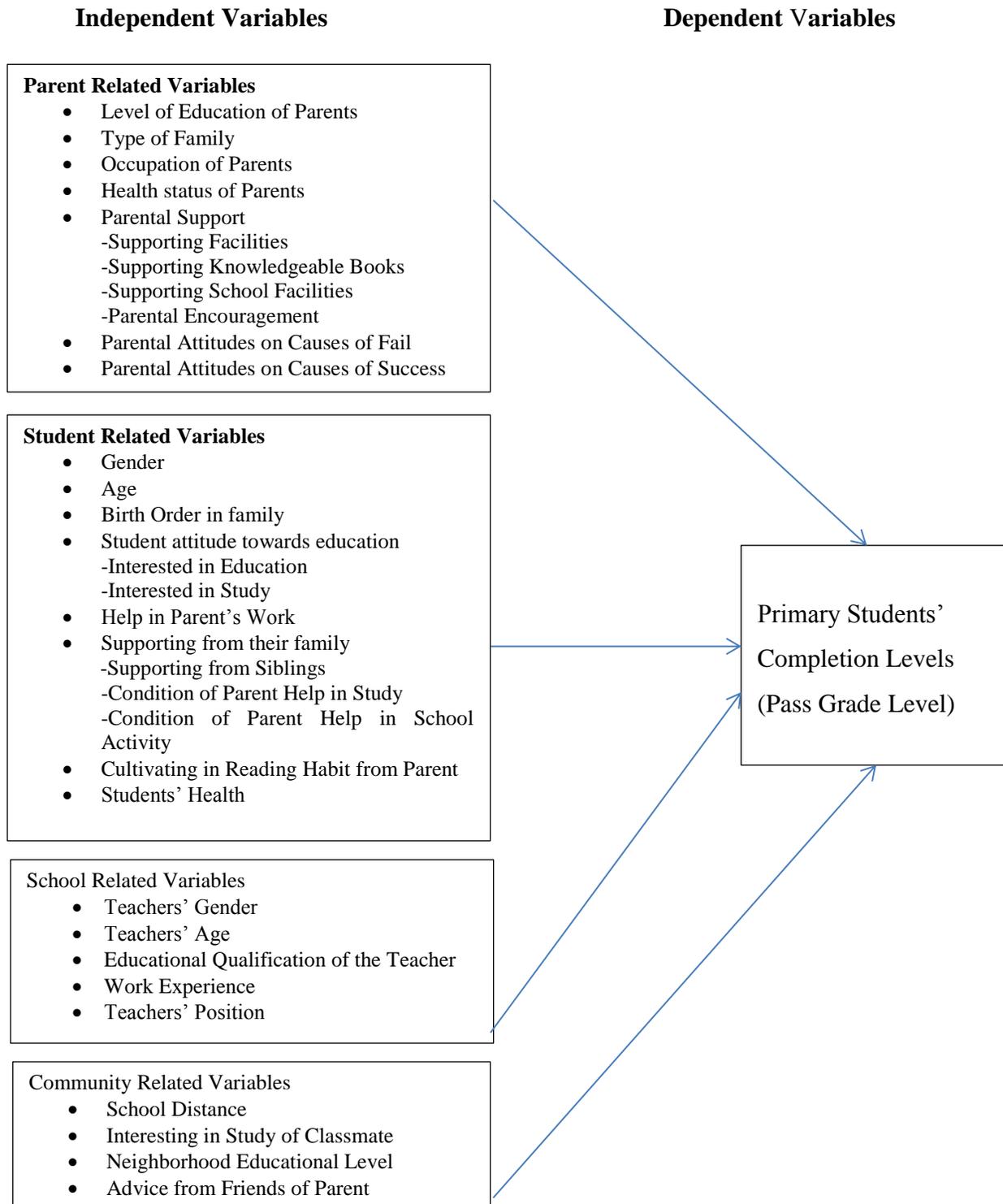
Tomita and Muta (2012) conducted a study on the influence of school and family related factors on scholastic achievements in Malawi, one of the very low-income countries and confirmed Heyneman and Loxley's finding (i.e., school related factors are more influential and family-related factors are less influential on scholastic achievements in low-income countries). Two different statistical methodologies were employed: (1) separate analyses of school and student level variables based on linear regression and structural equation modeling (SEM), and (2) simultaneous analyses of school and student level variables based on hierarchical linear modeling (HLM). Results from both methodologies confirmed the Heyneman and Loxley's finding effect in the case of Malawi one interpretation of the Heyneman and Loxley's finding may be that the variance of school-related factors is larger than family-related in developing countries and vice-versa.

Koskei and Neon (2015) studied on parental educational attainment as a factor in students' academic performance of public mixed day secondary schools in Kuroki Sub-County, Nauru County, Kenya. One hundred and eighty four students were selected from six schools and used for the study. The study population was 3,913 students enrolled in public mixed day secondary schools in Kuroki Sub-County. Stratified random sampling was adopted. The technique places the respondents into two strata based on gender (boys and girls). In this study, simple random sampling was adopted because it necessitated selecting of schools in such a way that the schools had an equal probability of being equal. Data was collected from students in the selected secondary schools by using questionnaire for students. Both closed and open-ended items were used in the questionnaire. To determine the contribution of parental educational attainment to student's academic performance, chi-square test analysis were done with the father's and mother's variable and the student's average end of term score for one year as the dependent variable. The result obtained from analysis showed that the level of education appear to have no direct influence on secondary students performance.

Ibeawuchi and Ekechudwu (2017) studied on the relationship between birth order, family size, parental involvement and secondary school adolescents' academic underachievement in Rivers state, Nigeria. The design adopted in this study was a correlational design, which was aimed at finding out the relationship between psychological and family demographic variables with academic underachievement among secondary

school adolescents in Rivers State. This study found that small families, parents are less stressed economically and emotionally. Again in small families, family members are more patient with each other and have more time to devote to each child's development. On the hand children in large families receive little attention and care as these has to be shared among the siblings. And also birth order is one of the student related factors and it refers to the science of understanding a person's place in their family. The order in which a person lands in their family can affect their life. Birth order is the Location in which a child is born in a family system. It refers to four basic positions of a child: oldest, middle, youngest and only. Each position has person's childhood. Birth order begins with the order in which a person enters their family. The sample of 240 students in 30 selected secondary schools was selected by using purposive sampling technique.

Figure 2.1: Conceptual Framework on the Relationship between Conceptual Determinants and Primary Students' Completion Levels



Source: Own Compilation (2016)

CHAPTER III

Basic Education Sector Development in Myanmar

3.1. The Educational Background

A Study of the Myanmar's history of education begins with the monastic education of the monastery. Monastic education was the only education system and it thrived throughout the history of Myanmar under Myanmar Kings. Since the period before 1824 when the first Anglo-Burma war broke out, based on the religion, literature and traditional culture, the monastic schools and home schools spread all over the country. In the post 1826 period after the first Anglo-Burma war, British government opened State schools in Tanintharyi and Rakhine, colonized areas, with the intention of providing modern education (western education).

The education system under British rule was summarized as the system of education with its i) absence of ideals, ii) parallel and unrelated types of schools, iii) single-tract curriculum, iv) pre-occupation with book-learning and examinations, v) foreign medium of instruction and reliance on note-learning, vi) non-provision of education in practical agriculture resulting in drift of abler youth from rural to urban areas, vii) wastage and lapse into illiteracy, viii) increasing unemployment of educated youths, ix) low pay of teachers, and x) tendency to ignore the dignity of labour and the need for technical education.

After many struggles and resistance movements, the long-cherished goal for independence was realized by Myanmar on 4th January 1948. The situation of education on the eve of independence was thus characterized by Bogyoke Aung San, supreme architect of Burma's independence. In the same year of independence, 1948, Government announced its education Policy and the Parliament pass the Mass Education Act which became effective in March 1949. The Mass Education Council was an autonomous body first under the Ministry of Education, later under the Ministry of Social Services. The main objective of the Mass Education Council was nothing but the community development by creating an integrated village. In Post – Independence years, Education reforms introduced could hardly provide a national Education as demanded by country's economic sector. Conscious of urgent needs calling for educational reforms, the Revolutionary Council soon took some dynamic measures to eliminate the old, serviceable system in preference of a new one characteristic of Socialist ideals. Under the weight

of consideration of the party, its policy declaration has clearly formulated its educational policy thus: educational target is to bring basic education within the reach of all. As regards higher education only those who have promise and enough potentialities and industriousness to benefit from it will be especially encourages.

3.2 Formation of the Department of Education

Although British had reigned the lower Myanmar for forty years, they still did not have a departmental system for education affairs. Therefore, an education department was set up in 1866 in the British ruled lower Myanmar. The department comprises of Commissioner of Education and four mobile teachers. There is one intention of the British in opening the education department. It is to provide western subjects: Grammar (English), Math and Surveying (later Geography) at monastic schools where the primary education can be provided for general public.

In British perspective, the priority for Myanmar is the Primary Education. As there were many monastic schools in villages and towns across the country, British government assumed that there was no need to extend more primary schools. British government education policy on education budget is that they allowed only a few schools funded by the government and encouraged many schools funded by individuals and local organizations.

In fact, British Education Policy is that the government takes no responsibility of the necessary education for the citizens. It is obvious that the government took the responsibility partially. In this system, monastic schools and home schools became vernacular schools while the Christian missionaries became bilingual schools. The Education Plan for a Welfare State was born in 1952. It was the first Four-Year Education Plan after independence. The five cardinal objectives of this plan were as follows: (1) to ensure universal knowledge of the three R's among all citizens of Unions, (2) to ensure the production of a sufficient number of technicians and technologists, (3) to train and equip young men and women so that they can adequately and efficiently perform their various duties as citizens of the Union, (4) to eradicate illiteracy and produce men and women who possess the five Strengths, and (5) to perpetuate democracy within the Union.

In 1962, the Revolutionary Council of Union of Myanmar was formed with 17 members and the Revolutionary Government was formed with eight members. The Ministry of Education

and the Ministry of Health an official was assigned to a responsible official (The minister was then called as the responsible person).

Based on the recommendations made at the General Education Conferences in those days, General Education was changed to Basic Education. As the Revolutionary Council Law of Union of Myanmar (No.2), the 1966 Union of Myanmar P Basic Education Law was approved. As of this law, the Basic Education System was set up and implemented starting from 1967-68 academic years. This was noted as the first time approving a law for the whole Basic Education in the history of Myanmar education. It is noteworthy that the term 'General Education' was banished and the term 'Basic Education' has gained a wide usage. According to this law, to supervise the Basic Education, Basic Education Council of the Union of Myanmar was formed. Under the said council, there groups: (a) Basic Education Syllabus, Curriculum and Materials Group, (b) Teacher Education Supervision Group and (c) Testing Group were formed.

For the Administration of Basic Education, According the Chapter (5), section 10 of this law, Education Directorate (formerly as Education Commissioner) and education officials were assigned. According to this law, Education Directorate office (in the place of Education Commissioner Office) took the responsibility of Basic Education Administration. On the 14th February 1972, according to the plan 'to explore the new system of governing in the Union of Myanmar', the regulation and procedure reforms were carried out. According the new administration system, the Secretariat Offices were replaced with the Ministry Offices and Directorate offices were reformed as Departments and Corporations on 16 March, 1972.

The Ministry of Education is functionally the main sponsor of education and training, especially in the area of basic education and higher education. Under the Ministry of Education, there are six departments such as, Department of Basic Education (DBE), Department of Higher Education (DHE), Department of Technical, Agricultural and Vocational Education (DTAVE), Department of Myanmar board of Examinations (MBE), Myanmar Education Research Bureau (MERB), and Department of Myanmar Language Commission (DLMC).

3.3 Department of Basic Education

Department of Basic Education is the one of the departments under the Ministry of Education (MOE), and its functions under the direction of the statutory bodies such as: Myanmar Education Committee, Basic Education Council, Basic Education Curriculum, Syllabus and

Text- Book Committee. The main objectives of the department of basic education are (i) to enable every citizen of the Union of Myanmar to become a physical and mental worker well equipped with basic education, good health and moral character (ii) to lay foundations for vocational education for the benefit of the Union of Myanmar, (iii) to give precedence to the teaching of science capable of strengthening and developing productive forces, (iv) to give precedence to the teaching of arts capable of preservation and developing of culture, fine arts and literature of the State; and (v) to lay a firm and sound educational foundation for the further pursuance of university education.

3.3.1 Education System of Myanmar

In the education system of Myanmar, whether the students pass or fail was determined by the first pre-test, second pre-test, and final examination from kindergarten to night standard. This system was adopted from 1950 to 1998-1999 Academic Year. While adopting this system, the first pre-test and second pre-test of fourth standard was examined at Ka-Ka-Sa (i.e. the schools team for giving help to one another and the board checked it). But the final examination was examined at Basic Education High Schools and Basic Education High Schools and Basic Education Middle Schools which were designated as the exam zones and was checked by the supervising of township Education Officer.

At that time, this system was called the Examination checked by the Government and the answer papers were checked by the supervising of Township Education Office. Starting from (1985-1986) Academic Year, the final examination was examined at each school but the examiners was examined at each school but the examiners were changed and the answer papers were checked by Township Education Office.

Since (1993-1994) Academic Year, the examinations have Assessment Promotions (CAP) system and All Children in School (ACIS). According to this system, the disable children were also taken care of following the motto “Educations for All”. After that, Non- Formal Education and Non-formal Primary Education systems were introduced. According to the upgrading program of education (1998-1999 Academic Year), the system of testing three times at each other school was changed Starting from (1999-2000) Academic Year, the monthly tests were to be taken at least (7) times a year from kindergarten to seventh Standard and whether pass or fail was determined depending on the average marks and participation in school activities (9

agenda at Primary level and 6 agenda at Middle and High School level). This system was adopted up to (2016-2017) Academic Year. Instead of monthly tests, the system which includes two times of monthly tests in July and December, the first semester test in October and ear-end test in February, is adopted starting from (2017-2018) Academic Year.

Since the earliest days, education has been highly regarded in Myanmar. The strong traditions of monastic education have contributed significantly to high literacy levels since the time of the Myanmar kings. Present-day education places more emphasis, however, on the formal system with its schools and institutions at primary, secondary and tertiary levels. The Ministry of Education (MOE) and 12 other ministries provide varied and diverse courses for learning, but the MOE is responsible for the basic education schools for all children.

To promote greater access to and to improve the quality of Basic Education, the 30-year long-term plan for basic education sector development (2001-02 FY to 2030-31 FY) consisting of six 5-year medium-term plans is being implemented with the following ten broad programs: (1) emergence of an education system for modernization and development, (2) completion of basic education by all citizens, (3) improvement of the quality of basic education, (4) opportunity for pre-vocational and vocational education at all levels of basic education, (5) providing facilities for e-Education and ICT, (6) producing all-round developed citizens, (7) Capacity-building for educational management, (8) broader participation of the community in education, (9) expansion of non-formal education, (10) development of educational research.

Completion of basic education by all citizens, target goals for attainment of basic education by all citizens, target goals for attainment of basic education by all citizens have been set. These ensure: (1) universal primary education by the end of the first five-year medium-term plan, (2) universal lower secondary education by the end of the third five-year medium-term plan, and (3) universal basic education by the end of long-term plan.

3.3.2 Millennium Development Goals (MDGs)

At the United Nations Millennium Summit held in New York in September 2000, 189 Member States adopted the Millennium Declaration. The Declaration consists of a set of interconnected and mutually reinforcing development goals and time-bound targets aiming at eradication of Poverty and sustainable human development. There are 8 goals and 18 targets for

respective goals in the Declaration. Out of 8 goals, goal (2) and (3) are concerned with Education. These are as follows: (a) goal (2) states that “Achieve universal primary education”. The target of goal (2) is to ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling, (b) goal (3) states that “Promote Gender equality and empower of women” target to eliminate gender disparity in primary and secondary education preferably by 2005, and to all levels of education no later than 2015.

Thereafter programs of the Long-Term Basic Education Development Plan are (i) emergence of an education system for modernization and development, (ii) completion of basic education by all citizens, (iii) improvement of the quality of basic education, (iv) opportunity for pre-vocational and vocational education at all levels of basic education, (v) providing facilities for e-education and ICT (vi) producing all-around developed citizens (vii) capacity-building for educational management, (viii) broader participation of the community in education, (ix) expansion of non-formal education, and (x) development of educational research.

In line with the long-term education development plan and based on the framework of the Darkar EFA Goals and also adopting the Millennium Development Goals (MDGs), the Myanmar Education for All-National Action Plan (EFA-NAP) 2003-15 was formulated with the following 6 goals within 4 goal areas:-

- ❖ Ensuring that significant progress is achieved so that all school- age children have access to and complete free and compulsory basic education of good quality by 2015.
- ❖ Improving all aspects of the quality of basic education: teachers, education personal and curriculum.
- ❖ Achieving significant improvement in the levels of functional literacy and continuing education for all by 2015.
- ❖ Ensuring that the learning needs of the young people and adults are met through non-formal education, life-skills and preventive education.
- ❖ Expanding and improving comprehensive early childhood care and education.
- ❖ Strengthening education management and EMIS.

In the density of basic education schools, the land area of Myanmar is 261228 square miles and as there is a total of 40876 schools in the whole country, the farthest student has to travel from home to attend school being 1.43 miles, the distance between home and school is within

acceptable limits. Therefore, the State has provided adequate accessibility to education. For the expansion in the number of schools for progress of border areas, since 1989, for the progress of border areas and national races, the number of basic education schools has been increased annually. The number of basic education schools, teachers and students are 888, 6907 and 194636 respectively.

To enable every citizen to complete basic education, the Inclusive Education Program was initiated and those having difficulty attending school, those who are members of socially excluded families, and those children who dropped out before completion of primary education are accepted in basic education schools and learning circles under the non-formal education program have been opened for them. In 2010-11 AY, under the Inclusive Education Program, 801 disable children enroll in the formal schools, 1450 children enroll in the special schools for the blind and the deaf. 30 disable students are attending to universities and colleges and 6 students are learning in master degree courses.

Local authorities and social organizations are collaborating for the realizing of the Mobile Schools programs under which teachers accompany migrant workers living far from schools to provide education to their children. In 2009-10 AY there were 24 mobile schools with 1019 students in Bago (east and west) Magway Division and Rakhine State. With the aim of further ensuring that all school going- age children are in school, a special program for over-age children is being implemented in 2003-04 AY at basic education schools. The accelerated program enables children of age 7⁺ or 8⁺ to complete primary education in 3 years and those of age 9⁺ to complete primary education in 2 years.

Non-formal education (NFE) focuses on basic education services for all children, youth and adults. It targets those who have not been reached by the formal school system for various reasons; for example, those we could not afford schooling or having dropped out of school, as well as those who completed primary school but could not continue further. Out-of school children and adults need equal opportunity of access to basic education to enable them to participate usefully and effectively in national development. The NFE programs in Myanmar are Basic Literacy Program, Post Literacy Program, In-come Generating Program, and Quality Life Improvement Program. These programs are being implemented through 2007 CLCs. Before 1998, there were only in-service trainings for the teachers who were un-certified in service.

Starting from 1998, all teacher training colleges and schools have been upgraded to Education Colleges introducing the pre-service teacher training courses, to ensure the teacher quality. To improve the quality of teachers, per-service, in-service and refresher courses are being offered in the Institutes of Education and Education Colleges. For that reason, qualified teachers have been produced by these institutions. To narrow the gap in quality between the schools in the urban and the rural areas, refreshers courses for teachers of basic education sector were conducted in 2006-07, 2007-08 and 2008-09 Academic Years, totally 1232 TEOs, High School Heads, SEOs/ DEOs and other concerned education officials were trained.

According to the article 28 of the Constitution, Nation will be established a free compulsory primary education system. And also, according to Section 366 of the Constitution, every citizen has the right to education in accordance with the educational policies laid down by the nation and must be taught the basic education required by law.

With the promulgation of Basic Education Law, the aims of basic education are laid down as follows:

- To enable every citizen of the Union of Myanmar to become a physical and mental worker well equipped with basic education, good health and moral character;
- To lay foundation for vocational education for the benefit of the Union of Myanmar;
- To give precedence to the teaching of science capable of strengthening and developing productive force;
- To give precedence to the teaching of arts capable of preservation and development of culture, fine arts and literature of the states; and
- To lay a firm and sound educational foundation for the further pursuance of university education.

3.3.3 Legal and Policy Context

The National Education Law (NEL) (2014) and NEL Amendment (2015) provides a though legislative framework for the entire education sector. Regarding management it provides the unifying national vision to strengthen coordination, management structures and systems.

Concerning quality assurance the NEL is innovative and pioneering on number levels. Firstly, the NEL describes a new strategic approach to quality assurance in the education sector based on the systematic measurement of national quality standards. The NEL states: “every level

of education there shall be a program of quality assurance” (Clause 54 (a)). In response to this statement quality assurance systems have been mainstreamed in all sub-sectors.

Secondly, and most importantly, the NEL establishes a new accountability mechanism of internal and external quality assurance assessments – “In the assessment of educational quality and standards, there shall be a program of internal quality assessment and external quality assessment”.

3.4 Universalization of Primary Education (UPE) and Basic Education

“ Universal primary education was first adopted as a goal for the countries of the Asia region in the Karachi Plan” (1960), which proposed that “ every country of this region should provide a system of universal, compulsory and free primary education of seven years or more within a period of not more than 20 years (1960-1980)”. This target has not been attained, due in part to a more rapid expansion of the population than foreseen in 1960. However, some of the shortfall is attributable to a slackening of the expansion of primary education in the early 1970s, which followed changes in the education and development policies of some countries.”

Universalization of primary education (UPE) remained the goal of the countries of Asia and the Pacific region in the 1970s and 1980s. The available data shows that a large percentage of children are out of school in the region. In some countries, there are more children out of school than in. In Myanmar, the percentage of the children out of school is 38.77 percent in 1971, 31.48 percent in 1973, and 40.78 percent in 1974.

Recently, countries have begun to appreciate the intimate relationship between primary education and the literacy rate in a country. Primary education is a major input in the literacy effort: the literacy rate is its output. A weakened primary education system leads to lowered enrolment rates and increased drop- out from the primary schools and when these children relapse to illiteracy, they automatically add to the illiterate population.

Earlier literacy programmes and primary education were seen as two separate programmes, one for the children and another for the adults. Therefore, people argued that the countries should stress primary education in their limited budgets, and that the literacy programme should not be promoted at the cost of primary education. Many people also believed

that the problem of illiteracy would eventually be solved using mandatory primary education programmes to reach every child in the region.

APPEAL is an historic attempt to reform mass education in Asia and the Pacific. For the first time, primary education, literacy and lifelong education are being combined in one programme using an integrated approach. The aims of APPEAL are to eradicate illiteracy, to universalize primary education and to provide continuing education for development in Asia and the Pacific. The underlying principle is that the eradication of illiteracy and universalization of primary education lay the foundation of basic education. Thereafter, continuing education will establish an interactive and dynamic relationship between education and development.

There is growing recognition of the role of human resources in national development. The newly industrialized countries of Asia have demonstrated that the key to development is human rather than natural resources. As the world moves toward knowledge-intensive industries that are spearheaded by hi-tech industries, human resources will play an ever greater role in national development. Human resource development has to be balanced at all levels, high and low. This is a challenge to all policy-makers of education and development in Asia and the Pacific as the twenty-first century approaches.

The world community has reiterated the need to eradicate illiteracy. The United Nations General Assembly in its Forty-Second Session declared 1990 as International Literacy Year and asked UNESCO to prepare a plan of Action to be launched in 1990 to eradicate illiteracy by the year 2000. This mandate will certainly give a big push to the world campaign for the eradication of illiteracy.

The famous historian Arnold Toynbee predicts, "Our age will be remembered, not for its horrifying crimes or its astonishing inventions, but because it is the first generation since the dawn of history to believe it practical to make the benefits of civilization available to the whole human race." The first meeting for the Regional Co-ordination of APPEAL (Bangkok, 14-18 November 1988) indicated that the first problem to be tackled would be to provide primary, literacy and continuing education to girls, women and socially, culturally and geographically disadvantaged populations. The Second most urgent issue would be the quality and relevance of the Education for All movement. It is not enough to be satisfied with the growing number of

people participating in the education programmes. These programmes must deliver the knowledge, skills and attitudes required for the people's development. In this regard, the whole approach to the planning and management of mass education should be improved.

It is time for education planners and managers to go the villages and school units, discover what the real problems are and then improve the planning and management process to ensure that true teaching and learning occur. In doing this, they will, thereby, assure the development of the individual and the steady progress of the community for the benefit of all.

The Asia-Pacific Programme of Education for All (APPEAL) was UNESCO's first regional co-operative programme devoted to education for all, focusing on the eradication of illiteracy universalization of primary education, and promotion of continuing education. While responding to the Recommendations and Resolutions of UNESCO General Conference and its Medium-Term Strategy, it got its greatest momentum from the World Conference on Education for All (Jomtien,1990) and its Declaration, which stressed basic learning needs as a fundamental human right of all children, youths and adults, and called for actions to attain the goal of 'education for all by the year 2000.

3.4 History of Education for All in Myanmar

At the World Conference on Education for All in Jomtien, Thailand (March 1990), delegates from 155 countries and representatives of 160 organizations affirmed their collective commitment to education as a human right and pledged to address the basic learning needs of all by the end of the decade. Targets and strategies for providing universal access and improving equity and learning were enshrined in the Jomtien Framework for Action for Meeting the Basic Learning Needs. However, by the year 2000 assessments showed that the goals set in Jomtien had not been achieved. Thus at the World Education Forum in Dakar, Senegal (April 2000), 1,100 participants from 164 countries reaffirmed their commitment to achieving Education for All by the year 2015, specifically the six major goals and 12 major strategies identified in the Dakar Framework for Action. The Framework placed the main responsibility for achieving the EFA goals on Member States, which were encouraged and supported in their development of national plans of action.

Thematic Working Groups member agencies and organizations provided advisory and support services to MDA participating countries starting in 2006. Other EFA supporting partners, international NGOs, civil society organizations and special interest advocacy groups were also invited to extend support and assistance. The UIS-AIMS Unit served as the TWG Secretariat. TWG members in 2007-2008 reviewed and advised on draft national EFA MDA reports, participated in the policy review conferences and indicated their support for the implementation of the recommended strategies and actions for reaching EFA by 2015.

3.4.1 EFA National Action Plan (2003- 2015) and Myanmar EFA Goals

In line with the long-term basic education development plan and based on the framework of the Darkar EFA Goals and also adopting the Millennium Development Goals (MDGs), the Myanmar Education for All-National Action Plan (EFA-NAP) 2003-15 was formulated with the following six goals: (a) ensuring that significant progress is achieved so that all school- age children have access to and complete free and compulsory basic education of good quality by 2015; (b) improving all aspects of the quality of basic education: teachers, education personnel and curriculum; (c) Achieving significant improvement in the levels of functional literacy and continuing education for all by 2015; (d) ensuring that the learning needs of the young people and adults are met through non-formal education, life-skills and preventive education; (e) expanding and improving comprehensive early childhood care and education and (f) strengthening Education Management Information System-EMIS.

In line with the long-term education development plan and based on the framework of the Darkar EFA Goals and also adopting the Millennium Development Goals (MDGs), the Myanmar Education for All-National Action Plan (EFA-NAP) 2003-15 was formulated with the following 6 goals within 4 goal areas: (1) ensuring that significant progress is achieved so that all school-age children have access to and complete free and compulsory basic education of good quality by 2015, (2) improving all aspects of the quality of basic education: teachers, education personal and curriculum, (3) achieving significant improvement in the levels of functional literacy and continuing education for all by 2015, (4)ensuring that the learning needs of the young people and adults are met through non-formal education, life-skills and preventive education, expanding and improving comprehensive early childhood care and education and strengthen education management and EMIS.

3.4.2 Implementing National Education Strategic Plan (2016-21)

The progress of any country is heavily dependent on its education system. Education systems must be in line with the demands of a changing labour market to create the human capital needed for economic development. Education also plays a central role in reducing poverty and inequity. Increasing household incomes, improving individual and family health, strengthening communities, are fostering lasting peace, expanding economic development and building national unity.

Internationally, ‘Basic Education’ means primary and lower secondary school. These levels are often compulsory. For the purposes of the analyses of the 2014 Census data, ‘Basic Education’ comprised primary, lower secondary (middle school) and upper secondary (high school). Therefore, the structure of basic education was: primary level (from Grade 1 to Grade 5); lower secondary level (from Grade 6 to Grade 9); and upper secondary level (from Grade 10 to Grade 11). Thus, the basic education system was described as a 5-4-2 system. Education systems in selected ASEAN countries are shown in Table (3.2).

Table (3.2)
Education System in Selected ASEAN Countries

No	Country	Education System	Year of Schooling	Starting Age
1	Cambodia	6-3-3	12	6
2	Indonesia	6-3-3	12	6
3	Lao PDR	5-4-3	12	6
4	Philippines	6-4-2	12	6
5	Thailand	6-3-3	12	6
6	Viet Nam	6-3-3	12	6
7	Myanmar	5-4-2	11	5
	(Myanmar planned)	Kg+12	(12)	(6)

Source: Thematic Report on Education (2017)

The usual education system in ASEAN countries, and also in many less developed countries, requires six years of primary school, three years of lower secondary and three years of upper secondary school. As noted above, Myanmar had a slightly different basic education system, 5-4-2; 11 years of schooling starting at age five. Therefore, Myanmar changed the

education system in 2016 to 5-4-3, comprising 12 years of schooling starting at age six. This system is more in line with most other ASEAN countries. In the new education system, the primary school age is 6-10 years; the middle/ lower secondary school age is 11-14 years; and the high/upper secondary school age is 15-17 years.

To fully realize the benefits of a quality of national education system, the Government of the Republic of the Union of Myanmar implemented a new National Education Strategic Plan (NESP) during the period 2016-2021. The NESP is a comprehensive, widely-owned and evidence-based roadmap intended to reform the entire education sector over the next five years.

A key reform focus of the government in the coming years will be the provision of quality, health, play-centered pre-school and primary education for all children, including those living in remote rural areas. The physical, intellectual, linguistic, emotional and social needs of children age 3 to 6 years must be met.

With regard to basic education, we must work together to ensure that all children successfully complete their primary, middle and high school education and acquire relevant learning competencies. This will provide them with a strong foundation of knowledge and skills that will enable them to progress to higher education or technical and vocational education and training. The concept that higher education is only university education must be changed.

There is a need for education programmes to be especially developed to meet the needs of children who face difficulties in accessing primary and secondary education, children with mental or physical disabilities, or those who live in poverty or in remote areas. In recent years Myanmar's national education system has come under increased public scrutiny and debate due to growing expectations from students, parents, employers and citizens for education reforms that will improve access, quality and equity in the main education sub-sectors- preschool, kindergarten, primary, secondary and alternative education, and technical vocational education and training and higher education.

Furthermore, there is broad consensus that major shifts are required in the coming years to transform the national education system and ensure that all students progress through the education cycle, achieve quality learning standards and fulfill their career and lifelong learning goals and aspirations. In response to these expectations, the Ministry of Education (MOE) has undertaken a three-and-a-half-year Comprehensive Education Sector Review (CESR) involving

three phases: a rapid assessment (Phase 1): in-depth research and analysis of critical sub-sector challenges (Phase 2): and drafting and building ownership for an evidence-based and costed National Education Strategic Plan (NESP) for the period 2016-21(Phase 3).

The NESP provides the government, education stakeholders and citizens with ‘roadmap’ for sector-wide education reforms over the next five years that will dramatically improve access to quality education for students at all levels of the national education system. However, Myanmar’s economy is heavily reliant on the agricultural sector and extractive industries. In order to achieve sustainable economic development Myanmar needs to reduce its reliance on natural resources and expand the services and manufacturing sectors.

At the same time, there is a need to use modern technology to produce quality products in the agricultural sector. Myanmar currently is facing two major challenges to expand priority development sectors: (a) a shortage of skilled workers, despite increased job opportunities: and (b) limited governance and public sector management capacity. The education sector has a vital role to play to support the government to address these challenges in the coming years.

There are also other key challenges that the country needs to address to achieve sustainable development and equitable economic growth, such as the growing disparity between wealthy and poor citizens within Myanmar society, disparity in access to essential services, between citizens living in urban and rural areas, internal and external migration, human trafficking and drug abuse. The provision of quality and equitable education has an important catalyst role to play to help the government to address these challenges.

CHAPTER IV

SURVEY DESIGN AND METHODOLOGY

4.1 Questionnaire Design

The questionnaires play a central role in the survey process in which information is transferred to the interviews. Three types of questionnaire were used to collect the required information. The first type of questionnaire concerned with students. It included questions concerned with student related factors such as age, birth order in family, supporting from siblings, interesting in education, attitude of education, school attendance, interesting in study, cultivating in reading.

The second type of questionnaire intended to interview the parents of students selected primary schools. It included the characteristics of family related factors such as father's education, mother's education, giving time for children's education, mother's health, supporting facilities, supporting knowledgeable book, supporting school facilities, condition of persuade. The third type of questionnaire is teachers' questionnaire. It included questions concerned with the teacher related factors of age, work experience, teachers' qualification, and specialized teachers for the respective subjects.

4.1.1 Sampling Design

Since the stratified two-stage sampling design has been used to carry out sample survey, the selected primary schools in the survey area are stratified according to the type of region (rural or urban). All of the primary schools of each strata in the first-stage units are treated as first-stage sampling units. Students, parents and teachers from the selected primary schools in the second-stage units are treated as second-stage sampling units.

In the first-stage, primary schools are selected randomly from the sampling frame of each stratum. The sampling frame is a complete list of school name according to the village (rural) and wards (urban) of the Basic Education Administration Department of Meiktila Township. The simple random sampling without replacement method has been used to select primary schools from the sampling frame. Hence, 54 primary schools from the rural area and 6 primary schools from the urban area were selected from sampling frame.

In second-stage units, a student listing operation has been carried out in the selected first-stage units to provide the sampling frame for the selection of students, their parents, and grade 4 teachers. The student listing operation consisted of (i) visiting each of 54 selected schools from the rural area and 6 selected schools from the urban area to draw a location map and a detailed sketch, and (ii) listing the eligible students together with household address and the name of the head of household and teachers for each of second-stage units. The resulting lists of students serve as the sampling frame selection of students, parents and teachers in the third-stage of sampling.

In this stage, number of students was selected by using probability proportional to size. A level of no response or refusals on the part of individuals has already been taken into consideration in determination of sample size and the resulted students are allocated to the second-stage units using probability proportional to size.

4.2 Sampling Method

The required information is obtained from students, parents and teachers of selected schools by conducting a sample survey. It is the most flexible for data collecting. First, the target population is determined to collect the required information. In this survey, the target population is all students who passed the Grade-4 examination in 2015-2016 AY, their parents, teachers and all primary schools in Meiktila Township. The data collection method used in this survey is personal interview. It is the most common method in collecting data through large scale surveys in developing countries.

Apart from the usually high response rate resulting from personal interview, the main advantage of this method is that the interviewers can persuade respondents to answer questions and explain the objective of the survey and can be persuaded the respondents to answer questions.

4.2.1 Pilot Survey

The pilot survey was conducted on third week of May, 2018. Before the pilot survey, the training of interviewers was held. This training involved explaining the objectives of the sample survey, discussing about the questionnaires and visiting to primary schools. After completing the

training, supervisors were trained for next day on how to supervise the fieldwork and edit questionnaires in the field. A total of 10 trainees were involved and the training consisted general interviewing techniques, field procedures for the survey, the detailed review of the questionnaires, and practice interviews in the field.

During the period May, 19-20, 2018, a pilot survey has been conducted in this township and 30 students and their parents were interviewed in the selected village tracks and wards. Using the findings of the pilot survey questionnaire for students, parents, and teachers were refined.

The advantages of conducting the pilot survey were (i) to assess the appropriateness of the questions in order to collect the required information (ii) to reduce the number of unanticipated problems (iii) to gain experience on interviewing for interviewers (iv) to manage interviewing time efficiently (v) to redesign parts of the study to overcome difficulties to provide ideas, approaches, and clues for the study and (vi) to obtain clearer findings in the main study.

4.2.2 Organization of the Field Work

The fieldwork was done by three supervisors and ten interviewers. Supervisors contacted the administrator of the ward or village to inform them of the purpose of the survey and to obtain their cooperation. Data collection began on June 1st, 2018. First, the interviewers informed eligible respondents clearly about the purpose of the survey and the results of interviews would be kept confidential. Then they administered questionnaires to each respondent.

The supervisors maintained fieldwork by close contact with the field teams and communicating through cell phones. Additionally, to ensure the quality of the data collected, the field supervisors monitored ongoing interviews in the field. During the field visits the supervisors verify (i) accuracy of the method of asking questions, (ii) accuracy of recording answers, (iii) following skip instructions, and (iv) identifying eligible respondents. The supervisors edited all questionnaires and resolved inconsistencies in the data prioritization while the team was under enumeration. After that, the team moved to the next enumeration area. The cover page of every questionnaire was signed by both the interviewer and the supervisors to make sure that they had checked and verified the contents of the questionnaires. The only transportation facility available to visit one place to another has been used a motorcycle, by car and on foot across the stream for the difficult place in transportation.

Since Meiktila Township is constituted of wards (urban) and village tracks (rural). The stratified two-stage sampling design has been used to carry out a sample survey. In the first-stage, primary schools are selected from the list of the Basic Education Administration Department of Meiktila Township. In the second-stage, students who complete primary level in 2015-2016 AY, their parents and teachers are selected from the selected primary schools in second- stage.

The survey was carried out using personal interviews to collect the required information from 543 students, 543 parents and 60 teachers who taught these students in 2015-2016 AY of selected 60 schools and noted responses from questionnaires through student, parent and teacher questionnaires. Then, data on demographic, social-economic and related characteristics of selected individual student, parent and teacher were collected. Moreover, data on environmental conditions such as community characteristics were also recorded.

4.2.3 The Design Effects

The design effect (or estimate of unit variance) is an adjustment used in some kinds of studies, such as cluster randomized trials, to allow for the design structure. It is similar to the variance inflation factor and it used in sample size calculation. The Design effect is the ratio of the actual variance to the variance expected with SRS. It can more simply be stated as the actual sample size divided by the effective sample size. The effect of the complex design on the variance of θ^2 (relation to the *srswr* design) is given by the design effect (*deff*) developed by Kish (1965),

$$deff(\hat{\theta}) = \frac{Var_{true}(\hat{\theta})}{Var_*(\hat{\theta})} \quad (4.1)$$

where $Var_{true}(\hat{\theta})$ = actual design variance

$Var_*(\hat{\theta})$ = the variance of $\hat{\theta}$ calculated under a hypothetical simple random sampling with replacement design of the same sample size

Clearly, if $deff(\hat{\theta})_{kish} < 1$, the true complex design is a better design than a corresponding simple random sampling without replacement design with respect to $\hat{\theta}$, the estimator of θ under the true design. Note that Kish's *deff* (4.1) is completely a design-based measure.

Let $\nu_0 = \widehat{var}_{SRS}(\hat{\theta})$ be an estimator which is derived under the SRS assumption or under the equivalent independently and identically distributed (IID) assumption, that is $E(\nu_0|SRS) = E(\nu_0|IID) = Var_{SRS}(\hat{\theta})$. Clearly, ν_0 may be a design-based estimator or a model-based estimator. The effect of the true design on the estimator pair $(\hat{\theta}, \nu_0)$ is given by the bias of ν_0 ,

$$E_{true}(\nu_0) - Var_{true}(\hat{\theta}), \quad (4.2)$$

where, expectation in (4.2) is with respect to the actual complex design of $(\hat{\theta}, \nu_0)$.

The deff $(\hat{\theta}, \nu_0)$ measures the inflation or deflation of IID-based pivotal statistic due to the use of true design. The actual coverage probability of a confidence interval obtain from the IID- assumption would be different from its nominal value depending on the deff $(\hat{\theta}, \nu_0)$. Table 4.1 shows some such values.

Table (4.1)

Actual and Nominal Coverage Probability of Confidence Intervals for Different Values of Design Effects

Design effect	Nominal Coverage	
	95%	99%
	Actual Coverage (%)	Actual Coverage (%)
0.9	96	99.3
1.0	95	99
1.5	89	96
2.0	83	93
2.5	78	90
3.0	74	86

Source: Skinner (1989)

In Table (4.1), coverage probability of a technique for calculating a confidence interval is the proportion of the time that the interval contains the true value of interest. The actual coverage probability is the coverage probability that the interval contains the true mean remission. And also nominal coverage probability is the coverage probability but it is set of 0.9. According to the table, the value of design effect is 1.5. Because sampling method that use in this study is stratified two- stage sampling. Therefore, 1.5 is the best point for this sampling method. When more increased the design effect value, more decrease the 95% and 99% percent of actual coverage value.

4.2.4 Sample Size Determination

In this survey of Meiktila Township, wards and village tracks were taken as the first-stage units and rural and urban areas were assumed as strata. In the second-stage, the simple random sampling without replacement method was used to select 30% of schools from each stratum. Therefore 54 schools from the rural area and 6 schools from urban area were selected in the second-stage. There are 543 students, 543 parents and 60 teachers were selected in the third-stage.

For the third-stage, the sample size of students and parents was determined based on sample size determinant formulas of Krejcie and Morgan (1970) and Cochran's (1977). According to Krejcie and Morgan (1970), using the acceptable margin of error is 5% for categorical data. For using two-stage sampling design, the design effect is used in calculation of sample size determination.

$$n_o \geq \frac{P(1-P)Z^2}{E^2} \times deff$$

Where, $p = 0.5$ (maximum possible proportion)

(i.e., (maximum possible proportion) × (1 - maximum possible proportion) produces maximum possible sample size)

$E = 0.05$ (margin of error)

$Z = 1.96$ for 95% level of significance

$deff = \text{Design effect} = 1.5$

Hence, $n = 488$ students.

If a response rate is assumed as 90% the required sample size is $(488/0.9 = 543)$ students. In many educational and social research surveys, the response rates are typically well below 100%. Therefore, the required sample size (90% response rate assumed) is 543 students. But teachers were defined as the one who were teaching the Grade 4 students at the selected primary schools in 2015-2016 AY. Therefore the number of teachers is 60 according to the selected number of primary schools

Table (4.2)

Allocation of Sample Size (Number of Students and Parents) to Each Stratum

Strata	N_h	n_h	M_{hi}	a_h	m_{hi}
I(Rural)	180	54	870	0.67	364
II(Urban)	18	6	438	0.33	179
Total	198	60	1308	1.00	543

N_h = total number of wards / villages schools in each stratum

n_h =number of sample wards/village schools in each stratum

M_{hi} =total number of students and parents in the i^{th} wards / villages of each stratum

m_{hi} =number of students and parents in the sample for i^{th} wards / villages schools of each stratum

$$a_h = \frac{M_{hi}}{\sum M_{hi}}$$

In the third-stage , 543 students were distributed to 54 selected rural and 6 urban primary schools of second-stage unites with probability proportional to size and 54 village schools and allocation of sample students are shown in stratum 1(see Appendix A.1).The allocation of sample of students of 6 selected urban schools are shown in stratum 2 (see Appendix A.2).

4.3 Ordinal Logistic Regression

Ordinal logistic regression or ordinal regression is used to predict an ordinal dependent variable given one or more independent variables. For example, analysis the level of completion primary student, this is the ordinal dependent variable measure on three levels (A, B, C) based on some independent variables such as gender, age, interesting level, education, occupation etc. Ordinal regression will be unable to determine independent variables (if any) have a statistically significant effect on dependent variable.

For categorical independent variables (e.g. gender) the odds can be interpret that one ‘group’ (e.g. gender) have a higher or lower level on dependent variable (a higher value may be started that “Good” that student who pass examination are clever rather than stating that “Low”. The continuous independent variables (e.g. age) can be able to interpret how a single unit increase or decrease in that variable, is associated with the odds of dependent variable having a higher or lower value can also be determined how well ordinal regression model predicts the dependent variable.

Dependent variables which are analyzed in the majority of researches and applied studies are generally in categorical and ordinal structure. Ordinal Logit Models that consider the ordinal structure of the dependent variable are used in case where the dependent variable has at least 3 categories with these categories ordinally arranged, i.e. pass grade level (low, moderate, good).

4.3.1 Assumptions of Ordinal Logistic Regression

When the data are analyzed by using ordinal regression part of the process involves checking to make sure that the data can actually be analyzed by using ordinal regression. It is needed to do because it is only appropriate to use ordinal regression if data passes four assumptions that are required for ordinal regression to give a valid result. These four assumptions are following.

Assumption (1): The dependent variable should be measured at the ordinal level. Example of ordinal variables is three level of pass grade level from “fair” to “good”.

Assumption (2): One or more independent variables that are continuous, ordinal or categorical (including dichotomous variables). However, ordinal independent variables must be treated as being either continuous or categorical. Examples of continuous variables that meet this criterion include age (measured in years), working experience (measures in years), school distance (measured in minutes) and so forth. Example of categorical variables include gender (e.g. 2 groups: male and female), supporting facilities (e.g. 3 groups: never, sometimes and always), supporting school facilities (e.g. 2 groups: no and yes) and so forth.

Assumption (3): There is no multicollinearity. Multicollinearity occurs when there are two or more independent variables that are highly correlated with each other. This lead to problems with understanding which variable contributes to the explanation of the dependent variable and technical issues in calculating an ordinal regression. Determining whether there is multicollinearity is an important step in ordinal regression.

Assumption (4): It is needed to have proportional odds, which is a fundamental assumption of this type of ordinal regression model. The assumption of proportional odds means that each independent variable has an identical effect at each cumulative split of the ordinal dependent variables.

4.4 Proportional Odds (PO) Model

4.4.1 Model Description of PO Model

The most commonly used ordinal logistic model was described in Walker and Duncan (1967) and later called the *proportional odds (PO) model* by Mc-Cullagh (1980). The PO model is best stated as follows, for a response variable having levels 0, 1, 2, . . . , k:

$$\Pr [Y \geq j|X] = \frac{1}{1 + \exp[-(\alpha_j + X\beta)]} \quad (4.3)$$

Where, $j = 1, 2, \dots, k$. Some authors write the model in terms of $Y \leq j$. There are k intercepts (α s). For fixed j , the model is an ordinary logistic model for the event $Y \geq j$. By using a common vector of regression coefficients β connecting probabilities for varying j , the PO model allows for parsimonious modeling of the distribution of Y . There is a nice connection between the PO model and the Wilcoxon–Mann–Whitney two-sample test: when there is a single predictor X_1 that is binary, the numerator of the score test for testing $H_0 : \beta_1 = 0$ is proportional to the two-sample test statistic.

4.4.2 Assumptions of PO Model

There is an implicit assumption in the PO model that the regression coefficients (β) are independent of j , the cutoff level for Y . One could say that there is no $X \times Y$ interaction if PO holds. Since the logistic model is direct probability model, its only assumptions are verifiable, unlike the assumption of multivariate normally made by discriminant analysis. The logistic model assumptions are most easily understood by transforming $\text{Prob}\{Y=1\}$ to make a model that is linear in $X\beta$:

$$\begin{aligned} \text{logit}\{Y = 1/X\} &= \text{logit}(P) = \log[P/(1 - P)] \\ &= X\beta, \end{aligned} \quad (4.4)$$

where, $P = \text{Prob}\{Y=1/X\}$. Thus the model is a linear regression model in the log odds that $Y=1$ since $\text{logit}(P)$ is a weighted sum of the X s. If all effects are additive (i.e., no interactions are present), the model assumes that for every predictor X_j ,

$$\begin{aligned} \text{logit}\{Y = 1|X\} &= \beta_0 + \beta_1 X_1 + \dots + \beta_j X_j + \dots + \beta_k X_k \\ &= \beta_j X_j + C, \end{aligned} \quad (4.5)$$

where if all other factors are held constant, C is a constant given by

$$C = \beta_0 \quad (4.6)$$

The parameter β_j is then the change in the log odds per unit change in X_j if X_j represents a single factor that is linear and does not interact with other factors and if all other factors are held constant. Instead of writing this relationship in terms of log odds, it could just as easily be written in terms of the odds that $Y=1$:

$$\text{odds}\{Y = 1|X\} = \exp(X\beta), \quad (4.7)$$

and if all factors other than X , are held constant,

$$\text{odds}\{Y = 1|X\} = \exp(\beta_j X_j + C) = \exp(\beta_j X_j) \exp(C). \quad (4.8)$$

The regression parameters can also be written in terms of odds ratios. The odds that $Y=1$ when X_j is increased by d , divided by the odds at X_j is

$$\begin{aligned} & \frac{\text{odds}\{Y = 1|X_1, X_2, \dots, X_j + d, \dots, X_k\}}{\text{odds}\{Y = 1|X_1, X_2, \dots, X_j, \dots, X_k\}} \\ &= \frac{\exp[\beta_j(X_j+d)]\exp(C)}{[\exp(\beta_j X_j)\exp(C)]} \\ & \exp[\beta_j X_j + \beta_j d - \beta_j X_j] = \exp(\beta_j d). \end{aligned} \quad (4.9)$$

Thus the effect of increasing X_j by d is to increase the odds that $Y=1$ by a factor of $\exp(\beta_j d)$, or to increase the log odds that $Y=1$ by an increment of $\beta_j d$. In general, the ratio of the odds of response for an individual with predictor variable values X^* compared with an individual with predictors X is

$$\begin{aligned} X^*:X \text{ odds ratio} &= \exp(X^*\beta)/\exp(X\beta) \\ &= \exp[(X^* - X)\beta]. \end{aligned} \quad (4.10)$$

Now consider some special cases of the logistic multiple regression model. If there is only one predictor X and that predictor is binary, the model can be written

$$\begin{aligned} \text{logit}\{Y = 1|X = 0\} &= \beta_0 \\ \text{logit}\{Y = 1|X = 1\} &= \beta_0 + \beta_1. \end{aligned} \quad (4.11)$$

Here β_0 is the log odds of $Y=1$ when $X=0$. By subtracting the two equations above, it can be seen that β_1 is the difference in the log odds when $X=1$ as compared with $X=0$, which is equivalent to the log of the quality $\exp(\beta_1)$ is the odds ratio for $X=1$ compared with $X=0$. Letting $P^0 = Prob\{Y = 1|X = 0\}$ and $P^1 = Prob\{Y = 1|X = 1\}$. The regression parameters are interpreted by

$$\begin{aligned}\beta_0 &= \text{logit}(P^0) = \log[P^0/(1 - P^0)] \\ \beta_1 &= \text{logit}(P^1) - \text{logit}(P^0) \\ &= \text{logit}[P^1/(1 - P^1)] - \log[P^0/(1 - P^0)] \\ &= \log\{[P^1/(1 - P^1)]/[P^0/(1 - P^0)]\}\end{aligned}\tag{4.12}$$

Since there are only two quantities to model and two free parameters, there is no way that this two-sample model can't fit; the model in this case is essentially fitting two cell proportions. Similarly, if there are $g-1$ dummy indicator X s representing g groups, the ANOVA-type logistic model must always fit.

If there is one continuous predictor X , the model is

$$\text{logit}\{Y = 1|X\} = \beta_0 + \beta_1 X,\tag{4.13}$$

and without further modification (e.g., taking log transformation of the predictor), the model assumes a straight line in the log odds, or that an increase in X by one unit increase the odds by a factor of $\exp(\beta_1)$.

Now consider the simplest analysis of covariance model in which there are two treatments (indicated by $X_1 = 0$ or 1) and one continuous variable (X_2). The simplest logistic model for this setup is

$$\text{logit}\{Y = 1|X\} = \beta_0 + \beta_1 X_1 + \beta_2 X_2,\tag{4.14}$$

which can be written also as;

$$\begin{aligned}\text{logit}\{Y = 1|X_1 = 0, X_2\} &= \beta_0 + \beta_2 X_2 \\ \text{logit}\{Y = 1|X_1 = 1, X_2\} &= \beta_0 + \beta_1 + \beta_2 X_2.\end{aligned}\tag{4.15}$$

The $X_1 = 1: X_1 = 0$ odds ratio is $\exp(\beta_1)$, independent of X_2 . The odds ratio for a one-unit increase in X_2 is $\exp(\beta_2)$, independent of X_1 .

This model, with no terms for a possible interaction between treatment and variable, assumes that for each treatment the relationship between X_2 and log odds is linear, and that the lines have equal slope: that is, they are parallel. Assuming linearity in X_2 , the only way that this model can fail is for the two slopes to differ. Thus, the only assumptions that need verification are linearity and lack of interaction between X_1 and X_2 .

To adapt the model to allow or test for interaction, model can be written as

$$\text{logit}\{Y = 1|X\} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3, \quad (4.16)$$

Where, the derived variable X_3 is defined to be $X_1 X_2$. The test for lack of interaction (equal slopes) is $H_0: \beta_3 = 0$. The model can be amplified as

$$\begin{aligned} \text{logit}\{Y = 1|X_1 = 0, X_2\} &= \beta_0 + \beta_2 X_2 \\ \text{logit}\{Y = 1|X_1 = 1, X_2\} &= \beta_0 + \beta_1 + \beta_2 X_2 + \beta_3 X_2 \\ &= \beta'_0 + \beta'_2 X_2. \end{aligned} \quad (4.17)$$

Where $\beta'_0 = \beta_0 + \beta_1$ and $\beta'_2 = \beta_2 + \beta_3$. Therefore, the model with interaction is equivalent to fitting two separate logistic models with X_2 as the only predictor, and one model for each treatment group. Here the $X_1 = 1: X_1 = 0$ odds ratio is $\exp(\beta_1 + \beta_3 X_2)$. That is, the model in its simplest form assumes the log odds that $Y \geq j$ is linearly related to each X and that there is no interaction between the X s.

In designing clinical studies, one sometimes hears the statement that an ordinal outcome should be avoided since statistical tests of patterns of those outcomes is hard to interpret. In fact, one interprets effects in the PO model using ordinary odds ratios. The difference is that a single odds ratio is assumed to apply equally to *all* events $Y \geq j, j = 1, 2, \dots, k$. If linearity and additively hold, the $X_{m+1}: X_m$ odds ratio for $Y \geq j$ is $\exp(\beta_m)$, whatever the cutoff j .

The assumptions of normality of residuals with equal variance in ordinary regression are frequently violated, but the PO model can still be useful and powerful in this situation. Clearly, the dependence of the proportional odds model on the assumption of proportionality can be overstressed.

4.4.3 Estimation of PO Model

The PO model is fitted using Maximum Likelihood Estimation (MLE) on a somewhat complex likelihood function that is dependent on differences in logistic model probabilities.

After fitting the model, the coefficients for the model be estimated. The estimates labeled **Threshold** are the α_j 's, the intercept equivalent terms. The estimates labeled **location** are interested things. These things are the coefficients for the predictor variables. As is always the case with categorical predictor in models with intercepts, the number of coefficients displayed is one less than the number of categories of the variable. In the categories of gender, the coefficient is denoted as 1 for female and 2 for male. The reference category has a one (1) coefficient.

4.4.4 Residuals for PO Model

Schoenfeld (1982) residuals are very effective in checking the proportional hazards assumption in the Cox (1972) survival model. For the PO model one could analogously compute each subject's contribution to the first derivative of the log likelihood function with respect to β_m , average them separately by levels of Y , and examine trends in the residual plots. A few examples have shown that such plots are usually hard to interpret. Easily interpreted score residual plots for the PO model can be constructed, however, by using the fitted PO model to predict a series of binary events $Y \geq j, j = 1, 2, \dots, k$, using the corresponding predicted probabilities

$$\hat{P}_{ij} = \frac{1}{1 + \exp[-(\hat{\alpha}_j + X_i \hat{\beta})]} \quad (4.18)$$

where X_i stands for a vector of predictors for subject i . Then, after forming an indicator variable for the event currently being predicted [$Y_i \geq j$], one computes the score (first derivative) components U_{im} from an ordinary binary logistic model:

$$U_{im} = X_{im}([Y_i \geq j] - \hat{P}_{ij}), \quad (4.19)$$

for the subject i and predictor m .

Then, for each column of U , plot the mean \bar{U}_m and confidence limits, with Y (i.e., j) on the x -axis. For each predictor the trend against j should be flat if PO holds. In binary logistic regression, *partial residuals* are very useful as they allow the analyst to fit linear effects for all the predictors but then to nonparametrically estimate the true transformation that each predictor requires to compute the residual. The partial residual (r_{im}) is defined as follows, for the i th subject and m th predictor variable.

$$r_{im} = \hat{\beta}_m X_{im} + \frac{Y_i - \hat{P}_i}{\hat{P}_i(1 - \hat{P}_i)}, \quad (4.20)$$

where,

$$\hat{P}_i = \frac{1}{1 + \exp[-(\alpha + X_i \hat{\beta})]}. \quad (4.21)$$

A smoothed plot of X_{im} against r_{im} provides a nonparametric estimate of how X_m relates to the log relative odds that $Y = 1/X_m$. For ordinal Y , we just need to compute binary model partial residuals for all cutoffs j :

$$r_{im} = \hat{\beta}_m X_{im} \frac{Y_i \geq -\hat{P}_{ij}}{\hat{P}_{ij}} \quad (4.22)$$

Then to make a plot for each m showing smoothed partial residual curves for all j , looking for similar shapes and slopes for a given predictor for all j . Each curve provides an estimate of how X_m relates to the relative log odds that $Y \geq j$. Since partial residuals allow examination of predictor transformations (linearity) while simultaneously allowing examination of PO (parallelism), partial residual plots are generally preferred over score residual plots for ordinal models.

Li and Shepherd have a residual for ordinal models that serves for the entire range of Y without the need to consider cutoffs. Their residual is useful for checking functional form of predictors but not the proportional odds assumption.

4.4.5 Estimation of PO Model

The PO model is fitted using Maximum Likelihood Estimation (MLE) on a somewhat complex likelihood function that is dependent on differences in logistic model probabilities. After fitting the model, the coefficients for the model be estimated. The estimates labeled **Threshold** are the α_j 's, the intercept equivalent terms. The estimates labeled **location** are interested things. These things are the coefficients for the predictor variables. As is always the case with categorical predictor in models with intercepts, the number of coefficients displayed is one less than the number of categories of the variable. In the categories of gender, the coefficient is denoted as 1 for female and 2 for male. The reference category has a one (1) coefficient.

Wald Test (χ^2)

The Wald Test is a way to find out if explanatory variables in a model are significant. "Significant" means that they add something to the model; variables that add nothing can be

deleted without affecting the model in any meaningful way. The test can be used for a multitude of different continuous variables. The null hypothesis of the test is; some parameter has some value. If the null hypothesis is rejected, it suggests that the variables in question can be removed without much harm to the model. If certain explanatory variables are zero, the variables can be removed from the model.

The Wald Test Statistic formula is;

$$W_T = \frac{[\hat{\theta} - \theta_0]^2}{\text{Var}(\hat{\theta})} = \ln(\hat{\theta}) [\hat{\theta} - \theta_0]^2 \quad (4.23)$$

Where: $\hat{\theta}$ = Maximum Likelihood Estimator (MLE)

$\text{Var}(\hat{\theta})$ = expected Fisher information

4.4.6 Describing the Fitted Model

Models are best described by computing predicted values or differences in predicted values. For PO models there are four and sometimes five types of relevant predictions:

1. $\text{logit}[Y \geq j|X]$, i.e., the linear predictor
2. $\text{Prob}[Y \geq j|X]$
3. $\text{Prob}[Y = j|X]$
4. Quantiles of Y/X (e.g., the median)
5. $E(Y/X)$ if Y is interval scaled.

For the first two quantities above a good default choice for j is the middle category. Partial effect plots are as simple to draw for PO models as they are for binary logistic models. Other useful graphics, as before, are odds ratio charts and monographs. For the latter, an axis displaying the predicted mean makes the model more interpretable, under scaling assumptions on Y .

4.4.7 Parallel Lines Test for Ordinal Logistic Regression

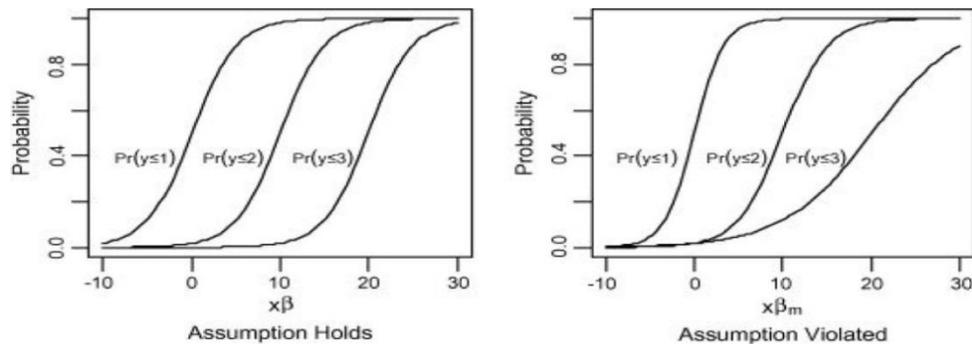
Fitting an ordinal regression assumes that the relationships between the independent variables and the logits are the same for all the logit. This means that the results are a set of parallel lines or planes—one for each category of the outcome variable. This assumption can be

checked by allowing the coefficients to vary, estimating them and then testing whether they are all equal.

In the result of the test of parallel is m , the row labeled **Null Hypothesis** contains $-2 \log$ - likelihood for the constrained model, the model that assumes the lines are parallel. The row labeled **General** is for the model with separate lines or planes. It assumes the general model results in a sizeable improvement in fit.

The entry labeled *Chi-Square* (χ^2) is the difference between the two ($-2 \log$ - likelihood) values. If the lines or planes are parallel, the observed significance level for the change should be large, since the general model doesn't improve the fit very much. The parallel model is adequate. If accept the null hypothesis that the lines are parallel. If rejected the null hypothesis, it is possible that the link function selected is incorrect for the data or that the relationships between the independent variables and logits are not the same for all logits. Figure 4.1 shows the conditions

Fig 4.1 Conditions where the assumption holds and does not hold



Sources: O' Connel, a. A.(2006)

4.4.8 Overall Model Test for Ordinal Logistic Regression

Before proceeding to examine the individual coefficients, testing overall model should be made that the location coefficients for all of the variables in the model are 0. It base on the change in $-2 \log$ - likelihood when the variables are added to a model that contains only the intercept. The change in likelihood function has a Chi - square (χ^2) distribution even when there are cells with small observed and predicted counts.

4.4.9 Goodness-of-Fit Measures

From the observed and expected frequencies, the usual Pearson and Deviance goodness-of-fit measures can be computed. The Pearson goodness-of-fit statistic is

$$\chi^2 = \sum_{i=1}^n \sum_{j=1}^k \frac{(O_{ij} - E_{ij})^2}{E_{ij}} \quad (4.24)$$

The deviance measure is

$$D = 2 \sum \sum O_{ij} \ln \left(\frac{O_{ij}}{E_{ij}} \right) \quad (4.25)$$

Both of the goodness-of-fit statistics should be used only for models that have reasonably large expected values in each cell. If there is a continuous independent variable or many categorical predictors or some predictors with many values, it may have many cells with small expected values. In this situation, neither statistic provides a dependable goodness-of-fit test.

If the model fits well, the observed and expected cell counts are similar, the value of each statistic is small, and the observed significance level is large. The null hypothesis can be rejected that the model fits if the observed significance level for the goodness-of-fit statistics is small. Good models have large observed significance levels.

4.4.10 Measuring Strength of Association

There are several R^2 -like statistics that can be used to measure the strength of the association between the dependent variable and the predictor variables. They are not as useful as the R^2 statistics in regression, since their interpretation is not straightforward.

(i) Cox and Snell's R-square

Cox and Snell's presents the R-squared as a transformation of the statistic of $(-2 \ln[L(\beta^0)/L(\hat{\beta})])$. That is used to determine the convergence of a logistic regression. The ratio of the likelihoods reflects the improvement of the full model over the intercept model (the smaller the ratio, the greater the improvement). The Cox and Snell R-square

$$R_{CS}^2 = 1 - \left(\frac{L(\beta^0)}{L(\hat{\beta})} \right)^{\frac{2}{n}} \quad (4.26)$$

(ii) Nagelkerke R-Square

It adjusts Cox and Snell's so that the range of possible values extends to 1. To achieve this, the Cox & Snell R-squared is divided by its maximum possible value, $1 - L(\beta^{(0)})^{2/n}$. Then, if the full model perfectly predicts the outcome and has a likelihood of 1, Nagelkerke R-squared will equal one.

$$R_N^2 = \frac{R_{CS}^2}{1 - L(\beta^{(0)})^{2/n}} \quad (4.27)$$

(iii) McFadden's R-Square

McFadden's R-squared is defined as $1 - \left(\frac{L(\hat{\beta})}{L(\beta^{(0)})} \right)$, where $L(\hat{\beta})$ is the log likelihood value for the fitted model and $L(\beta^{(0)})$ is the log likelihood for the null model which includes only an intercept as predictor (so that every individual is predicted the same probability of 'success').

$$R_M^2 = 1 - \left(\frac{L(\hat{\beta})}{L(\beta^{(0)})} \right) \quad (4.28)$$

where, $L(\hat{\beta})$ is the log-likelihood function for the model with the estimated parameters and $L(\beta^{(0)})$ is the log-likelihood with just the thresholds and n is the number of cases (sum of all weights).

4.5 Multivariate Analysis of Variance (MANOVA)

4.5.1 One-way Multivariate Analysis of Variance (One-way MANOVA)

The one-way multivariate analysis of variance (one-way MANOVA) is used to determine whether there are any differences between independent groups on more than one continuous dependent variable. In this regard, it differs from a one-way ANOVA, which only measures one dependent variable.

A one-way MANOVA is used to understand whether there were differences in the three completion levels of primary students (i.e., the three dependent variables are 'only fair' 'good' and 'excellent' of completion levels, while the independent variables is 'teachers educational level', which has three independent groups; 'non-user', 'experimenter' and regular user').

It is important to realize that the one-way MANOVA is an omnibus test statistic and cannot tell which specific groups were significantly different from each other; it only tells that at least two groups were different. Since there have three, four, five or more groups in the study design, determine which of these groups differ from each other is important. It can be using a post-hoc test.

4.5.2 Two-way Multivariate Analysis of Variance (Two-way MANOVA)

The two-way multivariate analysis of variance (two-way MANOVA) is often considered as an extension of the two way ANOVA for situation where there is two or more dependent variables. The primary purpose of the two-way MANOVA is to understand if there is an interaction between the two independent variables on the two or more dependent variables. A two-way MANOVA has generally one primary aim: to understand whether the effect of one independent variable on the dependent variables (collectively) is dependent on the value of the other independent variable. This is called an “interaction effect” However, if no interaction effect is present (usually assessed as whether the interaction effect is statistically significant). It is can be interested in the “main effects” of each independent variable instead. This is somewhat akin to assessing the effects that an independent variable has on the dependent variable collectively when “ignoring” the value of the other independent variable. On the other hand, if a statistically significant interaction is found. It needed to consider a method of following up the result.

(i) Assumptions of Two-way MANOVA

When analyzing data use with a one-way MANOVA, part of the process involves checking to make sure that the data can usually be analyzed using a one-way MANOVA. It is need to do because it is only appropriate to use a one-way MANOVA if data ‘satisfy’ nine assumptions that are required for a one-way MANOVA to give a valid result.

These nine assumptions are;

1. Two or more dependent variables should be measured at the interval or ratio level (i.e., they are continuous)
2. Independent variable should consist of two or more categorical, independent groups.
3. The data should be independence of observations, which means that there is no relationship between the observations in each group or between the groups themselves.

4. Sample size must be adequate.
5. There are no univariate or multivariate outliers. First, there can be no (univariate) outliers in each group of the independent variable for any of the dependent variables. This is similar assumption to the one-way ANOVA, but for each dependent variable that in MANOVA analysis. Univariate outliers are often just called outliers. Multivariate outliers are cases which have an unusual combination of scores on the dependent variables.
6. There is multivariate normality. Unfortunately, multivariate normality is a particularly tricky assumption to test for and cannot be directly tested in SPSS Statistics. Instead, normality of each of the dependent variable is often used in its place as a best ‘guess’ as to whether there is multivariate normality.
7. There is a linear relationship between each pair of dependent variables for each group of the independent variable. If the variables are not linearly related, the power of the test is reduced.
8. There is homogeneity of variance-covariance matrices.
9. There is no multicollinearity.

(ii) Partial Eta Squared in Two- Way (MANOVA) Model

Partial Eta Squared (η^2) is a proportion of variance accounted for by some effect.

$$\text{Partial } \eta^2 = \frac{SS_{effect}}{SS_{effect} + SS_{error}} \quad (4.29)$$

Where SS is short for “sums of squares”, the amount of dispersion in dependent variables. This means that partial η^2 is the variance attributable to an effect divided by the variance that could have been attributable to this effect.

CHAPTER V

FINDINGS AND DISCUSSIONS

5.1 Description of Variables

In order to meet the objectives, ordinal logistic regression analysis and multivariate analysis of variances were conducted. The dependent and independent variables used in these analyses are presented below.

5.1.1 Dependent Variables of Primary Student's Completion Level

The pass grade level is the dependent variables and there are three levels of pass grade namely; grade A, grade B and grade C. When the student gets the marks between 80 and 100, it's denoted as grade A. For grade B, the marks must be between 60 and 79 and for the marks between 40 and 59 as grade C. These three levels of dependent variables are explored from the primary student's completion namely;

- (a) Students passed with grade A (good) as Level 3.
- (b) Students passed with grade B (moderate) as Level 2.
- (c) Students passed with grade C (low) as Level 1.

5.1.2 Independent Variables

The independent variables were identified to determine the completion of primary level. To account for the influence of parent related variables, level of education of parents, type of family structure, occupation of parents, health of parents, parental support (supporting facilities, supporting knowledge book, supporting school facilities and parental encouragement) were used as the independent variables.

For the influence of student related variables, gender, age, parental attitude towards education, student attitude towards education (interested in education, interested in study), Help the parent's work, Supporting from their family (condition of parent help in study, condition of parent help in school activities) and cultivating in reading, health of students used as the independent variable.

In order to school related variables gender of teachers, teacher's age, educational qualification of the teacher, work experience (service), teacher's position, were used as independent variables for the influence of school related variables.

Community related variables refer to variable within the society which may have a direct input on student not to attend school or drop out of school. Schools operate as integral parts of the society. The characteristics of the community may influence students' participation in formal primary education. Student's participation school helps not only the schools but also the teachers and students as well. When students are involved in discussion about teaching and learning teachers will benefit in that they will be able to get easy feedback to help in improving the quality of student-teacher relationship. It will also enable teachers to identify problems implementing students' progress, help to create a more collaborative classroom and help in developing new ideas to improve teaching and learning. Place of resident, advice from parents' friends, interested in study of friends and distance from school were used as independent variables to account for the influence of community related variables.

5.1.3 Variable Coding of Independent Variables

The variables coding for the independents variables and definition of each are shown in Table (5.1).

Table (5.1)

Variable Coding for Independent Variables

Sr. No	Variable	Definition	Coding
1.	I. Parent Related Variables 1.Parents' Educational Level 2.Type of Family 3.Parents' Occupation 4.Parents' Health	Status of mothers' and fathers' education was considered separately in this study. Family type is a derived variable that classifies family according to the presence or absence of couples, parents and children. The occupation of parents can represent family incomes as well as social status. Different occupational groups with a different income have a different effect. It was considered separately in this study. The physical and emotional health of child's parents can affect their ability to care for their child and can influence the health and well-being of the family as whole.	1=literate 2=Basic Education 3= Higher Education 1=With Father 2=With Mother 3=With Grand Parent 4=With Parent 1=Non -Working 2=Working 1=Weak 2=Fair 3=Strong

Table continue,

Sr. No	Variable	Definition	Coding
	5.Supporting Facilities 6.Supporting Knowledgeable Books 7.Supporting School Facilities 8.Paental Encouragement 9.Paternal Attitudes on causes of fail 10.Parental Attitudes on causes of success	Parents supports facilities to their children for studying at home such as desk, chair, making a reading room, supporting facilities. Parent supports knowledgeable books (i.e. reference work containing articles on various topics dealing with the entire range of human knowledge or with some particular specialty. Parents support facilities to their children to help the students learning at school. It refers to the general process undertaken by the parents to initiative and directs the behavior of the children toward high achievement. This is the parental of attitudes on the causes of student's fail examination This is the parental attitudes on the causes of student's pass examination	1=Never 2=Sometimes 3=Always 1=Never 2=Sometimes 3=Always 1=No 2=Yes 1=No 2=Yes Factor Scores Factor Scores
2.	II. Student Related Variables 1.Child's Gender 2. Age 3.Birth Order In Family 4.Supporting from siblings 5.Interesting in Education 6.School Attendance 7.Interesting in study	Gender of the child. Gender refers to how an individual sees himself or herself in terms of masculine and feminine tendencies. Age of the student in completed years. Birth Order of students in their family The students get the help from their elder brothers and sisters. The condition of student interested in education. The student attends the school regularly. It is the feeling of a person whose attention, concern, or curiosity is particularly engaged by study.	1=Male 2=Female 1= $9 \leq \text{age} \leq 10$ 2= $10 < \text{age} \leq 11$ 1=Only One 2=Youngest 3=Middle 4=Oldest 1=No 2=Yes 1=Weak 2=Strong 1=No 2=Yes 1=Weak 2=Strong

Table continue,

Sr. No	Variables	Definition	Coding
	8.Help in Parent's Work 9.Parents help in Study 10.Parents help in School Activity 11.Cultivating in Reading Habit 12.Students' Health	<p>The condition of student help in parent's work. Parents help in study is encouraging learning. Children need active learning as well as quite learning such as reading and doing homework.</p> <p>The learning what the school offers, reading the information the school sends home, talking to other parents to find out what programs the school offers.</p> <p>Helping the student become a reader. Reading helps student in all school subjects. It is the key to lifelong learning.</p> <p>Students with poor health have a higher probability of school failure, grade retention and dropout.</p>	1=Sometimes 2=Always 1=Never 2=Sometimes 3=Always 1=Never 2=Sometimes 3=Always 1=Weak 2=Fair 3=Strong 1=Weak 2=Fair 3=Strong
3.	III. School Related Variables 1.Teacher's Gender 2.Teacher's Age 3.Educational qualification of the teacher 4. Work experience	<p>Gender of Teachers</p> <p>Age of Teachers</p> <p>A teaching qualification is one of a number of academic and professional degrees that enables a person to become a registered teacher.</p> <p>The experience that a teacher already has of working.</p>	1=Male 2=Female 1=Under 35 2=36-45 3=46-55 4= above56 1=B.A 2=B.Sc 3=B.Econ 4=Others 1=3-15 Years 2=16-28 Years 3=29-41 Years

Table Continue,

Sr. No.	Variables	Definition	Coding
4.	IV. Community Related Variables 1. School Distance 2. Interesting in study of Classmate 3. Neighborhood Educational Level 4. Advice from Parents' Friend	The school being far or close to the home definitely affects the student in many ways. A friend is a person who supports a cause, organization, or country by giving financial or other help. Therefore, interested in study of a student in education can affect other one. The educational level of persons who live near the student's home. Parents got information or notice concerned with their children education from their friends.	1=4-12 minutes 2=13-21 minutes 1=No 2=Yes 1=Literate 2=Basic Education 3=Graduate 1=No 2=Yes

5.1.4 Model Description

According to the objectives, the seven models are built to find out the factors influencing the completion of basic education primary level. The description of the models is presented in Table (5.2). These models were built up by using Ordinal Logistic Regression. In order to find out the analysis of variance with multiple dependent variables, multivariate analysis of variance (MANOVA) was applied to the school related variables.

Table (5.2)
Description of Models for Variable

Model No	Dependent Variable	Independent Variable
1	Pass Grade Level	Parent related Variables for Rural
2	Pass Grade Level	Parent related Variables for Urban
3	Pass Grade Level	Student related Variables for Rural
4	Pass Grade Level	Student related Variables for Urban
5	Pass Grade Level	Community related Variables for Rural
6	Pass Grade Level	Community related Variables for Urban
7	Percentage of Pass Grade Level	Teacher related Variables

5.2 Parent Related Variables Affecting on the Completion of Primary Level

Primary Student Completion level is dependent variable and it was given 1 if the student had passed with level C, 2 if the student had passed with level B and 3 if the student had passed with level A. These variables were denoted as follows:

Y=1, if the student had passed with Grade C.

Y=2, if the student had passed with Grade B.

Y=3, if the student had passed with Grade A.

Level of education of parent, type of family, occupation of parents, health of parents and parental support (supporting facilities, supporting knowledge book, supporting school facilities and parental encouragement) are considered as independent variables. These variables are categorized as follows.

X_{i1} = Cause of Fail

X_{i2} = Cause of Success

X_{i3} = Father's Education

=1 if the father's education level is literate

=2 if the father's education level is basic education (reference)

X_{i4} = Mother's Education

=1 if the mother's education level is literate

=2 if the mother's education level is basic education (reference)

X_{i5} = Type of Family

=1 if the student stays with father

=2 if the student stays with mother

=3 if the student stays with grandparent

=4 if the student stays with parent (reference)

X_{i6} = Father's Occupation

=1 if the father is non-working

=2 if the father is working (reference)

X_{i7} = Mother's Occupation

- =1 if the mother is non- working
- =2 if the mother is working (reference)

X_{i8} =Father's Health

- =1 if the father's health is weak
- =2 if the father's health is fair
- =3 if the father's health is strong (reference)

X_{i9} =Mother's Health

- =1 if the mother's health is weak
- =2 if the mother's health is fair
- =3 if the mother's health is strong (reference)

X_{i10} =Supporting Facilities

- =1 if the parents never support the facilities to their children
- =2 if the parents sometimes support the facilities to their children
- =3 if the parents always support the facilities to their children (reference)

X_{i11} =Supporting Knowledgeable Books

- =1 if the parents never support the knowledgeable books to their children
- =2 if the parents sometimes support the knowledgeable books to their children
- =3 if the parents always support the knowledgeable books to their children (reference)

X_{i12} =Supporting School Facilities to their children

- =1 if the parents do not support school facilities
- =2 if the parents support school facilities (reference)

X_{i13} =Parental Encouragement

- =1 if the parents do not encourage their children to be interested in education
- =2 if the parents encourage their children to be interested in education (reference)

X_{i14} =Factor score of supporting activities for causes of fail

X_{i15}=Factor score of learning activities for causes of fail

X_{i16}=Factor score of teaching activities for causes of fail

X_{i17}=Factor score of learning activities for causes of success

X_{i18}=Factor score of supporting activities for causes of success

X_{i19}=Factor score of teaching activities for causes of success

5.2.1 Bivariate Analysis of Pass Grade Level by Parent Related Variables in Rural

In this sub section, the independent variables such as father's education, mother's education, type of family, father's occupation, mother's occupation, father's health, mother's health, supporting facilities for children studies, supporting knowledgeable books for children, supporting school facilities and parental encouragement were analyzed by using χ^2 -test for the association with pass grade level in rural area. Four variables were associated with pass grade level. It is shown in Table (5.3).

Table (5.3)

Association between Pass Grade Levels and Parent Related Variables

Sr.No	Variables	χ^2	df	p-value
1.	Father's Education	5.152	2	0.076*
2.	Father's Health	9.442	4	0.051*
3.	Supporting Facilities to their children	7.792	4	0.100*
4.	Supporting Knowledge Books	16.840	4	0.002***

*** denotes significant at 1% level and * denote significant at 10% level

Source: Survey data, 2018

In the Table (5.3), father's education, father's health, supporting facilities and supporting knowledgeable books are significantly associated with pass grade level. According to the results, father's education, father's health and supporting facilities to their children are 10% level significant in association with pass grade level. Paternal education is one aspect of family background that influences children's subsequent achievements as adults. Parents are the first teachers of their children until they start going to school. However, even after that, they do play a critical role. Parents may alter their time investments in children, such as reading to the child and they may affect children's aspirations. Especially, when educated fathers are involved in the lives of their children education, children learn more, perform better in school and exhibit healthier behavior. Therefore, father's education is significantly associated with pass grade level

in rural area. Fathers play a role in every child's life that cannot be filled by others. This role can have a large impact on a child. Children look to their fathers to lay down the rules and enforce them. They also look to their fathers to provide a feeling of security, both physical and emotional. An involved father promotes inner growth and strength. So, father's health is significantly associated with pass grade level of student.

The result of Chi-square analysis was found that supporting facilities is significantly associated with pass grade level at 10% level. Parents supported their children facilities which were essential for their studies. Children need the facilities to study their lessons very well. If they have facilities such as desk, chair, reading room, they can be more interested in their school lessons. If they are more interested in their study, they can get higher level of pass grade. Therefore, the supporting facilities are significantly associated with pass grade level.

According to the result of Chi-square analysis, supporting knowledgeable book is highly significantly associated with pass grade level at 1% level. If the students have knowledgeable books, they can have much knowledge in their learning. And then, they can have higher level of pass grade. Thus, supporting knowledge books is also significantly associated with pass grade level. According to the result of cross tabulation of father's education and pass grade level, the students at fair pass grade level are higher than other level in literate of father's education. For the students who have basic educated father are higher in moderate pass grade level (see Appendix Table: C-1). In father's health, the students who have strong father are higher in moderate pass grade level than other levels (see Appendix Table: C-2). According to the collected data, the results are shown in the following table.

Table (5.4)
Distribution of Parent Related Variables

Variables	No. of Parent	Percent	
Father's Education	Literate	310	85.4
	Basic	53	14.6
	Total	363	100
Father's Health	Weak	34	9.4
	Fair	27	7.4
	Strong	302	83.2
	Total	363	100
Supporting Facilities	Never	33	9.1
	Sometime	177	48.8
	Always	153	42.1
	Total	363	100
Supporting Knowledgeable Book	Never	138	38.0
	Sometimes	150	41.3
	Always	75	20.7
	Total	363	100

Source: Survey Data (2018)

According to Table (5.4), there are 310 (85.4%) fathers who are literate and they can read and write in their daily life but they do not attend the school. The number of father who has basic educational level is 53(14.6%). Therefore, the literate father is the most in the rural.

For the father's health, there are 34(9.4%) fathers who are weak in their health, 27(7.4%) fathers are fair and 302 (83.2%) fathers are strong in health respectively. Thus, the father who is strong in health is the most in rural area.

In the results of supporting facilities, there are 33(9.1%) persons who never support facilities to their children for study. The number of persons who sometimes support facilities to their children for study is 177(48.8%). There are 153(42.1%) persons who always support to their children for study. Therefore, the parents who sometimes support to their children for study are the most in rural.

For supporting knowledgeable books, there are 138 (38.0%) persons who never support knowledgeable books to their children to help in study. There are 150 (41.3%) persons who sometimes support knowledgeable books and 75 (20.7%) persons who always support knowledgeable books to their children to help in study. Therefore, most of the parent who sometimes support knowledgeable books to their children helps in study.

5.2.2 Multiple Ordinal Logistic Regression Analysis in Rural

In this sub section, multiple ordinal logistic regression model was built up for pass grade level with parent related variables in rural area such as father’s education, father’s health, supporting facilities, supporting knowledgeable books and parental attitudes for causes of fail and success (supporting activities, learning activities and teaching activities).

The variables of parental attitude cause of fail and success are measured with 5 Likert Scales (see Appendix A1). The results of are shown in Table (5.5).

Table (5.5)
Consistency and Sampling Adequacy of Parental Attitude for Causes of Fail

Testing		Causes of Fail
Cronbach’s Alpha		0.858
KMO Test		0.873
Bartlett’s Test	Chi-Square	1649.101
	df	120
	Sig	0.000***

*** denotes significant at 1% level

Source: Survey data, 2018

According to the Table (5.5), the variable is consistency, sampling is adequate and correlation matrix is not an identity. Therefore, factor analysis is suitable for the data. In the results of factor analysis, three factors which are supporting activities, learning activities and teaching activities are found in parental attitude for cause of fail (see Appendix Table B-1). The results of parental attitude for causes of success are shown in Table (5.6).

Table (5.6)
Consistency and Sampling Adequacy of Parental Attitude for Causes of Success

Testing		Causes of Success
Cronbach’s Alpha		0.831
KMO Test		0.861
Bartlett’s Test	Chi-Square	1170.626
	df	78
	Sig	0.000***

*** denotes significant at 1% level

Source: Survey data, 2018

According to the Table (5.6), the variable is consistency, sampling is adequate and correlation matrix is not an identity. Therefore, factor analysis is suitable for the data. In the results of factor analysis, three factors which are learning activities, supporting activities and teaching activities are found in parental attitude for cause of are found (see Appendix B-2). The results of model fitting information are shown in Table (5.7).

Table (5.7)

Model Fitting Test of Ordinal Logistic Regression Model with Parent Related Variables in Rural

Model	-2log-likelihood	χ^2	df	p-value
Intercept Only	734.221			
Final	704.086	30.134	13	0.005**

** denotes significant at 5% level

Source: Survey data, 2018

According to the Table (5.6), the difference between -2log-likelihood (χ^2) has an observed significance level of less than 0.01. Therefore, the model with ten parent related independent variables such as father's education, father's health, supporting facilities, supporting knowledgeable books and parental attitudes for causes of fail and success (supporting activities, learning activities and teaching activities) is fit. The results of overall model evaluation of ordinal logistic regression model are shown in Table (5.8).

Table (5.8)

Goodness of Fit for Ordinal Logistic Regression Model

	χ^2	df	p-value
Pearson	713.333	683	0.204
Deviance	699.692	683	0.321

Source: Survey data, 2018

According to the results in Table (5.8), Pearson (0.204) and Deviance (0.321) have larger p-value and the null hypothesis is not rejected. Therefore, the ordinal logistic model of parent related variables is fit with father's education, father's health, supporting facilities, supporting knowledgeable books and parental attitudes for causes of fail and success (supporting activities, learning activities and teaching activities). The results of parameter estimation of ordinal logistic model are shown in Table (5.9).

Table (5.9)

Parameters Estimates of Parent Related Variables

	Beta	S.E	Wald	df	Sig	Exp Beta	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold Pass Grade Level								
PGL(1)	-1.247	0.357	12.209	1	0.000***	0.287	0.143	0.578
PGL(2)	1.254	0.356	12.424	1	0.000***	3.504	1.745	7.037
Location								
Supporting Activities	0.021	0.109	.037	1	0.847	1.021	0.824	1.266
Learning Activities	-0.005	0.112	.002	1	0.965	0.995	0.799	1.239
Teaching Activities	-0.239	0.106	5.070	1	0.024**	0.788	0.640	0.970
Learning Activities	0.220	0.110	4.010	1	0.045**	1.246	1.005	1.546
Supporting Activities	-0.024	0.108	0.048	1	0.827	0.977	0.790	1.208
Teaching Activities	0.066	0.110	0.353	1	0.552	1.068	0.860	1.325
Father's Education								
FE(1)	0.406	0.293	1.928	1	0.165	1.501	0.846	2.665
FE (2) (ref:)								
Father's Health								
FH(1)	-0.250	0.356	.494	1	0.482	0.779	0.387	1.565
FH(2)	-0.549	0.402	1.865	1	0.172	0.578	0.263	1.270
FH (3)(ref:)								
Supporting Facilities								
SF(1)	0.085	0.408	.043	1	0.835	1.089	0.489	2.423
SF(2)	-0.013	0.239	.003	1	0.955	0.987	0.617	1.577
SF (3) (ref:)								
Supporting Knowledgeable Books								
SKB(1)	-0.851	0.320	7.063	1	0.008***	0.427	0.228	0.800
SKB(2)	-0.347	0.298	1.358	1	0.244	0.707	0.394	1.267
SKB (3) (ref:)								

*** denotes significant at 1% level ** denotes significant at 5% level

Source: Survey data, (2018)

The Ordinary Logistic models of pass-grade level I and II are

$$P(Y = 1) = P(Y \leq 1)$$

$$P(Y \leq 1)$$

$$= \frac{\exp\left\{-1.247 - \frac{(0.021SACOF - 0.005LACOF - 0.239TACOF + 0.220LACOS - 0.024SACOS + 0.066TACOS + 0.406FE(1) - 0.250FH(1) - 0.549FH(2) + 0.085SF(1) - 0.013SF(2) - 0.851SKB(1) - 0.347SKB(2))}{(0.021SACOF - 0.005LACOF - 0.239TACOF + 0.220LACOS - 0.024SACOS + 0.066TACOS + 0.406FE(1) - 0.250FH(1) - 0.549FH(2) + 0.085SF(1) - 0.013SF(2) - 0.851SKB(1) - 0.347SKB(2))}\right\}}{1 + \exp\left\{-1.247 - \frac{(0.021SACOF - 0.005LACOF - 0.239TACOF + 0.220LACOS - 0.024SACOS + 0.066TACOS + 0.406FE(1) - 0.250FH(1) - 0.549FH(2) + 0.085SF(1) - 0.013SF(2) - 0.851SKB(1) - 0.347SKB(2))}{(0.021SACOF - 0.005LACOF - 0.239TACOF + 0.220LACOS - 0.024SACOS + 0.066TACOS + 0.406FE(1) - 0.250FH(1) - 0.549FH(2) + 0.085SF(1) - 0.013SF(2) - 0.851SKB(1) - 0.347SKB(2))}\right\}} \quad (5.1)$$

$$P(Y = 2) = P(Y \leq 2) - P(Y = 1)$$

$$P(Y \leq 2)$$

$$= \frac{\exp\left\{1.254 - \frac{(0.021SACOF - 0.005LACOF - 0.239TACOF + 0.220LACOS - 0.024SACOS + 0.066TACOS + 0.406FE(1) - 0.250FH(1) - 0.549FH(2) + 0.085SF(1) - 0.013SF(2) - 0.851SKB(1) - 0.347SKB(2))}{(0.021SACOF - 0.005LACOF - 0.239TACOF + 0.220LACOS - 0.024SACOS + 0.066TACOS + 0.406FE(1) - 0.250FH(1) - 0.549FH(2) + 0.085SF(1) - 0.013SF(2) - 0.851SKB(1) - 0.347SKB(2))}\right\}}{1 + \exp\left\{1.254 - \frac{(0.021SACOF - 0.005LACOF - 0.239TACOF + 0.220LACOS - 0.024SACOS + 0.066TACOS + 0.406FE(1) - 0.250FH(1) - 0.549FH(2) + 0.085SF(1) - 0.013SF(2) - 0.851SKB(1) - 0.347SKB(2))}{(0.021SACOF - 0.005LACOF - 0.239TACOF + 0.220LACOS - 0.024SACOS + 0.066TACOS + 0.406FE(1) - 0.250FH(1) - 0.549FH(2) + 0.085SF(1) - 0.013SF(2) - 0.851SKB(1) - 0.347SKB(2))}\right\}} \quad (5.2)$$

According to the Table (5.9), for factor scores of teaching activities for causes of fail increase one unit, the log of odds of having a negative perception about pass grade level decreased by 0.239. For the factor scores of learning activities factor for cause of success, if one unit increase in teaching activities factor, the log of odds of having a positive perception about pass grade level increased by 0.220.

The parent who is never support the knowledgeable books to their children as opposed to the parent who always support the knowledgeable books is associated with a higher likelihood of having a negative perception about pass grade level of the student's completion. The Wald χ^2 is 7.063 and therefore is statistically significant at 1% level.

In the results of odds ratio, when one unit increase in factor score of teaching activities for cause of fail on pass grade level, the odds of low pass grade level versus the combined moderate and good pass grade level are 0.788 times lower. Likewise, for one unit increase in factor score of teaching activities for cause of fail, the odds of the combined low and moderate pass grade level versus good pass grade level are 0.788 times lower, given the other variables are held constant.

For the factor score of learning activities for cause of success on pass grade level the proportional ratio for one unit increase in factor score of learning activities on pass grade level given that the other variables in the model are held constant. Thus, for one unit increase in factor

score of learning activities on pass grade level are 1.246 times greater, given the other variables are held constant in the model. Likewise, for one unit increase in factor score of learning activities for cause of success, the odds of the combined low and moderate pass grade level versus good pass grade level are 1.246 times greater, given the other variables are held constant.

For never supporting knowledgeable book, the odds of low pass grade level versus combined moderate and good pass grade level are 0.427 times lower than for always supporting knowledgeable books, given the other variables are held constant. Likewise, the odds of the combined low and moderate pass grade level versus good pass grade level is 0.427 times lower never categorical variables compared to always categorical variable of supporting knowledgeable books, given the other variables are held constant in the model. For the test of parallelism, the results are shown in Table (5.10).

Table (5.10)
Parallelism Test of Ordinal Logistic Regression Model

Model	-2log-likelihood	χ^2	df	p-value
Null Hypothesis	704.086			
General	671.625	32.462	13	0.121

Source: Survey data, 2018

According to the Table (5.10), the model has large significant value. So, the null hypothesis is not rejected and the parallel line assumption is not violated. To test the assumption of multicollinearity test, the results are shown in Table (5.11).

Table (5.11)
Multicollinearity Test of Ordinal Logistic Regression Model

Model	95% Confidence Interval		Colinearity statistics
	Lower Bound	Upper Bound	VIF
(Constant)	1.153	2.091	
Father Education	-0.333	0.076	1.032
Father's Health	-0.48	0.181	1.034
Supporting Facilities	-1.25	0.125	1.317
Supporting Knowledgeable Book	0.044	0.256	1.308

Source: Survey data, 2018

According to the results from Table (5.11), the ten variables of parents related variables in rural area; father's education, father's health, supporting facilities, and supporting

knowledgeable books do not have multicollinearity. The results of the strength of association for Ordinal Logistic Regression model are shown in Table (5.12).

Table (5.12)

Coefficient of Determination for Ordinal Logistic Regression Model

	Pseudo R ² Value
Cox and Snell	0.080
Nagelkerke	0.092
McFadden	0.041

Source: Survey data, 2018

In Table (5.12), the Pseudo R² value (Nagelkerke = 9.2%) indicated that pass grade level explained 9.2% by father's education, father's health, supporting facilities, supporting knowledgeable book and the factor scores of causes of fail and success explain.

5.2.3 Bivariate Analysis of Pass Grade Level by Parent Related Variables in Urban Area

In the urban area, three variables are found by using χ^2 test for the association with pass grade level. It is shown in Table (5.13).

Table (5.13)

Association between Pass Grade Levels and Parent Related Variables in Urban Area

Sr.No	Variables	χ^2	df	p-value
1.	Mother's Occupation	7.763	2	0.021**
2.	Supporting School Facilities	9.996	2	0.007**
3.	Parental Encouragement	9.996	2	0.007**

** denotes significant at 5% level

Source: Survey data, 2018

According to Table (5.13), for the urban area mother's occupation, supporting school facilities and parental encouragement are significantly associated with pass grade levels. According to the results of Chi-Square (χ^2) analysis, mother occupation is 5% level significantly associated with pass grade level in urban area. For supporting school facilities variable, it was found that there is significantly associated with pass grade level at 1% level and also parental encouragement is also found to be significantly associated with pass grade level at 1% level. The student need to be encouraged to interest in education. This means that encouragement is a sensibility and capacity that a good education cultivates in students.

According to the result of the cross-tabulation of mother's occupation and pass grade level, number of students with good level of pass grade who has working mother is higher than the number of students who has non-working mother. In the low level of pass grade, number of students who has non-working mother is higher than number of students who has working mother (see Appendix Table: C-5).

In the supporting school facilities, the percentage of the students who receive the supporting school facilities from their parents is higher than the percentage of the students who do not receive the supporting school facilities from their parents at moderate and good pass grade level (see Appendix Table: C-6). According to the collected data, the results of number of parents in parent related variables are shown in the following table.

Table (5.14)

Distribution of Parent Related Variables in Urban Area

Variables		No. of Parent	Percent
Mother's Occupation	Non-Working	65	45.1
	Working	79	54.9
	Total	144	100
Supporting School Facilities	No	11	7.6
	Yes	133	92.4
	Total	144	100
Parental Encouragement	No	11	7.6
	Yes	133	92.4
	Total	144	100

Source: Survey Data, 2018

According to Table (5.14), there are 79(54.9%) persons who are working mother in urban area and 65 (45.1 %) persons who are non-working mother in urban area. For supporting school facilities, there are 133(92.4%) parents who support school to their children for study and 11(7.6 %) parents who do not support school facilities to their children in urban area. In the result of the number of parents in parental encouragement, there are 133 (92.4 %) parents who encourage their children to interest in education and 11(7.6%) parents who do not encourage their children respectively.

5.2.4 Multiple Ordinal Logistic Regression Analysis

Multiple ordinal logistic regression model was developed to analyze the pass grade level with parent related variables in urban area. In this model mother’s occupation, supporting school facilities, parental encouragement, and parental attitudes for causes of fail and causes of success (learning activities, supporting activities and collaboration of parent and teacher activities) from urban area are independent variables.

Table (5.15)

Consistency and Sampling Adequacy of Parental Attitudes for Causes of Fail

Testing		Causes of Fail
Cronbach’s Alpha		0.907
KMO Test		0.868
Bartlett’s Test	Chi-Square	1020.423
	df	91
	Sig	0.000***

*** denotes significant at 1% level

Source: Survey data, 2018

According to the Table (5.15), there is internal consistency among the items in causes of fail. Sampling is adequate and the correlation matrix is not an identity. Therefore, factor analysis was suitable for the data. In the results of factor analysis for variables of parental attitudes, the two factors which are learning and supporting activities are found (see Appendix Table: B-3).

Table (5.16)

Consistency and Sampling Adequacy of Parental Attitudes for Causes of Success

Testing		Causes of Success
Cronbach’s Alpha		0.929
KMO Test		0.908
Bartlett’s Test	Chi-square	870.217
	df	36
	Sig	0.000***

*** denotes significant at 1% level

Source: Survey data, 2018

According to the Table (5.16), there is internal consistency among the items in causes of success. Sampling is adequate and the correlation matrix is not an identity. Therefore, factor

analysis was suitable for the data. According to the result of factor analysis for variables of parental attitude, there is one factor; collaboration of parent and teacher activities (see Appendix Table: B-4). The results of model fitting information are shown in Table (5.17).

Table (5.17)

Model Fitting Test of Ordinal Logistic Regression Model

Model	-2log-likelihood	χ^2	df	p-value
Intercept Only	265.517			
Final	240.792	24.725	6	0.000***

*** denotes significant at 1% level

Source: Survey data, 2018

According to the Table (5.17), the model with six parent related independent variables such as mother’s occupation, supporting school facilities, parental encouragement, and parental attitudes for causes of fail and causes of success (learning activities, supporting activities and collaboration of parent and teacher activities) was fitted. The results of overall model evaluation of ordinal logistic regression model are shown in Table (5.18).

Table (5.18)

Goodness of Fit for Ordinal Logistic Regression Model

	χ^2	df	p-value
Pearson	282.521	248	0.065
Deviance	237.679	248	0.670

Source: Survey data, 2018

According to the results in Table (5.18), the results of Pearson and Deviance are 0.651 and 0.670 respectively. Therefore, null hypothesis is not rejected and the model was fitted to the data. The results of parameter estimation of ordinal logistic model are shown in Table (5.19).

Table (5.19)

Parameters Estimates of Parent Related Variables

	Beta	S.E	Wald	df	Sig	Exp Beta	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold								
Pass Grade Level								
PGL(1)	-3.026	0.382	62.698	1	0.000***	0.049	0.023	0.103
PGL(2)	-1.040	0.274	14.420	1	0.000***	0.353	0.207	0.605
Location								
Learning Activities	-0.098	0.180	0.298	1	0.585	0.906	0.637	1.290
Supporting Activities	0.306	0.176	3.006	1	0.083*	1.358	0.961	1.919
Collaboration of Parents and Teachers	0.196	0.179	1.203	1	0.273	1.216	0.857	1.726
Mother's Occupation								
MO(1)	-0.842	0.365	5.317	1	0.021**	0.431	0.211	0.881
MO (2) (ref:)								
Supporting School Facilities								
SSF(1)	-0.618	0.716	0.744	1	0.388	0.539	0.132	2.195
SSF (2) (ref:)								
Parental Encouragement								
PE(1)	-1.129	0.432	6.832	1	0.009***	0.323	0.139	0.754
PE (2) (ref:)								

*** denotes significant at 1% level and ** denotes significant at 5% level *denotes significant at 10% level

Source: Survey data, (2018)

The Ordinal Logistic Models of pass grade level I and II are

$$P(Y = 1) = P(Y \leq 1)$$

$$P(Y = 1) = \frac{\exp\left\{-3.026 - \frac{(-0.098LACOF + 0.306SACOF + 0.196CPT)}{-0.842M0(1) - 0.618SSF(1) - 1.129PE(1)}\right\}}{1 + \exp\left\{-3.026 - \frac{(-0.098LACOF + 0.306SACOF + 0.196CPT)}{-0.842M0(1) - 0.618SSF(1) - 1.129PE(1)}\right\}} \quad (5.3)$$

$$P(Y = 2) = P(Y \leq 2) - P(Y = 1)$$

$$P(Y \leq 2) = \frac{\exp\left\{-1.040 - \frac{(-0.098LACOF + 0.306SACOF + 0.196CPT)}{-0.842M0(1) - 0.618SSF(1) - 1.129PE(1)}\right\}}{1 + \exp\left\{-1.040 - \frac{(-0.098LACOF + 0.306SACOF + 0.196CPT)}{-0.842M0(1) - 0.618SSF(1) - 1.129PE(1)}\right\}} \quad (5.4)$$

According to the Table (5.19), for factor scores of supporting activities for causes of fail increase one unit, the log of odds of having a positive perception about pass grade level increased by 0.306. And non-working mother as opposed to the working mother is associated with a higher likelihood of having a negative perception about the pass grade level of student's

completion. The Wald χ^2 is 5.317 and therefore is statistically significant at 1% level. The parent who does not encourage their children to interest in study as opposed to the parent who encourage their children is associated with a higher likelihood of having a negative perception about pass grade level of the student's completion. The Wald χ^2 is 6.832 and therefore is statistically significant at 1% level.

In the results of odds ratio, when one unit increase in factor score of learning activities for cause of fail on pass grade level versus the combined moderate and good pass grade level are 1.358 times higher, given the other variables are held constant in the model. Likewise, for one unit increase in factor score of learning activities for causes of fail, the odds of the combined low and moderate pass grade level versus good pass grade level are 1.358 times higher, given the other variables are held constant.

For non-working mother, the odds of low pass grade level versus combined moderate and good pass grade level is 0.431 times lower than for working mother given the other variables are held constant. Likewise, the odds of the combined low and moderate pass grade level versus good pass grade level is 0.431 times lower non-working mother compared to working mother, given the other variables are held constant in the model. For the test of parallelism, the results are shown in Table (5.20).

Table (5.20)

Parallelism Test of Ordinal Logistic Regression Model

Model	-2log-likelihood	χ^2	df	p-value
Null Hypothesis	240.792			
General	234.615	6.177	6	0.404

Source: Survey data, 2018

According to the Table (5.20), the general model has a large p-value (0.404). So, the parallel line assumption is not violated. To test the assumption of multicollinearity test, the results are shown in Table (5.21).

Table (5.21)

Multicollinearity Test of Ordinal Logistic Regression Model

Model	95% Confident Interval		Colinearity statistics
	Lower Bound	Upper Bound	VIF
(Constant)	0.078	1.715	
Mother's Occupation	0.021	0.477	1.113
Supporting School Facilities	-0.249	0.720	1.435
Paternal Encouragement	0.131	0.694	1.331

Source: Survey data, 2018

According to the Table (5.21), the six variables of present related variables in urban area: mother's occupation, supporting school facilities, parental encouragement, do not have multicollinearity. The results of the strength of association for ordinal logistic regression model are shown is Table (5.22).

Table (5.22)

Determination Coefficient for Ordinal Logistic Regression Model

	Pseudo R ² Value
Cox and Snell	0.158
Nagelkerke	0.186
McFadden	0.092

Source: Survey data, 2018

According to the Table (5.22), the Pseudo R² value (Nagelkerke = 18.6%) indicate that there is 18.6% pass grade level is explained by mother's occupation, supporting school facilities, parental encouragement, factor scores of supporting activities, learning activities and collaboration of parent and teacher activities

5.3 Student Related Variables Affecting on the Completion of Primary Level in Rural

In this section, student related variables are considered as independent variables and ordinal logistic regression is used to find out which student related variables affecting on the Completion of Primary Level. There are ten Variables in this study.

Gender, age, parental attitude towards education, interesting in education, interesting in study, helps in parent's work, parent's help in school activity, cultivating in reading, health of students are considered as independent variables. These variables are categorized as follow.

X_{i1} =Gender of the student

- =1 if student is male
- =2 if student is female

X_{i2} =Age of Student

- =1 if 9 year \leq age \leq 10 year
- =2 if 10 year $<$ age \leq 11 year

X_{i3} =Birth order in Family

- =1 if the student is only one
- =2 if the student is youngest
- =3 if the student is middle
- =4 if the student is oldest (reference)

X_{i4} = School Attendance

- = 1 if the student does not regularly attend the school
- =2 if the student attends the school regularly (reference)

X_{i5} =Supporting from Siblings

- =1 if the student does not get supporting from old their sibling
- =2 if the student gets supporting from their sibling (reference)

X_{i6} =Interesting in Education

- =1 if the student is weakly interest in education.
- =2 if the student is strongly interest in education (reference)

X_{i7} =Interesting in Study

- =1 if the student is weakly interest in study
- =2 if the student is strongly interest in study (reference)

X_{i8} =Help in parent's work

- =1 if the student sometimes helps in parent's work
- =2 if the student always helps in parents work (reference)

X_{i9} = Parent's Help in Study

- =1 if the parent never helps in their children study
- =2 if the parent sometimes helps in their children study
- =3 if the parent always helps in their children study (reference)

X_{i10} = Parent's Help in School Activity

- =1 if the parent never helps in school activity
- =2 if the parent sometimes helps in school activity
- =3 if the parent always helps in school activity (reference)

X_{i11} =Cultivating in Reading Habit

- =1 if the parent weakly cultivates their children in reading
- =2 if the parent fairly cultivates their children in reading
- =3 if the parent strongly cultivate their children in reading (reference)

X_{i12} =Student's Health

- =1 if the student's health status is weak
- =2 if the student's health status is fair
- =3 if the student's health status is strong (reference)

5.3.1 Bivariate Analysis of Pass Grade Level by Student Related Variables in Rural Area

In this section, the independent variables such as gender, age, supporting from siblings, interested in education, interested in study, help in parent's work, condition of parent help in study, condition of parent help in school activity, cultivating in reading habit and student's health were analyzed by using χ^2 -test for the association with pass grade level. Four variables were associated with pass grade level. It is shown in Table (5.23) with chi-square (χ^2) value, degree of freedom, and p-value.

Table (5.23)

Association between Pass Grade Levels and Student Related Variables in Rural Area

Sr. No.	Variable	χ^2	df	p-value
1.	Supporting from sibling	6.911	2	0.032**
2.	Interesting in education	5.600	2	0.061*
3.	School attendance	7.530	2	0.023**
4.	Interesting in study	6.355	2	0.042**

** denotes significant at 5% level and * denote significant at 10% level

Data Source: Survey Data, 2018

According to Table (5.23), supporting from siblings, interesting in education, school attendance and interesting in study are significantly associated with pass grade level. Supporting from siblings' variables is highly associated with pass grade level at 5% level. Older siblings play an important role in lives of their younger siblings. Like parents, older brothers and sisters act as role models and teachers, helping their younger siblings learn about the World. Children whose older siblings are kind, warm and supportive are more empathic than children whose siblings lack these characteristics. Therefore, supporting from siblings is significantly associated with pass grade level.

For interesting in education, it is found that this variable has significant association with pass grade level at 10% level. Knowledge and understanding of the child's interest are a major factor in educational guidance and interests give clues regarding adjustment and personality. If the students are interested in education, they can get the high level in their study. Therefore, interesting in education is significantly associated with pass grade level.

For school attendance, this variable is significantly associated with pass grade level at 5% significantly associated with pass grade level. Attending school regularly is very important to the children's future. Children who miss school frequently can easily fall behind with their school work and may do less well in their exams. Therefore, school attendance is significantly associated with pass grade level.

According to the results, interesting in study is significantly associated with pass grade level at 5% level. This variable is the feeling for attention, concern, or curiosity engaged by study. If the students pay attention in their study, they can understand the lessons and easily take

their exam examinations. Therefore, interesting in study is significantly associated with pass grade level.

According to the cross-tabulation of supporting from siblings and moderate pass grade level, the students who get supporting from their older siblings is more than the students who do not get supporting from their older siblings. And also, in the good pass grade level, the students who get supporting from their older siblings is more than the students who do not get supporting from their older ones (see Appendix Table: C-8).

The results from cross-tabulation of interesting in education and moderate pass grade level are found that the students who are strong interesting in education have more percentage than the students who are weak interesting in education. At the weak interesting in education, the percentage of the students who have moderate pass grade level is more than the students who have low and good pass grade level (see Appendix Table: C-9).

For school attendance and pass grade level, the students who attend the school regularly have more percentage than the students who do not attend the school regularly at moderate and good pass grade level. At the not attending the school regularly category, the percentage of the students who have low pass grade level is more than moderate and good pass grade level (see Appendix Table: C-10).

For the interesting in study and pass grade level, the students who are strong interesting in study have more percentage than the students who are weak interesting in study at moderate and good pass grade level (see Appendix Table: C-11). The results of descriptive statistics for student related variables are shown in following table.

Table (5.24)

Distribution of Student Related Variables

Variables		No. of Students	Percent
Supporting from Siblings	No	56	15.4
	Yes	307	84.6
	Total	363	100
Interesting in Education	Weak	62	17.1
	Strong	301	82.9
	Total	363	100
School Attendance	No	23	6.3
	Yes	340	93.7
	Total	363	100
Interesting in Study	Weak	41	11.3
	Strong	322	88.7
	Total	363	100

Source: Survey Data, 2018

According to the Table (5.24), the number of students who do not get the supporting from their older ones is 56 and the number of students who get the supporting from their older ones is 307 respectively. As in percentage, the percentage of the student who do not get supporting from siblings is 15.4 and the percentage of the student who get supporting from siblings is 84.6 respectively. Therefore, most of the students get supporting from their older ones.

The number of students who are weak interesting in education is 62 and the number of students who are strong interesting in education is 301 students respectively. As in percentage, the percentage of the students who interesting in education is 17.1 for weak and 82.9 for strong respectively. Therefore, most of the student is strong interesting in education.

In the school attendance, the number of students who do not attend the school regularly are 23 and the students who attend the school regular are 340 respectively. As in percentage, there are 6.3 for not attending the school regularly. Therefore, most of student attends the school regularly. In the interesting in study, there are 41 students who are weak interesting in study and 322 students who are strong interesting in study respectively. As in percentage, there are 11.3 for the students weak who are interesting in study and 88.7 for the students who are strong interesting in study respectively. Therefore, most of the students are strong interesting in study.

5.3.2 Multiple Ordinal Logistic Regression Analysis for Rural Area

In this section, Multiple Ordinal Logistic Regression Model is built up for pass grade level with student related variables. This model is developed with independent variables such as supporting from siblings, interested in education, school attendance and interested in study. The results of model fitting information for Ordinal logistic Regression model are shown in Table (5.25).

Table (5.25)
Model Fitting Test of Ordinal Logistic Regression Model with Student Related Variables

Model	-2log-likelihood	χ^2	df	p-value
Intercept Only	90.963			
Final	76.062	14.901	4	0.005****

*** denotes significant at 1% level

Source: Survey data, 2018

According to the Table (5.25), the difference between the -2log-likelihood ($\chi^2=0.005$) has an observed significance level of less than 0.05. This means that the null hypothesis, the model without predictors is as good as the model with predictors, is rejected. The results of overall model evaluation for Ordinal Logistic Regression model are shown in Table (5.26).

Table (5.26)
Goodness of Fit for Ordinal Logistic Regression Model with Student Related Variables

	χ^2	df	p-value
Pearson	26.590	20	0.147
Deviance	26.784	20	0.141

Source: Survey data, 2018

According to the results in Table (5.26), the results of Pearson and Deviance are 0.147 and 0.141 respectively. Therefore, the ordinal logistic model of parent related variables is fit. The results of parameter estimate of ordinal logistic model are shown in Table (5.27).

Table (5.27)

Parameters Estimation of Ordinal Logistic Regression

	Beta	S.E	Wald	df	Sig	Exp Beta	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold								
Pass Grade Level								
PGL(1)	-1.285	0.146	77.832	1	0.000***	0.277	0.208	0.37
PGL(2)	1.129	0.142	63.619	1	0.000***	3.092	2.343	4.08
Location								
Birth Order in Family								
BOIF(1)	-0.651	0.286	5.168	1	0.023**	0.521	0.297	0.91
BOIF (2) (ref:)								
Interesting in education								
IIE(1)	-0.320	0.286	1.249	1	0.264	0.726	0.415	1.27
IIE (2) (ref:)								
School Attendance								
SA(1)	-0.419	0.424	.979	1	0.323	0.658	0.287	1.51
SA (2) (ref:)								
Interesting in Study								
IIS(1)	-0.695	0.341	4.154	1	0.042**	0.499	0.256	0.97
IIS(2) (ref:)								

The Ordinal Logistic Models of pass grade level I and II are

$$P(Y = 1) = P(Y \leq 1)$$

$$P(Y = 1) = \frac{\exp\{-1.285 - (-0.651BOIF(1) - 0.320IIE(1) - 0.419SA(1) - 0.695IIS(1))\}}{1 + \exp\{-1.285 - (0.651BOIF(1) - 0.320IIE(1) - 0.419SA(1) - 0.695IIS(1))\}} \quad (5.5)$$

$$P(Y = 2) = P(Y \leq 2) - P(Y = 1)$$

$$P(Y \leq 2) = \frac{\exp\{1.129(-0.651BOIF(1) - 0.320IIE(1) - 0.419SA(1) - 0.695IIS(1))\}}{1 + \exp\{1.129(-0.651BOIF(1) - 0.320IIE(1) - 0.419SA(1) - 0.695IIS(1))\}} \quad (5.6)$$

According to the Table (5.27), the students who do not get the siblings as opposed to the students who get the supporting from older siblings is associated with higher likelihood of having a negative perception about pass grade level of the student's completion. The Wald χ^2 is 5.168 and therefore is statistically significant at 5% level. For the interesting in study, the students who are weak interesting in study as opposed to the students who are strong interesting in study is associated with a higher likelihood of having a negative perception about pass grade

level of student's completion. The Wald χ^2 of interesting in study is 4.154 and therefore is statistically significant at 5% level.

In the results of odds ratio, for the students who do not get supporting from older siblings the odds of pass grade level versus combined moderate and good pass grade level is 0.521 times lower than for the students who get the supporting from older ones, given the other variables are held constant in the model. Likewise, the odds of combined low and moderate pass grade level versus good pass grade level is 0.521 times lower non supporting from siblings compared to supporting from siblings, given the other variables are held constant in the model. For interesting in study, the odds of low pass grade level is 0.499 times lower weak interesting in study compared to strong interesting in study, given the other variables are held constant in the model. Likewise, the odds of combine low and moderate pass grade level versus good pass grade level is 0.521 times lower weak interesting in study compared to strong interesting in study, given the other variables are held constant in the model. For the test of Parallism, the results are shown in Table (5.28).

Table (5.28)

Parallelism Test of Ordinal Logistic Regression Model with Student Related Variables

Model	-2log-likelihood	χ^2	df	p-value
Null Hypothesis	76.062			
General	68.725	7.337	4	0.119

Source: Survey data, 2018

According to the results from Table (5.28), null hypothesis is accepted and the parallel line assumption is not violated. The results of multicollinearity test for Ordinal Logistic Regression model of student related variables are shown in Table (5.29).

Table (5.29)
Multicollinearity Test for Ordinal Logistic Regression Model
with Student Related Variables

Model	95% Confident Interval		Colinearity Statistics
	Lower Bound	Upper Bound	VIF
(Constant)	-0.162	1.407	
Supporting from Siblings	0.026	0.422	1.045
Interesting in Education	-0.075	0.323	1.142
School Attendance	-0.179	0.409	1.047
Interesting in Study	0.003	0.475	1.137

Source: Survey data, 2018

According to Table (5.29), the four variables of student related variables; supporting from siblings, interesting in education, school attendance and interesting in study do not have multicollinearity. The results of strength of association for ordinal logistic regression model of student related variables are shown in Table (5.30).

Table (5.30)
Coefficient of Determination for Ordinal Logistic Regression Model with Student Related Variables

	Pseudo R ² Value
Cox and Snell	0.040
Nagelkerke	0.046
McFadden	0.020

Source: Survey data, 2018

According to the Table (5.30), the pseudo R^2 value (Nagelkerke=4.6 %.) reveals that 4.6% pass grade level is explained by the four variables of student related variables; supporting from siblings, interested in education, school attendance and interested in study.

5.3.3 Bivariate Analysis of Pass Grade Level by Student Related Variables in Urban Area

In this section, five variables are gotten by using χ^2 test for the associated with pass grade level. It is shown in Table (5.31).

Table (5.31)

Association between Pass Grade Levels and Student Related Variables in Urban

Sr. No.	Variable	χ^2	df	p-value
1.	Birth order in family	17.881	6	0.007***
2.	Interesting in education	46.377	2	0.000***
3.	Interesting in study	26.328	2	0.000***
4.	Parent help in school activities	24.256	4	0.000***
5.	Cultivating in reading habit	44.199	4	0.000***

*** denotes significant at 1% level, ** denotes significant at 5% level and * denote significant at 10% level

Data Source: Survey Data, 2018

According to the Table (5.31), birth order in family, interesting in education, interesting in study, parent help in school activities and cultivating in reading habit are significantly associated with pass grade level. According to the result of Chi Square (χ^2) analysis, birth order in family is 1% level significantly associated with pass grade level in urban area.

Birth order can affect not only personality but academic performance, career choices, relationship and even overall success in life. Firstborn children enjoy the enthusiastic attention of not only their parents but their extended family as well. The oldest may be more of a perfectionist, striving to fulfill the high expectations of his parents, which may also make these children more reliable and obedient. These children are high achievers who often outperform their siblings later in life.

Middle children will often become polar opposites of the firstborn, choosing to find a completely different path to carve out a separate identity. Feeling less accepted by their family, middle children tend to form stronger relationships with their friends and they are both loyal and competitive. The youngest children are usually babied longer and many maintain a position of dependency. Unlike the middle children who can face the world unafraid, the youngest may be in for a rude awakening. They are used to being the center of attention and they like to find ways to stand out among their more accomplished siblings. Therefore, birth order is significantly associated with pass grade level.

For interesting in education, the results were that there is highly significantly associated with pass grade level at 1% level in urban area. Because knowledge and understanding of the child's interests are a major factor in educational guidance and interests give clues regarding

adjustment and personality. If the students are interested in education, they can get the high level in their study. Therefore, being interested in education is significantly associated with pass grade level.

For interesting in study variable, it is also significantly associated with pass grade level at 1% level. This variable concern with the feeling for attention, concern, or curiosity and it is engaged by study, they can understand the lessons and easily sit their examinations very well. Therefore, being interested in education is significantly associated with pass grade level.

In the parent help in school activities, it is also highly significant in association with pass grade level at 1% level. Parent involvement can broadly be defined as the ways in which parents support their children's education in word and deed. Parents can be involved primarily because they develop a personal constriction of the parental role that included participation in their child education; they develop a positive sense of efficiency for helping their children success in school. Therefore, parent help in school activities is significantly associated with pass grade level.

For cultivating in reading habit, there is highly significantly associated with pass grade level at 1% level. Parents who make it a habit to encourage reading abilities in their child early on often feel less stressed in elementary years of their child since they have already accomplished much of it before their time. Reading is an exercise for the mind. It helps children calm down and relax, opening doors of new knowledge to enlighten their minds, Children who read grow up to have better cognitive skills. Therefore, cultivating in reading habit is significantly associated with pass grade level. The result of descriptive statistics for student related variables are shown in Table (5.32).

Table (5.32)**Distribution of Student Related Variables in Urban Area**

Variables		No. of Students	Percent
Birth Order In Family	Only One	36	25.0
	Youngest	46	31.9
	Middle	29	20.1
	Oldest	33	22.9
	Total	144	100
Interesting in Education	Weak	32	22.2
	Strong	112	77.8
	Total	144	100
Interesting in Study	Weak	26	18.1
	Strong	118	81.9
	Total	144	100
Parents' Help in School Activities	Never	27	18.8
	Sometimes	92	63.9
	Always	25	17.4
	Total	144	100
Cultivating in Reading Habit	Weak	27	18.8
	Fair	42	29.2
	Strong	75	52.1
	Total	144	100

Source: Survey Data, 2018

According to Table (5.32), the number of 36 students are only one child, 46 students are youngest, 29 students are middle and 33 students are oldest in their family respectively. As in percentage, there are 25.0 for only one child, 31.9 percent for youngest, 20.1 percent for middle and 22.9 percent for oldest of the birth order in family.

In the interesting in education, there are 32 students who are weak interesting in education. The number of students who are strong interesting in education is 112. As in percentage, the percentage of the weak interesting in education student is 22.2 percent and the strong in education student is 77.8 percent respectively.

In the interesting in study, there are 26 students who are weak interesting in study and 118 students who are strong interesting in study respectively. As in percentage, 18.1 percent of

the students weakly interested in study and 81.9 percent of the students strongly interested in study.

In parent’s help in school activities, the number of students who get the help from parents in school activities is 27 for never, 92 for sometimes and 25 for always respectively. As in percent, the percentage of students who get the help from parents in school activities is 18.8 percent for never, 63.9 percent for sometimes and 17.4 percent for always respectively.

For cultivating in reading habit, there are 27 students who are weak cultivating in reading habit from their parents. The number of students who are fair and strong cultivating in reading habit from their parents are 42 and 75 respectively. As in percentage, the percentage of students who are the cultivating in reading habit is 18.8 percent for weak, 29.2 percent for fair and 52.1 percent for strong respectively.

5.3.4 Multiple Ordinal Logistic Regression Analysis

In this section, Multiple Ordinal Logistic Regression Model is built up for pass grade level with student related variables. This model is developed with independent variables such as birth order in family, interesting in education, interested in study, condition of parent’s help in school activities and cultivating in reading habit. The results of model fitting information for Ordinal logistic Regression model are shown in Table (5.33).

Table (5.33)
Model Fitting Test of Ordinal Logistic Regression Model with Student Related Variables in Urban

Model	-2log-likelihood	χ^2	df	p-value
Intercept Only	198.882			
Final	133.125	65.757	9	0.000***

*** denotes significant at 1% level

Source: Survey data, 2018

According to the Table (5.33), the difference between the -2log-likelihood (Chi-Square) has an observed significance level of less than 0.01. This means that the model fit with birth order in family, interesting in education, interested in study, condition of parent’s help in school activities and cultivating in reading habit. The results of overall model evaluation for Ordinal Logistic Regression model are shown in Table (5.34).

Table (5.34)**Goodness of Fit for Ordinal Logistic Regression Model with Student Related Variables in Urban**

	χ^2	df	p-value
Pearson	95.129	93	0.419
Deviance	94.640	93	0.433

Source: Survey data, 2018

According to the results in Table (5.34), the goodness of fit measure has large observed significance levels (Pearson = 0.419, Deviance = 0.433). Therefore, the ordinal logistic model of parent related variables is fit. The results of parameter estimate of ordinal logistic model are shown in Table (5.35).

Table (5.35)**Parameters Estimates of Parent Related Variables**

	Beta	S.E	Wald	df	Sig	Exp Beta	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold								
Pass Grade Level								
PGL(1)	-2.985	0.679	19.297	1	0.000***	0.051	0.013	0.191
PGL(2)	-1.329	0.632	4.418	1	0.036**	0.265	0.077	0.914
Location								
Birth Order in Family								
BOIF(1)	-0.662	0.600	1.216	1	0.270	0.516	0.159	1.673
BOIF(2)	-1.010	0.601	2.825	1	0.093*	0.364	0.112	1.183
BOIF(3)	-1.476	0.629	5.511	1	0.019**	0.229	0.067	0.784
BOIF (4) (ref:)								
Interesting in Education								
IIE (1)								
IIE (2) (ref:)	-1.955	0.557	12.296	1	0.000***	0.142	0.047	0.422
Interesting in Study								
IIS (1)								
IIS (2) (ref:)	-0.696	0.601	1.342	1	0.247	0.499	0.154	1.618
Parent Health in School Activities								
PHISA(1)								
PHISA(2)	-0.399	0.604	0.436	1	0.509	0.671	0.206	2.191
PHISA (3) (ref:)	0.515	0.495	1.080	1	0.299	1.673	0.634	4.416
Maturing in Reading								
MIR(1)								
MIR(2)	-1.225	0.563	4.738	1	0.029	0.294	0.097	0.885
MIR (3) (ref:)	0.455	0.465	0.957	1	0.328	1.575	0.634	3.918

Source : Survey Data, 2018

The Ordinal Logistic Models of pass grade level I and II are

$$P(Y = 1) = P(Y \leq 1)$$

$$P(Y = 1) = \frac{\exp\left\{\begin{array}{l} -2.985 - (-0.662\text{BOIF}(1) - 1.010\text{BOIF}(2) - 1.476\text{BOIF}(3)) \\ -1.955\text{IIE}(1) - 0.696\text{IIS}(1) - 0.399\text{PHISA}(1) - 0.515\text{PHISA}(2) \\ -1.225\text{CIRH}(1) + 0.455\text{CIRH}(2) \end{array}\right\}}{1 + \exp\left\{\begin{array}{l} -2.985 - (-0.662\text{BOIF}(1) - 1.010\text{BOIF}(2) - 1.476\text{BOIF}(3)) \\ -1.955\text{IIE}(1) - 0.696\text{IIS}(1) - 0.399\text{PHISA}(1) - 0.515\text{PHISA}(2) \\ -1.225\text{CIRH}(1) + 0.455\text{CIRH}(2) \end{array}\right\}} \quad (5.7)$$

$$P(Y = 2) = P(Y \leq 2) - P(Y = 1)$$

$$P(Y \leq 2) = \frac{\exp\left\{\begin{array}{l} (-0.662\text{BOIF}(1) - 1.010\text{BOIF}(2) - 1.476\text{BOIF}(3)) \\ -1.329 - 1.955\text{IIE}(1) - 0.696\text{IIS}(1) - 0.399\text{PHISA}(1) - 0.515\text{PHISA}(2) \\ -1.225\text{CIRH}(1) + 0.455\text{CIRH}(2) \end{array}\right\}}{1 + \exp\left\{\begin{array}{l} (-0.662\text{BOIF}(1) - 1.010\text{BOIF}(2) - 1.476\text{BOIF}(3)) \\ -1.329 - 1.955\text{IIE}(1) - 0.696\text{IIS}(1) - 0.399\text{PHISA}(1) - 0.515\text{PHISA}(2) \\ -1.225\text{CIRH}(1) + 0.455\text{CIRH}(2) \end{array}\right\}} \quad (5.8)$$

According to the Table (5.35), youngest birth order in family as opposed to the oldest birth order is associated with higher likelihood of having a negative perception about the pass grade level of student's completion. The Wald χ^2 is 2.825 and therefore is statistically significant at 10% level. Middle birth order in family as opposed to the oldest birth order is associated with higher likelihood of having a negative perception about the pass grade level of student's completion. The Wald χ^2 is 5.511 and therefore is statistically significant at 5% level.

For interesting in education, weak interesting in education as opposed to the strong interesting in education is associated with higher likelihood of having a negative perception about the pass grade level of student's completion. The Wald χ^2 is 12.296 and therefore is statistically significant at 1% level. For cultivating in reading habit, weak cultivating in reading habit is associated with higher likelihood of having a negative perception about the pass grade level of student's completion. The Wald χ^2 is 4.738 and therefore is statistically significant at 5% level.

According to the results of odds ratio, for youngest birth order in family, the odds of low pass grade level versus combined moderate and good pass grade level is 0.364 times lower than the oldest birth order in family given the other variables are held constant. Likewise, the odds of combined low and moderate pass grade level versus good pass grade level is 0.364 times lower youngest birth order in family, given the other variables are held constant in the model.

For middle birth order in family, the odds of low pass grade level versus combined moderate and good pass grade level is 0.229 times lower than the oldest birth order in family

given the other variables are held constant. Likewise, the odds of combined low and moderate pass grade level versus good pass grade level is 0.229 times lower middle birth order compared to oldest birth order, given the other variables are held constant.

For weak interesting in education, the odds of low pass grade level versus combine moderate and good pass grade level is 0.142 times lower than the strong interesting in education given the other variables are held constant. Likewise, the odds of combined low and moderate pass grade level are 0.142 times lower weak interesting in education, given the other variables are held constant.

For weak cultivating in reading habit, the odds of low pass grade level versus combined moderate and good pass grade level is 0.294 times lower than the strong cultivating in reading habit, given the other variables are held constant. Likewise, the odds of combined low and moderate pass grade level versus good pass grade level is 0.294 times lower weak cultivating in reading habit, given the other variables are held constant. For the test of Parallism, the results are shown in Table (5.36).

Table (5.36)

Parallelism Test of Ordinal Logistic Regression Model with Student Related Variables

Model	-2log-likelihood	χ^2	df	p-value
Null Hypothesis	133.125			
General	123.377	9.748	9	0.371

Source: Survey data, 2018

According to the results from Table (5.35), the general model has an large observed significance level (0.371). So, null hypothesis is not accepted and the parallel line assumption is not violated. The results of multicollinearity test for Ordinal Logistic Regression model of student related variables are shown in Table (5.37).

Table (5.37)
Multicollinearity Test for Ordinal Logistic Regression Model
with Student Related Variables in Urban

Model	95% Confident Interval		Colinearity Statistics
	Lower Bound	Upper Bound	VIF
(Constant)	-0.681	0.710	
Birth Order in Family	-0.094	0.112	1.044
Interesting in Education	0.424	1.133	1.781
Interesting in Study	-0.154	0.550	1.505
Parents Help in School Activities	-0.097	0.278	1.046
Cultivating in Reading Habit	-0.001	0.338	1.403

Source: Survey data, 2018

According to Table (5.37), the four variables of student related variables; interesting in education, interesting in study, parents help in school activities, cultivating in reading habit do not have multicollinearity. The results of strength of association for ordinal logistic regression model of student related variables are shown in Table (5.38).

Table (5.38)
Coefficient of Determination for Ordinal Logistic Regression Model
with Student Related Variables

	Pseudo R ² Value
Cox and Snell	0.367
Nagelkerke	0.426
McFadden	0.231

Source: Survey data, 2018

In Table (5.38) the pseudo R^2 value (Nagelkerke = 42.6%.) indicates that birth order in family, interesting in education, interesting in study, parents help in school activities, cultivating in reading habit explain a relatively small proportion of the variation between students in their completion of levels.

5.4 School Related Variables Affecting on the Completion of Primary Level

In this section, percentage of each of the completion level is dependent variable. There are three groups of dependent variables. These variables are denoted as follows:

Y=Percentage of A Level.

=Percentage of B Level.

=Percentage of C Level.

School related variables are considered as independent variables and Multivariate Analysis of Variance is used to find out which school related variables affecting on the Completion of Primary Level. There are five variables in this study. These variables are categorized as follows;

X_{i1} =Teacher's Gender

=1 if teacher is male.

=2 if teacher is female

X_{i2} = Teacher's age

= 1 if teacher is under 35 years old

= 2 if teacher is between 36-45 years old

= 3 if teacher is between 46-55 years old

= 4 if teacher is above 56 years old

X_{i3} = Educational Qualification of teacher

= 1 if teacher get B.A Degree

= 2 if teacher get B.Sc Degree

= 3 if teacher get Degree of Economic

= 4 if teacher get others Training

X_{i4} =Years of Services

= 1 if teacher has 3-15 years of service

= 2 if teacher has 16-28 years of service

= 3 if teacher has 29-41 years of service

X_{i5} = Position

- = 1 if teacher is PAT
- = 2 if teacher is JAT (1)
- = 3 if teacher is JAT (2)
- = 4 if teacher is JAT (3)
- = 5 if teacher is Head of the school

5.4.1 Multivariate Analysis of Variance between Situation of Pass Grade Level and School Related Variables

In this sub section, multivariate analysis of variance (MANOVA) is used to find out the effect of student related variables such as teacher's gender, teacher's age, educational qualification of teacher, services and position on the pass grade level and their interaction. The results of the frequency statistics of school related variables are shown in Table (5.39).

Table (5.39)

Distribution of Teacher by School Related Variables

Variables		Number of Teacher	Percent
Gender	Female	39	65.0
	Male	21	35.0
	Total	60	100.0
Age	Under 35	3	5.0
	36-45	15	25.0
	46-55	9	15.0
	Above 56	33	55.0
	Total	60	100.0
Qualification of Teacher	B.A	37	61.7
	B.Sc	16	26.7
	Degree of Economics	1	1.7
	Other Training	6	10.0
	Total	60	100.0
Service of Teacher	3-15	23	38.3
	16-28	25	41.7
	29-41	12	20.0
	Total	60	100.0
Position of Teacher	PAT	3	5.0
	JAT 1	14	23.3
	JAT 2	3	5.0
	JAT 3	15	25.0
	Head of School	25	41.7
	Total	60	100.0

Source: Survey Data (2018)

According to the Table (5.39), there are 39 female and 21 male of 60 teachers in rural and urban area. According to the results, the female teachers rural and urban are more than male teacher in both areas. The percentages of gender of teacher are 65 percent for male and 35 percent for female respectively. In the result of the age of teachers, there are 3 teachers are under 35 and 15 teachers between 36 to 45 age group. The number of teachers who is are between 46 to 55 age group is 9 among 60 teachers in both area (rural and urban). There are 33 teachers who above 56 age group. The percentages of the age of teacher in rural and urban area are 5 percent in under 35 years old, 25 percent are between 36 to 45 years old, 15 percent are between 46-55 years old and 55 percent are above 56 years old respectively.

In the result of qualification of teachers, 37 teachers got B.A degree, 16 teachers got Science (B.Sc) degree and 1 teacher got the Degree of Economics. 6 teachers came from other training such as D. Teach, P.G. D. T and P.A.T (training). There are 61.7 percent of teachers who got B.A degree, 26.7 percent of teachers who got B,Sc degree, 1.7 percent of teachers who got the degree of economics and 10 percent of teachers who came from other training.

In the result of service of teachers, there are 23 teachers who have 3 to 15 years of service among the 60 teachers in both areas (rural and urban). And then, there are 25 teachers who have 16-28 years of service among the 60 teachers in both area (rural and urban), and 12 teachers who have 29 to 41 years of service among these teachers in both area (rural and urban). As in percentage, the percentages of the service of teacher are 38.3 percent for 3 to 15 years of service, 41.7 percent for 16-28 years of service, and 20 percent for 29 to 41 years of service respectively.

According to the results of position of teacher, among 60 teachers in both area, there are 3 teachers who are P.A.T, 14 teachers who are J.A.T (1), 3 teachers who are J.A.T (2), 15 teachers who are J.A.T (3) and 25 teachers who are head of school. According to the results, most of the teacher who teaches in grade 4 classes is head of school. As in percentage, the percentages of the position of teacher are 5 percent for P.A.T, 23.3 percent for J.A.T (1), 5 percent for J.A.T (2), 25 percent for J.A.T (3) and 41.7 percent for head of school respectively. The results of the assumption of equality of covariance matrices are shown in Table (5.40).

Table (5.40)**Box's test of Equality of Covariance Matrices**

Equality Test	Value
Box'M	50.511
F	2.227
df 1	12
df 2	421.029
Sig	0.551

Source: Survey data, 2018

The first test of the assumption of equality of covariance matrices is the Box's test. And also this checks the assumption of homogeneity of covariance across groups. According to the results of Box test, it is not significant ($p=0.551$). This indicates that there are no significant differences between the covariance matrices. Therefore, the assumption is not violated and Wilks' Lambda is an appropriate test to use.

Table (5.41)**Multivariate Tests of School Variables**

Effect	Wilks' Lambda Value	F	Hypothesis df	Error df	p-value	Partial Eta Squared
Intercept	0.001	1178.160 ^b	3	35	0.000***	0.990
Gender	0.885	3.954 ^b	3	35	0.004**	0.876
Age	0.910	3.148 ^b	3	35	0.003**	0.994
Qualification	0.225	4.949 ^b	9	85	0.008**	0.474
Service	0.867	3.795 ^b	3	35	0.001***	0.533
Position	0.673	3.248	12	92	0.002**	0.158
Gender* Qualification	0.957	3.519 ^b	3	35	0.006**	0.543
Gender*Position	0.910	2.562 ^b	6	72	0.006**	0.546
Gender*Service	0.975	2.178 ^b	3	23	0.021**	0.974
Age* Qualification	0.956	1.988 ^b	3	23	0.008**	0.876
Service* Position	0.982	0.138 ^b	3	23	0.046**	0.762
Service *Qualification	0.897	0.428 ^b	6	46	0.001***	0.986
Qualification*Position	0.752	0.777 ^b	9	56	0.638	0.091
Gender*Service*Position	0.948	0.420 ^b	3	23	0.741	0.052

*** denotes significant at 1% level, ** denotes significant at 5% level

b= Exact Statistic

Source: Survey data, 2018

According to the Table (5.41), it includes four main effects (one for each independent variable) and three interactions. These tests examine whether the groups of independent variables such as gender, qualification, service and position of teacher differ on a linear combination of the dependent variables: percentage of good pass grade level (Level III), percentage of moderate pass grade level (Level II) and percentage of low pass grade level (Level I). The significant F indicates that there are significant differences among the independent variables groups on a linear combination of the three dependent variables.

According to the results from Table (5.41), when assumptions are met, Wilks' Lambda provides good and commonly used multivariate F of gender of teachers ($F=3.954, p=.004$), qualification of teachers ($F=4.949, p=.008$), service of teacher ($F=3.795, p=.001$), position of teacher ($F=3.248, p=.002$) and the interaction between gender and qualification ($F=3.519, p=.006$), the interaction between age and qualification ($F=1.988, p=.008$) and the interaction between gender and position ($F= 2.562, p=.006$). Therefore, there are significant differences among the groups of independent variables: gender, qualification of teacher, service of teachers, position of teacher, the interaction between gender and qualification, the interaction between age and qualification and the interaction between gender and position on a linear combination of three percentage of pass grade levels.

Table (5.42)

Levene's Test of Equality of Error Variances

	F	df 1	df 2	p-value
Percentage of A level	2.503	34	25	0.105
Percentage of B level	1.372	34	25	0.471
Percentage of C Level	1.751	34	25	0.170

Source: Survey data, 2018

This test is the assumption of MANOVA that the variance of each variable is equal across group. If the Levene's test is significant, the assumption is violated. According to the Table (5.42), the Levene's test is not significant and the assumption of homogeneity of variance is not violated for the percentage of pass grade level.

Table (5.43)

Parameters Estimation for Percentage of Good Pass Grade Level

Parameter	Beta	Std.Error	t	p-value	95% Confidence Interval		Partial Eta Squared
					Lower Bound	Upper Bound	
Intercept	69.640	25.617	2.767	0.010**	17.807	121.473	0.234
[Gender=1]	120.819	60.959	1.982	0.050**	-4.727	246.366	0.136
[Age=2]	-30.127	29.061	-1.037	0.310	-89.979	29.725	0.041
[Qualification=1]	-56.306	27.570	-2.042	0.052**	-113.087	0.475	0.143
[Qualification=2]	-66.700	30.824	-2.164	0.040**	-130.183	-3.217	0.158
[Service=1]	-65.290	35.592	-1.834	0.079*	-138.594	8.014	0.119
[Service=2]	-48.900	35.592	-1.374	0.182	-122.204	24.404	0.070
[Position=2]	-48.791	48.953	-0.997	0.328	-149.611	52.029	0.038
[Position=3]	-20.000	20.549	-0.973	0.340	-62.322	22.322	0.037
[Gender=1] [Age=2]	-121.745	101.453	-1.200	0.241	-330.692	87.202	0.054
[Gender=1] [Qualification=1]	-105.583	54.368	-1.942	0.063*	-217.556	6.390	0.131
[Gender=1] [Qualification=2]	-90.429	68.309	-1.324	0.198	-231.114	50.255	0.066
[Gender=1] [Service=1]	109.443	86.879	1.260	0.219	-69.488	288.375	0.060
[Age=2] [Qualification=1]	192.601	96.220	2.002	0.056**	-5.567	390.769	0.138
[Age=2] [Qualification=2]	75.035	43.591	1.721	0.098*	-14.743	164.813	0.106
[Qualification=1] [Service=2]	56.763	40.058	1.417	0.169	-68.417	139.263	0.074
[Qualification=1] [Position=4]	-81.840	50.335	-1.626	0.117	-74.983	21.827	0.096

** denotes significant at 5% level and * denote significant at 10%

Source: Survey data, 2018

According to Table (5.43), the percentage of good pass grade level contribute to distinguish female from male. The qualification of teachers indicates difference among the education levels of other groups. In interaction variables, the first one (Gender=1, Age=2) indicates difference between the age groups with the educational level is B.A degree. The second one (Gender=1, Qualification=1) indicates difference between the female teachers who got the B.A degree. The third one (Gender=1, Qualification=2) indicates the difference between the female teachers who got B. Sc degree. The coefficient value indicates the weights for the dependent's variables of these variables. In order to distinguish teachers' gender, female from male, the percentage of good pass grade level is weighted in absolute value (120.819). This means that the female teachers who can be more able to teach the students to get good pass grade level than male teachers.

In order to distinguish teachers who got the B.A degree from other qualification of teachers, the percentage of good pass grade level is weighted in absolute value (-56.306). This means that the teachers who got the B.A degree can be less able to teach the students to get good

pass grade level than others. And also, in distinguishing teachers who got the degree of Science (B.Sc) from other qualification of teachers, the percentage of good pass grade level is weighted in absolute value (-66.700). This means that the teachers who got the (B.Sc) degree can also be less able to teach the students to get good pass grade level than others.

In distinguishing the interaction of 36-45 years age of teachers with B.A degree from others, the percentage of good pass grade level is weighted in absolute value (192.601). This means that the (36-45) years of teachers with B.A degree can be more able to teach the students to get the good pass grade level. In order to distinguish female teachers with B.A degree from others, the percentage of good pass grade level is weighted in absolute value (-105.583). This means that female teachers with B.A degree can be less able to teach the students to get good pass grade level than other groups.

Table (5.44)

Parameters Estimation for Percentage of Moderate Pass Grade Level

Parameter	Beta	Std. Error	t	p-value	95% Confidence Interval		Partial Eta Squared
					Lower Bound	Upper Bound	
Intercept	25.900	26.098	0.992	0.331	-27.849	79.649	0.038
[Position=2]	74.317	50.762	1.464	0.156	-30.230	178.864	0.079
[Position=3]	44.170	21.309	2.073	0.049**	0.284	88.056	0.147
[Position=4]	90.900	36.908	2.463	0.021**	14.887	166.913	0.195
[Qualification=1]	29.276	28.589	1.024	0.316	-29.604	88.156	0.040
[Qualification=2]	35.670	31.963	1.116	0.275	-30.159	101.499	0.047
[Gender=1] [Age=1]	149.307	105.204	1.419	0.168	-67.364	365.978	0.075
[Gender=1] [Service=2]	-45.297	35.656	-1.270	0.216	-118.733	28.138	0.061
[Gender=1] [Position=2]	-53.754	46.685	-1.151	0.260	-149.904	42.396	0.050
[Gender=1] [Position=3]	-121.317	47.648	-2.546	0.017**	-219.449	-23.184	0.050
[Gender=1] [Qualification=1]	72.127	56.378	1.279	0.213	-43.986	188.239	0.206
[Gender=1] [Qualification=2]	60.973	70.834	0.861	0.398	-84.912	206.857	0.061
[Age=2] [Qualification=2]	-70.670	45.203	-1.563	0.131	163.767	22.427	0.089

** denotes significant at 5% level

Source: Survey data, 2018

According to Table (5.44), there are two variables for percentage of moderate pass grade level, for the difference between teachers' position as well as for the interaction term [Gender=1, Position=3]. Thus, the percentage of moderate pass grade level the position of teachers, as well as contributes to distinguish the interaction of gender and position.

The position of teachers indicates difference among the position of other groups. In interaction variables, [Gender=1, Position=4] indicates difference between the female teachers J.A.T (3) Position. The coefficient value indicates the weights for the dependent variables of that, variables.

In order to distinguish teachers who are J.A.T (2) from other positions of teachers, the percentage of B Level is weighted in absolute value (44.170). This means that J.A.T (2) teachers who can be more able to teach the students to get moderate pass grade level than other positions. Moreover, distinguishing teachers who are J.A.T (3) from other positions of teachers, the percentage of B Lev moderate pass grade level el is weighted in absolute value (90.900). This means that J.A.T (3) teachers who also can be more able to teach the students to get moderate pass grade level than other positions.

In order to distinguish interaction of female teacher with J.A.T (3) position from others, the percentage of moderate pass grade level is weighted in absolute value (-121.317). This means that the female teachers with J.A.T (3) position can be less able to teach the students to get moderate pass grade level than other groups.

Table (5.45)

Parameters Estimation for Percentage of Low Pass Grade Level

Parameter	Beta	Std.Error	t	p-value	95%Confidence Interval		Partial Eta Squared
					Lower Bound	Upper Bound	
Intercept	4.000	34.393	0.116	0.908	-66.833	74.833	0.001
[Age=1]	-29.333	106.005	-1.220	0.234	-347.656	88.989	0.056
[Service=1]	57.000	48.639	1.172	0.252	-43.173	157.173	0.052
[Position=4]	-91.000	48.639	-1.871	0.073*	-191.173	9.173	0.123
[Gender=1] [Service=2]	45.467	46.989	0.968	0.343	-51.310	142.243	0.036
[Gender=1] [Position=4]	124.00	62.792	1.975	0.059*	-5.323	253.23	0.135
[Position=4] [Qualification=1]	114.000	68.785	1.657	0.110	-27.666	255.666	0.099

* denote significant at 10% level

Source: Survey data , 2018

According to Table (5.45), there are two variables for percentage of low pass grade level, for the difference between teachers' position as well as for the interaction term [Gender=1,

Position=4]. Thus, the percentage of C Level the position of teachers, as well as contributes to distinguish the interaction of gender and position.

The position of teachers indicates difference among the position of other groups. In interaction variables, [Gender=1, Position=4] indicates difference between the female teachers J.A.T (3) Position. The coefficient value indicates the weights for the dependent variables of that, variables.

In order to distinguish teachers who are J.A.T (3) from other positions of teachers, the percentage of low pass grade level is weighted in absolute value (-91.000). This means that J.A.T (3) teachers who can be less able to teach the students to get low pass grade level than other positions. In order to distinguish interaction of female teacher with J.A.T (3) position from others, the percentage of low pass grade level is weighted in absolute value (124.000). This means that the female teachers with J.A.T (3) position can be less able to teach the students to get low pass grade level than other groups.

5.5 Community Related Variables Affecting on the Completion of Primary Level in Rural Area

In this section, primary student completion level is also used as dependent variables. For the independent variables, residence region, getting advice from parents' friends, interested in study of their children's friends and school distance are considered as independent variables. These variables are categorized as follow:

X_{i1} = Getting advice from parents' Friends

- = 1 if student does not get advice from their parent's friends for their education
- = 2 if student gets advice from their parent's friends for their education (reference)

X_{i2} = Interesting in study of friends

- = 1 if the friends are not interested in study
- = 2 if the friends are interested in study (reference)

X_{i3}= School Distance

- = 1 if the distance of school and home is last for 4 to 12 minutes
- = 2 if the distance of school and home is last for 13 to 21 minutes
(reference)

X_{i4}= Neighborhood's Educational Level

- =1 if the neighborhood's education level is no education
- =2 if the neighborhood's education level is basic education
- =3 if the neighborhood's education level is higher education

5.5.1 Bivariate Analysis of Pass Grade Level by Community Related Variables in Rural Area

In this section, the independent variables such as distance from school, interesting in study of friends, neighborhood education, and getting advice from their parent's friend were analyzed by using χ^2 -test for the association with pass grade level. Two variables were associated with pass grade level. It is shown in Table (5.46).

Table (5.46)

Association between Pass Grade Levels and Community Related Variables

Sr. No	Variables	χ^2	df	p-value
1.	School Distance	105.106	2	0.000***
2.	Neighborhood Educational Level	43.207	4	0.000***
3.	Getting Advice from Parent Friend	17.269	2	0.000***

*** denotes significant at 1% level,

Source: Survey data, 2018

According to the Table (5.46), school distance, neighborhood education, and getting advice from parent's friend are significantly associated with pass grade level. For school distance, the results of Chi-Square (χ^2) analysis of school distance are significantly associated with pass grade level at 1% level.

The student living far from the school, the long commute every day is physically and mentally tiring for the student. And as a result, it is harder for student to focus on studying after

students gets home. But student may utilize travelling time in many others ways, such as reading a book, studying listening to music and relaxing. These students learn to manage their time better than their peers who live closer to the school. They also get well acquainted with the roads and the general geography of the area.

The students who live closer to the school are usually better connected to school. But they only get acquainted with their general area and they may not know the geography of other area. They don't necessarily develop the time management skills like their peers who live far away. Cause of these facts, school distance is significantly associated with pass grade level.

According to the results of Chi-Square (χ^2) analysis, neighborhood education level is statistically significant with pass grade level at 1% level. Neighborhood educational level influences physical activity. A high average education in the neighborhood may stimulate values that are favorable to a healthy and physically active lifestyle. Therefore, disparities in neighborhood educational disparities in active commuting, supporting "low- active, low-educated neighborhood" as priority target for community-based interventions promoting target for community-based interventions promoting physical activity. Therefore, neighborhood educational level is significantly associated with pass grade level in rural area.

For advice from parent's friend, there is significantly associated with pass grade level 1% level. Friendship is described as the emotional bond that a person establishes with one or younger or older people. Interaction between people from the basic of their friendship characteristics such as speaking ability, possessing prosocial behaviors and aggressiveness are influential in making friends. Helping each other grow in the relationship is the essence of the friendship. Good friends often give helpful advice to friends concern with their children education. Therefore, advice from parent's friend is significantly associated with pass grade level.

According to the results of cross-tabulation, the percentage of the students who take 4-12 minutes to go from home to school is higher than the percentage of the students who take 13-21 minutes to go from home to school at good pass grade level. At low pass grade level, the percentage of the students who take 13-21 minutes to go from home to school is higher than the percentage of the students who take 4-12 minutes to go from home to school (see Appendix Table: C-18).

In the getting advice from parents' friend variable, the percentage of the students who get the advice from their friends of parents' friends at moderate and good pass grade level (see Appendix Table: C-19). The result of the number of students in community related variables are shown in following table.

Table (5.47)

Distribution of Student by Community Related Variables

Variables	No. of Student	Percent	
School Distance	4-12	310	85.4
	Minutes	53	14.6
	13-21	363	100
	Minutes		
Neighborhood Education	Total		
	Illiterate	98	27.0
	Basic	190	52.3
	Education	75	20.7
Getting Advice from Parent's Friend	Graduate	363	100
	Total		
	No	132	36.4
	Yes	231	63.6
	Total	363	100

Source: Survey Data, 2018

According to the Table (5.47), there are 310 students who take 4-12 minutes to go from home to school and 53 students who take 13-21 minutes to go from home to school. As in percentage, there are 85.4 percent for near from school and 14.6 percent for far from school respectively.

In the result of neighborhood educational level, there are 98 students who live near the illiterate person, 190 students who live near the bas educated person, and 75 students who live near the graduated person respectively. As in the percentage, there are 27 percent for illiterate level, 52.3 percent for basic educational level and 20.7 percent for graduate level respectively.

In the result of advice from parents' friend's variable, there are 132 students who do not get the advice from their friends of parents and 231 students who get the advice from their

friends parents respectively. As in percentage, there are 36.4 percent for not getting advice from the friends of parents and 63.6 percent for the getting advice from the friends of parents.

5.5.2 Multiple Ordinal Logistic Regression Analysis in Rural Area

In this analysis, Multiple Ordinal Logistic Regression model of community related variables is developed with school distance, neighborhood educational level, and advice from parents' friends. The results of overall model evaluation of ordinal logistic regression model are shown in tables below. The results of model fitting information are shown in Table (5.48).

Table (5.48)

Model Fitting Test of Ordinal Logistic Regression Model

Model	-2log-likelihood	χ^2	df	p-value
Intercept Only	210.956			
Final	136.564	74.392	4	0.000***

*** denotes significant at 1% level

Source: Survey data, 2018

According to the Table (5.48), the difference between the -2log-likelihood (Chi-Square) has an observed significance level of less than 0.01. This means that the null hypothesis is rejected and the model with three community related independent variables; school distance, neighborhood education, and getting advice from parent's friend was fitted. The results of overall model evaluation of ordinal logistic regression model are shown in Table below.

Table (5.49)

Goodness of Fit for Ordinal Logistic Regression with Community Related Variables in Rural

	χ^2	df	p-value
Pearson	89.651	18	0.112
Deviance	77.551	18	0.046

Source: Survey data, 2018

According to the results in Table (5.49), the goodness of fit measure has large observed significance levels. Therefore, the ordinal logistic model of community related variables was fitted. The results of parameter estimate of ordinal logistic model are shown in Table (5.50).

Table (5.50)
Parameters Estimation of Community Related Variables

Variable	Beta	S.E	Wald	df	Sig	Exp Beta	95% Confident Interval	
							Lower Bound	Upper Bound
Threshold								
Pass Grade Level								
PGL(1)	-2.695	0.381	49.954	1	0.000***	0.068	0.032	0.143
PGL(2)	0.900	0.362	6.173	1	0.013**	2.459	1.209	5.002
Location								
School Distance								
DIST(1)	1.805	0.327	30.505	1	0.000***	6.081	3.204	11.539
DIST(2) (ref:)								
Neighborhood's Education								
NBHE (1)	-1.675	0.331	25.670	1	0.000***	0.187	0.098	0.358
NBHE (2)	-1.720	0.297	33.622	1	0.000***	0.179	0.1	0.320
NBHE (3) (ref:)								
Getting Advice from Parents' Friend								
AFPF (1)	-0.984	0.239	17.017	1	0.000***	0.374	0.234	0.597
AFPF (2) (ref:)								

*** denotes significant at 1% level, ** denotes significant at 5% level and

Source: Survey data, 2018

The Ordinal Logistic Models of pass grade level I and II are

$$P(Y = 1) = P(Y \leq 1)$$

$$P(Y \leq 1) = \frac{\exp\{-2.695 - (1.805SD(1) - 1.675NBHE(1) - 1.720NBHE(2) - 0.984AFPF(1))\}}{1 + \exp\{-2.695 - (1.805SD(1) - 1.675NBHE(1) - 1.720NBHE(2) - 0.984AFPF(1))\}} \quad (5.9)$$

$$P(Y = 2) = P(Y \leq 2) - P(Y = 1)$$

$$P(Y \leq 2) = \frac{\exp\{0.900 - (1.805SD(1) - 1.675NBHE(1) - 1.720NBHE(2) - 0.984AFPF(1))\}}{1 + \exp\{0.900 - (1.805SD(1) - 1.675NBHE(1) - 1.720NBHE(2) - 0.984AFPF(1))\}} \quad (5.10)$$

According to the Table (5.50), the students near from school (4-12 minutes) increase one unit, the log of odds of having a positive perception about pass grade level increase by 1.805. For the neighborhood educational level, the illiterate level of neighborhood as opposed to the graduate educational level of neighborhood is associated with higher likelihood of having a

negative perception about the pass grade level of the student's completion. The Wald χ^2 is 25.670 and therefore is statistically significant at 1% level. Likewise, the basic education level of neighborhood as opposed to the graduate education level of neighborhood is associated with higher likelihood of having a negative perception about the pass grade level of the student's completion. The Wald χ^2 is 17.07 and therefore is statistically significant at 1% level.

The advice from parents' friends, not getting advice from parents' friends as opposed to the getting advice from parents' friends is associated with lower likelihood of having a negative perception about the pass grade level of the student's completion. The Wald χ^2 is 17.07 and therefore is statistically significant at 1% level.

According to the results of odd ratio, the place where students live near from school, the odds of low pass grade level versus combined moderate and good pass grade level is 6.081 times higher than the place where the students live far from school given the other variables are held constant. Likewise, the odds of combined low and moderate pass grade level versus good pass grade level is 6.081 times higher than the place where the student live near from school compared to the place where the student live far from the school, given the other variables are held constant in the model.

For the neighborhood educational level, the illiterate educational level of neighborhood the odds of low pass grade level versus combined moderate and good pass grade level is 0.187 times lower than the graduate educational level of neighborhood, given the other variables are held constant in the model. Likewise, the odds of combined low and moderate pass grade level versus good pass grade level is 0.187 lower than the illiterate level compared to graduate level of neighborhood education level, given the other variables are held constant in the model.

And also the basic educational level of neighborhood, the odds of low pass grade level versus moderate and good pass grade level is 0.179 times lower than the graduate educational level of neighborhood, given the other variables are held constant in the model. Likewise, the odds of combined low and moderate pass grade level versus good pass grade level is 0.179 times lower the basic educational level compared to graduate educational level of neighborhood, given other variables are held constant in the model.

For advice from parents' friend's variable, not getting advice from parents' friends, the odds of low pass grade level versus combined moderate and good pass grade level is 0.374 times

lower than getting advice from parents' friends, given that the other variables are held constant in the model. Likewise, the odds of combined low and moderate pass grade level is 0.374 times lower the variables of not getting advice from parents' friends, given the other variables are held constant in the model. For the test of parallelism, the results are shown in Table (5.51)

Table (5.51)

Parallelism Test of Ordinal Logistic Regression Model

Model	-2log-likelihood	χ^2	df	p-value
Null Hypothesis	136.564			
General	59.110	77.455	4	0.126

Source: Survey data, 2018

According to the Table (5.51), the general model has a large significant value (0.126). So, null hypothesis is accepted and parallel line assumption is not violated. So that ordinal regression model can be used for these variables. The results of multicollinearity test for Ordinal Logistic Regression model of community related variables are shown in Table (5.52).

Table (5.52)

Multicollinearity Test for Ordinal Logistic Regression Parameter Estimates

Model	95% Confident Interval		Colinearity statistic
	Lower Bound	Upper Bound	VIF
(Constant)	1.587	2.194	
School Distance	-0.581	-0.257	1.005
Neighborhood Educational Level	0.108	0.275	1.008
Advice from Parent's Friend	0.135	0.373	1.005

Source: Survey data, 2018

According to the Table (5.52), the two variables of community related factors; school distance, neighborhood educational level, and advice from parents' friends do not have multicollinearity. The results of the strength of association for ordinal logistic regression model are shown in Table (5.53).

\Table (5.53)

Coefficient of Determination for Ordinal Logistic Regression Model

	Pseudo R ² Value
Cox and Snell	0.185
Nagelkerke	0.223
McFadden	0.115

Source: Survey data, 2018

According to the Table (5.53), the pseudo R^2 value (Nagelkerke = 22.3%) is reveal that 22.3% pass grade level is explained by school distance, neighborhood education, and getting advice from parent's friend.

5.5.3 Bivariate Analysis of Pass Grade Level by Community Related Variables in Urban Area

In the Urban area, two variables are gotten by using χ^2 test for the association with pass grade level. It is shown Table (5.54)

Table (5.54)

Association between Pass Grade Levels and Community Related Variables

Sr. No	Variables	χ^2	df	P-Value
1.	Neighborhood Educational Level	59.377	4	0.000***
2.	Advice from Parent Friend	7.144	2	0.028**

*** denotes significant at 1% level and ** denotes significant at 5% level

Source: Survey data, 2018

According to Table (5.54), neighborhood educational level, and advice from parents' friends are significantly associate with pass grade level in urban area. For neighborhood educational level, the results of Chi-Square (χ^2) analysis shows that there is 1% significantly associated with pass grade level. For advice from parents' friends, there is also 5% significantly associated with pass grade level.

According to the results of cross-tabulation, in the neighborhood educational level variables, the percentage of the students who live near the graduated person is higher than the

percentage of the students who live near the illiterate person at good pass grade level. And then, the percentage of the students who live near Illiterate person is higher than the percentage of the students who live near the Graduate person at low pass grade level (see Appendix Table: C-20).

According to the results of cross-tabulation, in the advice from parents' friends, the percentage of the students who get the advice from parents' friends is higher than the students who do not get the advice from parents' friends at moderate and good pass grade level.(see Appendix Table: C-21). The result of the number of students of community related variable in urban area are shown in Table (5.55).

Table (5.55)

Distribution of Student by Community Related Variables in Urban

Variables		No. of Student	Percent
Neighborhood Educational Level	Illiterate	26	18.0
	Basic Education	39	27.1
	Graduate	79	54.9
	Total	144	100
Getting Advice from Parent's Friend	No	27	18.8
	Yes	117	81.2
	Total	144	100

Source: Survey Data, 2018

According to the Table(5.55), there are 26 person who are illiterate level, 39 person who are basic education level and 79 person who are graduated person respectively in neighborhood educational level. As in percentage, the percentage of illiterate person is 18.0 percent, the percentage of basic education person is 27.1 percent and the percentage of graduate person is 54.9 percent respectively. For the advice from parents' friends, there are 27 students who do not get the advice from parents' friends and 117 students who get the advice from parents' friends. As in percentage, the percentage of the advice form parents' friends' variables are 18.8 percent for the students who do not get the advice from parents' friends and 81.2 percent for the students who get the advice from parents' friends.

5.5.4 Multiple Ordinal Logistic Regression Analysis for Urban Area

In this analysis, Multiple Ordinal Logistic Regression model of community related variables is developed neighborhood educational level and advice from parents' friends. The results of overall model evaluation of ordinal logistic regression model are shown in tables below. The results of model fitting information are shown in Table (5.56).

Table (5.56)

Model Fitting Test of Ordinal Logistic Regression Model with Community Related Variables in Urban

Model	-2log-likelihood	χ^2	df	P-value
Intercept Only	90.548			
Final	39.743	50.805	3	0.000***

*** denotes significant at 1% level

Source: Survey data, 2018

According to the Table (5.56), the difference between the -2log-likelihood (Chi-Square) has an observed significance level of less than 0.01. This means that the null hypothesis, is rejected and the model with two community related independent variables such as neighborhood educational level and advice from parents' friends is fit. The results of overall model evaluation of ordinal logistic regression model are shown in Table below.

Table (5.57)

Goodness of Fit for Ordinal Logistic Regression with Community Related Variables in Urban

	χ^2	df	p-value
Pearson	8.703	7	0.275
Deviance	9.187	7	0.240

Source: Survey data, 2018

According to the results in Table (5.57), the goodness of fit measure has large observed significance levels. Therefore, the ordinal logistic model of community related variables; neighborhood educational level and advice from parents' friends is fit. The results of parameter estimate of ordinal logistic model are shown in Table (5.58).

Table (5.58)

Parameters Estimation of Community Related Variables in Urban Area

Variable	Beta	S.E	Wald	df	Sig	Exp Beta	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold								
Pass Grade Level								
PGL(1)	-2.582	0.344	56.218	1	0.000***	0.076	0.039	0.126
PGL(2)	-0.721	0.241	8.920	1	0.003***	0.486	0.303	0.756
Location								
Neighborhood's Educational Level								
NBHE (1)	-3.434	0.563	37.190	1	0.000***	0.032	0.011	0.067
NBHE (2)	-1.032	0.389	7.027	1	0.008***	0.356	0.166	0.345
NBHE (3) (ref:)								
Getting Advice from Parents' Friend								
AFPF (1)	-0.126	0.463	0.074	1	0.785	0.882	0.356	0.721
AFPF (2) (ref:)								

*** denotes significant at 1% level.

Source: Survey data, 2018

The ordinary logistic Model of pass grade level I and II are

$$P(Y=1) = P(Y \leq 1)$$

$$P(Y \leq 1) = \frac{\exp\{-2.582 - (-3.434NBHE(1) - 1.032 NBHE(2) - 0.126AFP(1))\}}{1 + \exp\{-2.582 - (-3.434NBHE(1) - 1.032NBHE(2) - 0.126AFP(1))\}} \quad (5.11)$$

$$P(Y=2) = P(Y \leq 2) - P(Y=1)$$

$$P(Y \leq 2) = \frac{\exp\{-0.721 - (-3.434NBHE(1) - 1.032 NBHE(2) - 0.126AFP(1))\}}{1 + \exp\{-0.721 - (-3.434NBHE(1) - 1.032NBHE(2) - 0.126AFP(1))\}} \quad (5.12)$$

According to Table (5.58), For neighborhood educational level, the illiterate educational level of neighborhood as opposed to the graduate educational level of neighborhood is associated with higher likelihood of having a negative perception about the pass grade level of the student's completion. The Wald χ^2 is 37.190 and therefore is statistically significant at 1% level. Likewise, the basic education level of neighborhood as opposed to the graduate educational level of neighborhood is associated with higher likelihood of having a negative perception about the pass grade level of the student's completion. The Wald χ^2 is 7.027 and therefore is statistically significant at 1% level.

According to the results of odd ratio, for the neighborhood educational level, the illiterate educational level of neighborhood, the odds of low pass grade level versus combined moderate and good pass grade level is 0.032 times lower than the graduate educational level of neighborhood, given the other variables are held constant in the model. Likewise, the odds of combined low and moderate

pass grade level versus good pass grade level is 0.032 times lower than the illiterate educational level compared to the graduate educational level of neighborhood, given the other variables are held constant in the model.

And also the basic educational level of neighborhood, the odds of low pass grade level versus moderate and good pass grade level is 0.356 times lower than the graduate educational level of neighborhood, given the other variables are held constant in the model. Likewise, the odds of combined low and moderate pass grade level versus good pass grade level is 0.356 times lower the basic educational level compared to graduate educational level of neighborhood given other variables are held constant in the model. For the test of parallelism, the results are shown in Table (5.59).

Table (5.59)

Parallelism Test of Ordinal Logistic Regression Model with Community Related Variables in Urban

Model	-2log-likelihood	χ^2	df	p-value
Null Hypothesis	39.743			
General	34.245	5.498	3	0.139

Source: Survey data, 2018

According to the Table (5.59), the general model has a large significance. So, null hypothesis is accepted and parallel line assumption is not violated. So that ordinal regression model can be used for these variables. The results of multicollinearity test for Ordinal Logistic Regression model of community related variables are shown in Table (5.60).

Table (5.60)

Multicollinearity Test for Ordinal Logistic Regression Parameter Estimates with Community Related Variables in Urban

Model	95% Confident Interval		Colinearity statistic
	Lower Bound	Upper Bound	VIF
(Constant)	0.289	1.373	
Neighborhood Educational Level	0.419	0.718	1.135
Advice from Parent's Friend	-0.233	0.359	1.135

Source: Survey data, 2018

According to the Table (5.60), the two variables of community related factors; neighborhood educational level and advice from parent’s friends do not have multicollinearity. The results of the strength of association for ordinal logistic regression model are shown in Table (5.61).

Table (5.61)

Coefficient of Determination for Ordinal Logistic Regression Model with Community Related Variables in Urban

	Pseudo R ² Value
Cox and Snell	0.297
Nagelkerke	0.340
McFadden	0.171

Source: Survey data, 2018

According to the Table (5.61), R^2 (Nagelkerke=34.0%) indicated that there are 34% pass grade level is explained by neighborhood educational level, and advice from parents’ friends.

CHAPTER VI

CONCLUSION, RECOMMENDATIONS AND SUGGESTIONS

6.1 Finding and Discussion

Education is a basic human need, an integral part of the quality of life, a support for moral and social values and an instrument for economic productivity. Academic performance educational achievement in school, investing in education is widely recognized as a key component for a country to use in development. Primary education is a basic for other educational level such as secondary and high education. Therefore, primary completion is the most important for every student and it is influenced by various related variables such as parent, student, teacher and community. On the basis of the sample survey data from Meiktila Township, the study was conducted to identify variables influenced on completion of basic education primary level by using analyses of bivariate and multivariate analysis. In multivariate analysis, six multivariate ordinal logistic models and a model of multivariate analysis of variance (MANOVA) for completion of primary level were conducted by region.

In identifying the variables parent related variables in rural area, there are ten variables such as father's education, father's health, supporting facilities, supporting knowledgeable book, supporting activities in causes of fail, learning activities in causes of fail, teaching activities in cause of fail, supporting activities in causes of success, learning activities in causes of success and teaching activities in causes of success variables are influencing on completion pass grade primary level students. Among them, teaching activities in causes of success and supporting knowledgeable books are more significant in completion of primary level students. The odd ratio of 0.788 for teaching activities indicates that the odd of low pass grade level is 0.788 times less than that for combine moderate and good level. This implies that the poor teacher education and parent teacher contact have a negative impact on students who are low pass grade level students over combined moderate and good and negative impact on combined low and moderate pass grade level students. The odd ratio of pass grade level students over good pass grade level students 1.246 for teaching activities in causes of success indicates that the odd of low pass grade level is 1.246 times more than that of combine moderate and good pass grade level. This reveal that teaching activities such as school educational activities, giving time the parent for their children practicing lesson, supporting from their elder ones and participating actively in teaching

and learning have a positive impact on the low pass grade level student over combined moderate and good pass grade level students and also positive impact on the combine low and moderate pass grade level students over good pass grade level students. In addition, the odd of 0.427 for supporting knowledgeable books, the odd of never supporting knowledgeable books for low level students is 0.427 time less than that for the combine moderate and good pass grade level students. This shows that lack of supporting knowledgeable books have a negative impact on low pass grade level student over combine moderate and good pass grade level students and also negative impact on combine low and moderate pass grade level.

In identifying the factors of parent related variables in urban area, there are six variables such as mother's occupation, supporting school facilities in causes of fail, learning activities in causes of fail and collaboration of parent and teacher activities in causes of success. According to the results of multiple ordinal logistic regression, mother occupation, parental encouragement and learning activities in causes of fail are more significant effect on completion of primary level. The odd ratio of 0.211 for non-working mothers, the odd of low pass grade level is 0.211 times less that for combined moderate and good pass grade level. This means that non-working mother do not have the knowledge in health and education and also they do have the communication skills to help their children in studying. It has negative impact on low pass grade level students over combined moderate and good pass grade level students, the odd of 0.754 for the parent who are not encouragement to their children, the odd of low pass grade level students. This implies that the students who do not get the encouragement from the parent mentally, have the negative impact on low pass grade level over combined moderate and good pass grade level. The odd of 1.358 for learning activities in causes of fail, the odd of low pass grade level student is 1.358 times more than combined moderate and good pass grade level. The results shows that learning activities such as lack of student's motivation, weakness in learning and activities, absents the school, wrong imitation and having the false friends have a negative impact on the low pass grade level students.

For the student related variable in rural area, identifying in this area are supporting from siblings, interesting in education, school attendance and interesting in study and this variables are influence on the completion of primary level. According to the results of multiple ordinal logistic regression, supporting from siblings and interesting in study are more influence on the

completion of primary level. The odd ratio of 0.521 for the students who do not get the supporting from siblings, the odd of low pass grade level students is 0.521 times lower than that of the combined moderate and good pass grade level of students and 0.521 times lower, the combined low and moderate pass grade level compared to the good pass grade level, given the other variables are constant. This means that lack of supporting from elder ones has a negative impact on the low pass grade level students over combined moderate and good pass grade level and combine low and moderate pass grade level student over good pass grade level students. The odd ratio of 0.499 for the students who are not interesting in study, the odd of low pass grade level is 0.499 times lower than that of combined moderate and good pass grade level students. This shows that not interesting in study has a negative impact on low pass grade level students over combined moderate and good pass grade level students. And also this variable has negative impact on low and moderate pass grade level over good pass grade level students is rural area.

In urban area, identifying variables for student-related variables are birth order in family, interesting in education, interesting in study, parent helps in school activities and cultivating in read habits and these variables are influenced on the primary completion level. Therefore, the results from the multiple ordinal logistic regression model found that the children who are younger and middle children in their family have lower completion level comparison with those who are older children in their family. In addition, the children do not make cultivating in reading habits also decrease completion level. Since, birth order in family and cultivating in reading habits reflect completion level and these variables are significantly associated with pass grade level of primary level completion in urban area.

For community related variables, school distance, neighborhood educational level, and advice from parent's friends significantly influence on the completion level of primary student in rural area. In analysis of multiple ordinal regression of pass grade level for community related variables, school distance, neighborhood educational level and advice from parent's friends have also a significant impact on completion pass grade level. The school distance (4- 12 minutes) from home to school significantly increased completion pass grade level. Illiterate and basic educational level of neighborhood person is also decrease completion pass grade level of student. The students who do not get the advice from parent's friend have lower completion level comparison with those who get the advice from parent's friend. Therefore, school distance,

neighborhood educational level and advice from parent's friend reflect the completion pass grade level and therefore are significantly associated with completion pas grade level.

In identifying the community related variables in urban area neighborhood educational level and advice from parents' friends are influence on completion pass grade level of primary students. According to the multiple ordinal logistic model, illiterate and basic educational level of neighborhood person decrease completion pass grade level of student. Therefore, this result ensures that student pass grade level is associated with neighborhood educational level, it would contribute to higher level of completion pass grade.

Concerning with the school-related variables, the study found that gender, age, qualification service, position are more effect on the percentage of good pass grade level. And also interaction of [gender-age], [gender-qualification], [gender-service], [age-qualification], [qualification-service] and [qualification-position] are also effect on percentage of good pass grade level. For percentage of moderate pass grade level, position, qualification are more effect on this level and the interaction of (gender - age), (gender – service), (gender – position), (gender – qualification) and (age – qualification) are also effect on this level. In percentage of low pass grade level, age, service and position are effect on this level and the interaction of (gender – service), (gender – position) and (position – qualification) are also affect on this level. Since, the teacher's age, qualification, service and position reflect the level of good, moderate and low pass grade level.

6.2 Recommendations

Based on the findings and conclusion of the study, the researcher made the following recommendations.

- i. Government should create more programme for motivating the children to be interested in education.
- ii. It would be better if more children's literature festival were held by government and parent need to be encouraged to participate.
- iii. Government need to held educational conference also in rural area and need to allocate the teachers with their specialization to be more qualified teachers.

- iv. Government should make the programme to narrow down the differences between rural and urban.
- v. Government needs to do more to improve the environment to be a better society that can support the children education.
- v. It would be better if more parent and teacher made meetings and discussions for the student qualification in their class level.
- vi. Parent should give more times to their children to help in practicing lessons as much as they can.
- vii. Parent and teachers should train their students to actively participate in their learning activities.

6.3 Suggestions for Further Research

In this study, factors influencing the completion of basic education primary level in some primary school were studied. Based on these findings the researcher would like to suggest that further researchers should focus on the following areas:

- i. It could be interesting to consider the rest of the country with the same method depending on their specific meaning with respect to recognition process.
- ii. The way the model is constructed could be also change instead of using this method, it could be based on these factors with other method to explore the influenced factors in this region.
- iii. It could be interesting to consider the middle and high level of basic education in this region and rest of the country.
- iv. A study to be carried out to find out the effect of parents' income and school management system on the completion of primary level in primary schools.

REFERENCES

1. Armstrong, B.G. & Sloam, M. (1989). Ordinal regression models for epidemiologic data. *Am J Epi*, 129; 191-204.
2. Arshad, D. T. (2009). *Mis-allocation of Student Teacher Ratio, Class size AND Per Student Expenditure Leads To Wastage Of School Resource Inputs and Lower Academic Achievement*. Retrieved from [http:// mpra.ub.uni-muenchen.de/28143](http://mpra.ub.uni-muenchen.de/28143).
3. Asia-Pacific Programme of Education for All (APPEAL): Achievements, Broadened Visions and Renewed Strategies: Asia-Pacific Conference on EFA 2000 Assessment; 17-20 January 2000.
4. Chaturvedi, J. (2009). School Environment Achievement Motivation and Academic Achievement. *Journal of Social Science Research, Selection Centre Central, Bhopal*, 29-37.
5. Chevalier, A. (2004). *Parental Education and Child's Education: A Natural Experiment*. Home>Publicaton>IZA Discussion Papers>IZA Institute of Labour Economic
6. Cochran, W. G. (1997), *Sampling Techniques*, Third Edition, John Wiley & Sons.
7. Considine, G. and C. Zappala (2002), Factors Influencing the educational performance of students from disadvantaged backgrounds', in T. Eardley and B. Bradbury, eds, *Competing Visions: Refereed Proceedings of the National Social Policy Conference 2001, SPRC Report.1/02, Social Policy Research Centre*
8. Coleman, J. S., Cambell, E. Q., Hobson, C. J., Mcpartland, J., Mood, A. M., Weinfeld, F.D. and York, R. L. (1966) Equality of Educational Opportunities, U.S. Department of Health, Education and Welfare.
9. Cox, D. R. (1972). Regression models and life-tables. *J Roy Stat Soc B*, 34:187- 220.
10. Cullagh, P. Mc. (1980). Regression models for ordinal data. *J Roy Stat Soc B*, 42:109-142, 1980.
11. Daniel Suryadarma, A. S. (n.d.). (2010) *Determinants of Education Attainment in Developing Countries: Can Higher Skills Compensate for Poverty?*

12. Dalisay, S.M, Rhona, B.C, Arturo Martinez, Jr, and giving Cuevas(2010), Education Outcomes in the Philippines; *ADB Economics Working Paper Series No.199,May 2010*.
13. Dutta, D. (2008). *Altitude Towards School Infrastructure In Rural Areas of West Bengal*.Retrieved from <http://schoolininfrastructure.blogspot.com/search>. Eshiwani, G. (1983). Education and development in Western province. Chamber of commerce.
14. "Educational reforms in Asia", Bulletin of the UNESCO Principal Regional Office for Asia and the Pacific (29): 1-141, December 1988.
15. Eshiwani, G. (1983). Education and development in Western province. Chamber of commerce.
16. Frank E. Harrell, Jr." Regression Modeling Strategies." With Applications to Linear Models Logistic and Ordinal Regression, and Survival Analysis. Second Edition. ISSN 0172-7397. Springer Series in Statistics. ISBN-978-3- 319-19425-7. Library of Congress Control Number: 2015942921.
17. Heyneman, S.P. and Loxley, W.A. (1983) The Effect of Primary School Quality on Academic Achievement across Twenty-nine High- and Low- Income Countries,*American Journal of Sociology*, 88(6), 1162-1194.
18. Ibeawuchi, N. and Ekechudwu, R.(December 2017). "Relationship Between Birth Order, Family Size, Parental Involvement and Secondary School Adolescents Academic Underachievement in Rivers State, Nigeria". *British Journal of Psychology Research*, 24-34.
19. Jaques Delores (2000) Report to UNESCO of the international Commission on Education for the Twenty-First Century.
20. Kaoru Ishiguro, (2017): Determinants of Learning Achievements: Empirical Analysis of schools in Cambodian Primary School. *Journal of Education and Learning*; Vol.7, No,2:2018. Published by Canadian Center of Science and Education.
21. Kleinbaum, D.A.(Third edition). *Logistic Regression, A self-learning Text*. Spring,50p.
22. Koskei, B. K. and Neon, G.(2015). Parental Educational Attainment and Students' Academic Performance of Public Mixed Day Secondary School in Kuresoi Sub-

- County, Nakuru County, Kenya. *International Journal of Innovative Research and Development*. Vol 4 issue 1.
23. Krejcie, R. V. & Morgan, D. W. (1970). Determining Sample Size for Research Activities, *Educational and Psychological Measurement*, 30, 607-610.
 24. Masashi Sakigawa (2003). Factors Contributing to Students' Academic Achievement of Primary School in Mountainous Areas of Vietnam. *Journal of International Development and Cooperation*. Vol.10, No.1, 2003, pp.65-83.
 25. Michael, A. & Cop (2011). Determental Effects of missing school:Evidence from Urban Siblings. *American Journal of Education*, 117(2),147-182.
 26. Ming Ming Chiu, L. K. (2005). Effects of Resources. Inequality and Privilege Bias on Achievement: Country, School and Student Level Analyses. *American Educational Research Journal*. 575 - 603.
 27. Ministry of Education: Access to and Quality of Education; Education for All in Myanmar; The Government of the Republic of the Union of Myanmar., February,2012.
 28. Mukhopadhyay, P. (2009). *Theory and Methods of Survey Sampling*, Second Edition, Eastern Economy Edition. 20, 521- 539.27. Muta, H. (2015). Study on the Factors Affecting Scholastic Achievement of Grade 5 and Grade 9 in February 2015 - A Case of Chin State: Research Paper 20151021.
 29. Muta, H. (2016). Study on the Factors Affecting Scholastic Achievement ;A Case of Mandalay Region:Research Paper 20160208
 30. Nonglak, W.(1980). Influence of Physical Facilities, Teaching and Learning aterial on Academic Performance Variations in Academic Achievement between and within Schools: *An Educational Production Study of Primary Schools in Thailand*.
 31. O' connel, a. A. (2006). *Logistic Regression Models for Ordinal Response Variables, Quantitative Application in the Social Sciences*. Sage Publication,105 p.
 32. Ogula, P. (1998). *A Hand book On Educational Research*. Nairobi: New Kemit publishers.
 33. Peterson, B. & Harrell, F. E. (1990). Partial proportional odds model for ordinal

response variable. *Appl Stat*, 39:205-217

34. Rasiah, R. & Hassan (2011). Poverty and Students Performance in Malaysia. *International Journal of Institutions and Economics, University of Malaysia.*, 3(1),61-76.
35. Sopha Soeung, Fata No, Bunchhyay Ang and Yukiko Hirakawa, (2011), Factor Influencing Student Achievement in Rural Cambodian Primary Schools: [https://www. Academia.edu/24309621/](https://www.Academia.edu/24309621/).
36. Samir Ranjan Nath, B.(November 2012). *Factors influencing Primary students' learning achievement in Bangladesh*. Bangladesh: BRAC Research and Evaluation Division, Manchester University Press.
37. Sanders, W. L., Horn, S. P. & Wright, S. P. (1997). Teachers and Classroom Context Effects on Student Achievement; Implication for Teacher Evaluation. *Journal of Personnel Evaluation in Education: Volume 11, Issue 1*, pp 57-67.
38. Schoenfeld, D. (1982). Partial residuals for the proportional hazards regression model. *Biometrika*, 69: 239-241.
39. Selina Akhter (2012), Indirect Benefits of Women's Education: Evidence from Bangladesh; University of Wollongong. UOW Library: research-pubs@uow.edu.au.
40. Smits, J. (2007). Family Background and Context Effects on Educational Participation in Five Arab Countries. [http://www.ru. nl>page>nice_07106](http://www.ru.nl/page/nice_07106).
41. Tomita, M. and Muta, H. (2012) The Comparison of the Influence of School Factors and Family- Related Factors on Learning Achievements: Confirmation and Policy Implication of HL Effect in Low-Income Countries from MALP Example in Malawi, *Journal of International cooperation in education*, 15(1), 21-36

42. Thematic Report on Education (2017). *Myanmar Population and Housing Census* (2014). Department of Population, Ministry of Labor, Immigration and Population. Census Report Volume 4-H.
43. Trembly, Ross & Berthlot (2001). *Factors Affecting Grade 3 Student Performance in Ontario: A multiple analysis*. Education Quarterly Review, 2001, Vol.7, no.4. Statistics Canada- Catalogue no. 81-003
44. UNESCO (2010); *Reaching the Unreached in Education in Asia- Pacific to Meet the EFA Goals by 2015*: Published by UNESCO Bangkok. ISBN 978-92-9223-323-5.
45. Wamai, O. (1991). *Results Of The First Secondary Examination Under The New Curriculum in Kenya*. Kenya: Unpublished Med long essay, school of Education: University Of Leeds.
46. Walker, S.H and Duncan, D. B. (1967). Estimation of the probability of an event as a function of several independent variables. *Biometrika*, 54:167-178, 1967.
47. Wold, H. (1996). *Estimation of Principal Components and Related Models by Iterative Least Squares*. In P.R Krishnaiah(ed) *Multivariate Analysis*. New York: Academic Press.
48. World Bank. (2000). *Development in priorities and Strategies for Education*. World Bank Publication.

APPENDICES

APPENDIX 1: STUDENTS' QUESTIONNAIRE

Dear student,

I am a lecturer in statistics Department at the Yangon University of Economics, pursuing Ph. D degree in Research and Evaluation. I am currently conducting a research on ;

Factors Influencing the Completion of Basic Education Primary Level: A Case Study of Primary Schools in Meiktila Township in Myanmar. I kindly request your participation in this

study by volunteering responses to the following questionnaire. Your participation is highly appreciated and answers will remain **confidential** be used for the study only.

Thank you.

Instructions

Do not indicate your name anywhere in this questionnaire.

Kindly you are requested to honestly respond to the questionnaire items by ticking () or filling in the blank spaces.

Answer based on your experience in your fourth grade.

1. Name of the school

2. Male Female

3. Age

4. Date of Birth

5. Current Grade

6. The school's name where you passed the Grade (4) and the position

7. Entry year to the school

8. Siblings and his/ her position

1. only one child 2. the youngest 3.the middle one 4.the eldest one

9. Do you get any support in education?

1.NO 2.Yes

10. Who help you in learning?

1.Family 2.Relative 3.Others

11. Who give the financial support for education?

1. Family 2. Relative
12. How interested are you in learning?
1. Weak 2. Strong
13. How important is education to you?
1. Weak 2. Strong
14. How often do you attend the schools?
1. Weak 2. Strong
15. What are the reasons of your absence at school?
-

16. To what extent do you help your parents in their work?
1.Sometimes 2.Always
17. How interested are you when practicing the school lessons?
1. Weak 2. Strong
18. To what extent do your parents help with the schools lessons?
1.Never 2.Sometimes 3. Always
19. To what extent do your parents participate in the school education activities?
1.Never 2.Sometimes 3. Always
20. To what extent can your parents nurture your interest in education (reading)?
1.Weak 2.Fair 3.Strong
21. How is your health?
1.Weak 2.Fair 3. Strong
22. How many minutes do you need to travel from home to school?
-

THANK YOR FOR YOUR CO-OPERATION

APPENDIX 2: PARENTS' QUESTIONNAIRE

Dear Respondent,

I am a lecturer in statistics Department at the Yangon University of Economics, pursuing Ph. D degree in Research and Evaluation. I am currently conducting a research on ;

Factors Influencing the Completion of Basic Education Primary Level: A Case Study of Primary Schools in Meiktila Township in Myanmar.

I kindly request your participation in this study by volunteering responses to the following questionnaire. Your participation is highly appreciated and answers will remain **confidential** be used for the study only.

Thank you.

Instructions

Do not indicate your name anywhere in this questionnaire.

Kindly you are requested to honestly respond to the questionnaire items by ticking () or filling in the blank spaces.

The Questionnaire for the Parents

1. Father's Age
2. Mother's Age
3. Father's Educational Qualification
1. Illiterate 2. Basic 3. Higher Degree
4. Mother's Educational Qualification
1. Illiterate 2. Basic 3. Higher Degree
5. Type of Family
1. With Father 2. With Mother 3. With Grandparent
5. With Parent
6. Father's Occupation (Describe with the location)
1. Non-Working 2. Working

7. Mother's Occupation (Describe with the location)
 1. Non-Working
 2. Working
8. How often do the parents give time to the students' education
 1. Never
 2. Sometimes
 3. Daily/ Always
9. The condition of father's health
 1. Weak
 2. Fair
 3. Strong
10. The condition of mother's health
 1. Weak
 2. Fair
 3. Strong
11. The condition of stationery supply by parents
 1. Never
 2. Sometimes
 3. Always
12. The condition of books that can aid the Education supplied by parents
 1. Never
 2. Sometimes
 3. Always
13. The adequacy of school facilities provide by school
 1. No
 2. Yes
14. The condition of parents' interested in students education and arrange plans for active learning of the students
 1. No
 2. Yes
15. The condition of classmates' motivation in Education
 1. No
 2. Yes
16. The level of education in the neighborhood where the parents live
 1. Illiterate
 2. Basic Education
 3. Graduate
17. The availability of good advice from the parents' friends on the development of education
 1. No
 2. Yes
18. Parent's opinion on the level of knowledge that the students gain

19. Do you think the following factors make the students fail in the exam?

Tick the degree of agreement. (totally agree=5, agree=4, Not sure=3, Disagree=2, totally disagree=1)

NO	Particular	1	2	3	4	5
1	distance between home and school					
2	Lack of student's motivation in education					
3	Too many absent days from school					
4	Lack of school facilities					
5	Lack of parents' encouragement					
6	Student's ill health					
7	Parents' ill health					
8	Help in parents' work					
9	Insufficient parents' income					
10	Student's weakness in education activities					
11	Low IQ of the students					
12	Infrequent meeting between teachers and parents					
13	Teachers' weakness in teaching					
14	Students' weakness in learning					
15	Parents' conflict (quarrelling, divorce)					
16	Wrong imitation and false friends					

20. Do you think the following factors make the students pass in the exam?

Tick the degree of agreement. (totally agree=5, agree=4, Not sure=3, Disagree=2, totally disagree=1)

No	Particular	1	2	3	4	5
1	Students' education is related with the school education activities					
2	Students' education development is related with the Classmates' level of education					
3	If the parents can give more time to their children's practicing lessons, students will improve in their education					
4	Parents' regular reading habit can make the students interested in education					
5	Students' health condition can have effect on their education					
6	Parents' health condition can have effect on their children's education					
7	The education of development of elder children can support the younger children's education					
8	Parent's high income can support the students' accomplishing their education					
9	The high education level of parents' surrounding community can be supporting for the students' education					
10	The meeting and discussion between teachers and students can improve the students' education development					
11	Teachers' teaching skill can be supportive for education development					
12	If the parents fulfill their children, differentiate students' needs and wants, it can support the development of education					
13	Students' participation in the teaching and learning can be supportive for the development of education					

THANK YOU

APPENDIX 3: TEACHERS' QUESTIONNAIRE

Dear Teacher,

I am a lecturer in statistics Department at the Yangon University of Economics, pursuing Ph. D degree in Research and Evaluation. I am currently conducting a research on ;

Factors Influencing the Completion of Basic Education Primary Level: A Case Study of Primary Schools in Meiktila Township in Myanmar.

I kindly request your participation in this study by volunteering responses to the following questionnaire. Your participation is highly appreciated and answers will remain **confidential** be used for the study only.

Thank you.

Instructions

Do not indicate your name anywhere in this questionnaire.

Kindly you are requested to honestly respond to the questionnaire items by ticking () or filling in the blank spaces.

The Questionnaire for the Teachers

1. Male Female
2. Age
 1. Under 35
 2. 36-45
 3. 46-55
 4. Above56
3. Years of Service (From the day of appointment to the current position)
(Year, months and days in exact details)
4. Position
 1. Primary Assistant Teacher
 2. Junior Assistant Teacher(1)
 3. Junior Assistant Teacher (2)
 - 4 Junior Assistant Teacher (3)
 5. Headmaster

1. Noisy 2.Fair 3.Quiet

17. The distractions near the school that can disturb teaching-learning

1. Playground 2.Gaming hub 3.Cinema 4.Teashop

18. Teacher's opinion on level of knowledge that the students gain

THANK YOU

Appendix A

Table (A-1)

List of Selected Village Schools and Allocation of Number of Students in Rural (Stratum I)

Selected Primary School	Number of Student	P_{1i}	Number of Selected Student
BEPS(42)PADAUKDIN	9	0.01	4
BEPS(94)YONETAW	18	0.02	8
BEPS(112)PYAWKONE	17	0.02	7
BEPS(214)OOYIN	11	0.01	5
BEPS(28)KYAUTPIN	30	0.03	12
BEPS(39)TAWMAYAKYO	18	0.02	8
BEPS(40)THAMONKAN	21	0.02	8
BEPS(179)NAUNGPINTHAR	22	0.03	9
BEPS(41)DAHATTAN	31	0.04	13
BEPS(129)LAKAYA-3	12	0.01	5
BEPS(203)INNOHN	16	0.02	7
BEPS(110)THAETAW	16	0.02	7
BEPS(31)LUKHINKYI	21	0.02	9
BEPS(68)KHINTHAE	15	0.02	6
BEPS(103)ANAUKKAN	13	0.01	5
BEPS(125)KYARPININN	9	0.01	4
BEPS(235)SATPYITTAUNG	21	0.02	9
BEPS(148)NYARSANTAUNG	14	0.02	6

BEPS(168)BONSUKAN	12	0.01	5
BEPS(136)MYINKAN	10	0.01	4
BEPS(50)TITATKAN	8	0.009	3
BEPS(58)KYARKAN	6	0.007	3
BEPS(92)YAYNYAN	42	0.05	18
BEPS(127)NYAUNGAI	20	0.02	8
BEPS(169)THAYETTAN	10	0.01	4
BEPS(56)KYIKONE	20	0.02	8
BEPS(124)KYAYTHRAI	16	0.02	7
BEPS(166)AIKONE	14	0.02	6
BEPS(146)SHAWPYIPIN	20	0.02	8
BEPS(188)OMATWE	22	0.03	9
BEPS(69)GALONKONE	9	0.01	4
BEPS(213)SHINMYOE	10	0.01	4
BEPS(219)HTANTAWYAYWA	5	0.006	3
BEPS(46)MAESALIKONE	17	0.02	7
BEPS(177)TAMARPIN	17	0.02	7
BEPS(99)THAEPYUKHAUNG	8	0.009	3
BEPS(60)KANKAUNG	20	0.02	8
BEPS(102)SAEYWAR	8	0.009	3
BEPS(104)AYARTAW	22	0.03	9
BEPS(126)NYAUNGKAUT-1	22	0.03	9
BEPS(147)ANOUKSANPYA	11	0.01	5
BEPS(184)MYINTAWKAN	18	0.02	8

BEPS(202)GYAYDAUNKKONE	9	0.01	4
BEPS(128)PYINTHR-2	19	0.02	8
BEPS(212)PYIHTARYAR	23	0.03	10
BEPS(84)THANAUNGAN	22	0.03	9
BEPS(93)SHANTAE	24	0.03	10
BEPS(98)THAEKONE	9	0.01	4
BEPS(215)KANKYI	12	0.01	4
BEPS(236)YOEKAN	13	0.01	5
BEPS(131)INNPINWA	32	0.04	13
BEPS(181)BABOOKKONE	5	0.006	2
BEPS(KANTHARYAR-2)	21	0.02	9
BEPS(KANKYI-2)	3	0.003	1
Total	870		364

Source: Basic Education Administration Department of Meiktila Township

Table (A-2)

List of Selected Ward Schools and Number of Students Selected in Urban (Stratum II)

Selected Primary School	Number of Student	P_{1i}	Number of Selected Student
BEPS(6)MINYAT	116	0.26	47
BEPS(8)YAPAUTCHAUNG	83	0.19	34
BEPS(15)LINNZINN	47	0.10	19
BEPS(16)INNKONE	61	0.14	25
BEPS(24)KYITAWKONE	86	0.20	34
BEPS(149)YAHTAPA	52	0.11	20
Total	438	1.00	179

Source: Basic Education Administration Department of Meiktila Township

Appendix (B)

Table (B-1)

Rotated Component Matrix of Cause of Fail

	Component		
	1	2	3
Insufficient parent's income	0.761		
Helping parent's work	0.711		
Parental illness	0.660		
Lack of parental encouragement	0.639		
Lack of School Facilities supported from parent	0.613		0.318
Parent's conflict	0.514		
School distance from home	0.509		0.463
Absent school		0.763	
Lack of motivation for education		0.688	
Wrong imitation from School		0.651	
Low IQ		0.631	0.310
Weakness in education activities		0.593	
Student health is poor	0.479	0.507	
Learning is poor		0.444	
Teaching ability is poor		0.321	0.747
Lack of meeting with parent			0.686

Table (B-2)**Rotated Component Matrix of Causes of Success**

	Component		
	1	2	3
Participation in teaching learning activities	0.717		
Parent health in practicing lesson	0.715		0.308
Supporting from Sibling	0.632		
Supporting of teaching skill	0.601	0.349	
Relation between school education activities and student education	0.545		
Perfect support from parent		0.716	
Making meeting and discussion between parent and teacher		0.699	0.302
Neighborhood Educational level	0.365	0.639	
Parent's high income	0.324	0.590	
Educational level of classmate		0.355	0.309
Student's health is good			0.748
Parent health is good			0.714
Parent's reading habit	0.456		0.529

Table (B-3)

Rotated Component Matrix of Causes of Fail

	Component	
	1	2
Lack of motivation for education	0.885	
Weakness in education activities	0.746	
Learning is poor	0.718	
Absent school	0.689	
Low IQ	0.670	0.461
Wrong imitation from School	0.643	0.391
Student health is poor	0.625	0.424
Insufficient parent's income		0.799
Helping parent's work		0.781
Teaching ability is poor		0.635
Lack of parental encouragement	0.416	0.617
Lack of meeting between parent and teacher		0.572
Parental illness	0.419	0.560
Parent's conflict	0.463	0.534

Table (B-4)

Component Matrix of Causes of Success

	Component
	1
Supporting of teaching skill	0.875
Neighborhood Educational level	0.838
Parent's reading habit	0.823
Perfect support from parent	0.803
Participation in teaching learning activities	0.801
Making meeting and discussion between parent and teacher	0.798
Student's health is good	0.779
Parent health in practicing lesson	0.754
Relation between school education activities and student education	0.729

Table (C)

Table (C-1)

The Frequency for Father Education in Rural

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Illiterate	310	85.4	85.4	85.4
	Basic	53	14.6	14.6	100.0
	Total	363	100.0	100.0	

Table (C-2)

The Frequency for Father's Health in Rural

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Weak	34	9.4	9.4	9.4
	Fair	27	7.4	7.4	16.8
	Strong	302	83.2	83.2	100.0
	Total	363	100.0	100.0	

Table (C-3)

The Frequency for Supporting Facilities in Rural

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	33	9.1	9.1	9.1
	Sometimes	177	48.8	48.8	57.9
	Always	153	42.1	42.1	100.0
	Total	363	100.0	100.0	

Table (C-4)

The Frequency for Supporting Knowledge Book in Rural

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	138	38.0	38.0	38.0
	Sometimes	150	41.3	41.3	79.3
	Always	75	20.7	20.7	100.0
	Total	363	100.0	100.0	

Table (C-5)

The Frequency for Mother's Occupation in Urban

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Dependent	65	45.1	45.1	45.1
	Employ	79	54.9	54.9	100.0
	Total	144	100.0	100.0	

Table (C-6)

The Frequency for Supporting School Facilities in Urban

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	11	7.6	7.6	7.6
	Yes	133	92.4	92.4	100.0
	Total	144	100.0	100.0	

Table (C-7)

The Frequency for Condition of Persuade in Urban

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	11	7.6	7.6	7.6
	Yes	133	92.4	92.4	100.0
	Total	144	100.0	100.0	

Table (C-8)

The Frequency for Interesting in Education in Rural

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Weak	62	17.1	17.1	17.1
	Strong	301	82.9	82.9	100.0
	Total	363	100.0	100.0	

Table (C-9)

The Frequency for Attitude on Education in Rural

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Weak	35	9.6	9.6	9.6
	Strong	328	90.4	90.4	100.0
	Total	363	100.0	100.0	

Table (C-10)

The Frequency for Interest in Study in Rural

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Weak	41	11.3	11.3	11.3
	Strong	322	88.7	88.7	100.0
	Total	363	100.0	100.0	

Table (C-11)

The Frequency for Maturing in Reading

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Weak	48	13.2	13.2	13.2
	Fair	78	21.5	21.5	34.7
	Strong	237	65.3	65.3	100.0
	Total	363	100.0	100.0	

Table (C-12)

The Frequency for Interesting in Education in Urban

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Weak	21	14.6	14.6	14.6
	Strong	123	85.4	85.4	100.0
	Total	144	100.0	100.0	

Table (C-13)

The Frequency for Interest in Study in Urban

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Weak	20	13.9	13.9	13.9
	Strong	124	86.1	86.1	100.0
	Total	144	100.0	100.0	

Table (C-14)

The Frequency for Parents' Help in School Activities in Urban

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	24	16.7	16.7	16.7
	Sometimes	103	71.5	71.5	88.2
	Always	17	11.8	11.8	100.0
	Total	144	100.0	100.0	

Table (C-15)

The Frequency for Maturing in Reading in Urban

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Weak	6	4.2	4.2	4.2
	Fair	47	32.6	32.6	36.8
	Strong	91	63.2	63.2	100.0
	Total	144	100.0	100.0	

Table (C-16)

The Frequency for Neighborhood Education in Rural

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Illiterate	98	27.0	27.0	27.0
	Basic Education	190	52.3	52.3	79.3
	Graduate	75	20.7	20.7	100.0
	Total	363	100.0	100.0	

Table (C-17)

The Frequency for Advice from Parent's Friend in Rural

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	132	36.4	36.4	36.4
	Yes	231	63.6	63.6	100.0
	Total	363	100.0	100.0	

Table (C-18)

The Frequency for Neighborhood Education in Urban

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Illiterate	17	11.8	11.8	11.8
	Basic Education	45	31.3	31.3	43.1
	Graduate	82	56.9	56.9	100.0
	Total	144	100.0	100.0	

Table (C-19)

The Frequency for Gender of Teacher

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	39	65.0	65.0	65.0
	Male	21	35.0	35.0	100.0
	Total	60	100.0	100.0	

Table (C-20)

The Frequency for Age of Teacher

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Under 35	3	5.0	5.0	5.0
	36-45	15	25.0	25.0	30.0
	46-55	9	15.0	15.0	45.0
	Above 56	33	55.0	55.0	100.0
	Total	144	100.0	100.0	

Table (C-21)**The Frequency for Qualification of Teacher**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	B.A				
	B.Sc	6	4.2	4.2	4.2
	Degree of economics	47	32.6	32.6	36.8
	Other Training	91	63.2	63.2	100.0
	Total	144	100.0	100.0	

Table (C-22)**The Frequency for Years of Service**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3-15	23	38.3	38.3	38.3
	16-28	25	41.7	41.7	80.0
	29-41	12	20.0	20.0	100.0
	Total	60	100.0	100.0	

Table (C-23)**The Frequency for Position of Teacher**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	PAT	3	5.0	5.0	5.0
	JAT 1	14	23.3	23.3	28.3
	JAT 2	3	5.0	5.0	33.3
	JAT 3	15	25.0	25.0	58.3
	Head of School	25	41.7	41.7	100.0
	Total	60	100.0	100.0	

Appendix (D)

Table (D-1)

Father Education and Pass Grade Level Cross Tabulation in Rural

			Pass Grade Level			Total
			Only Fair	moderate	Good	
Father Education	Illiterate	Count	168	77	65	310
		Expected Count	162.3	8.7	64.0	310.0
		% within Father Education	54.2%	24.8%	21.0%	100.0%
	Basic	Count	21	22	10	53
		Expected Count	14.3	27.7	11.0	53.0
		% within Father Education	39.6%	41.5%	18.9%	100.0%
Total		Count	98	190	75	363
		Expected Count	98.0	190.0	75.0	363.0
		% within Father Education	52.0%	27.3%	20.7%	100.0%

Table (D-2)**Father's Health and Pass Grade Level Cross Tabulation in Rural**

			Pass Grade Level			Total
			Only Fair	moderate	Good	
Father's Health	Weak	Count	12	14	8	34
		Expected Count	9.2	17.8	7.0	34.0
		% within Father's Health	35.3%	41.2%	23.5%	100.0%
	Fair	Count	9	18	0	27
		Expected Count	7.3	14.1	5.6	27.0
		% within Father's Health	33.3%	66.7%	0.0%	100.0%
	Strong	Count	77	158	67	302
		Expected Count	81.5	158.1	62.4	302.0
		% within Father's Health	25.5%	52.3%	22.2%	100.0%
Total	Count	98	190	75	363	
	Expected Count	98.0	190.0	75.0	363.0	
	% within Father's Health	27.0%	52.3%	20.7%	100.0%	

Table (D-3)

Supporting Facilities and Pass Grade Level Cross Tabulation in Rural

			Pass Grade Level			Total
			Only Fair	moderate	Good	
Supporting Facilities	Never	Count	10	19	4	33
		Expected Count	8.9	17.3	6.8	33.0
		% within Supporting Facilities	30.3%	57.6%	12.1%	100.0%
	Sometimes	Count	57	83	37	177
		Expected Count	47.8	92.6	36.6	177.0
		% within Supporting Facilities	32.2%	46.9%	20.9%	100.0%
	Always	Count	31	88	34	153
		Expected Count	41.3	80.1	31.6	153.0
		% within Supporting Facilities	20.3%	57.5%	22.2%	100.0%
Total	Count	98	190	75	363	
	Expected Count	98.0	190.0	75.0	363.0	
	% within Supporting Facilities	27.0%	52.3%	20.7%	100.0%	

Table (D-4)

Supporting Knowledgeable Books and Pass Grade Level Cross Tabulation in Rural

		Pass Grade Level			Total	
		Only Fair	moderate	Good		
Supporting Knowledgeable Books	Never	Count	52	65	21	138
		Expected Count	37.3	72.2	28.5	138.0
		% within Supporting Knowledgeable Books	37.7%	47.1%	15.2%	100.0%
	Sometimes	Count	32	87	31	150
		Expected Count	40.5	78.5	31.0	150.0
		% within Supporting Knowledgeable Books	21.3%	58.0%	20.7%	100.0%
	Always	Count	14	38	23	75
		Expected Count	20.2	39.3	15.5	75.0
		% within Supporting Knowledgeable Books	18.7%	50.7%	30.7%	100.0%
Total		Count	98	190	75	363
		Expected Count	98.0	190.0	75.0	363.0
		% within Supporting Knowledgeable Books	27.0%	52.3%	20.7%	100.0%

Table (D-5)**Mother's Occupation and Pass Grade Level Cross Tabulation in Urban**

		Pass Grade Level			Total	
		Only Fair	moderate	Good		
Mother's Occupation	Dependent	Count	11	25	29	65
		Expected Count	7.7	20.3	37.0	65.0
		% within Mother's Occupation	16.9%	38.5%	44.6%	100.0%
	Employ	Count	6	20	53	79
		Expected Count	9.3	24.7	45.0	79.0
		% within Mother's Occupation	7.6%	25.3%	67.1%	100.0%
Total		Count	17	45	82	144
		Expected Count	17.0	45.0	82.0	144.0
		% within Mother's Occupation	11.8%	31.3%	56.9%	100.0%

Table (D-6)

Supporting School Facilities and Pass Grade Level Cross Tabulation in Urban

			Pass Grade Level			Total
			Only Fair	moderate	Good	
Supporting School Facilities	No	Count	4	5	2	11
		Expected Count	1.3	3.4	6.3	11.0
		% within Supporting School Facilities	36.4%	45.5%	18.2%	100.0%
	Yes	Count	13	40	80	133
		Expected Count	15.7	41.6	75.7	133.0
		% within Supporting School Facilities	9.8%	30.1%	60.2%	100.0%
Total		Count	17	45	82	144
		Expected Count	17.0	45.0	82.0	144.0
		% within Supporting School Facilities	11.8%	31.3%	56.9%	100.0%

Table (D-7)

Parental Encouragement and Pass Grade Level Cross Tabulation in Urban

			Pass Grade Level			Total
			Only Fair	moderate	Good	
Parental Encouragement	No	Count	10	15	13	38
		Expected Count	4.5	11.9	21.6	38.0
		% within Parental Encouragement	26.3%	39.5%	34.2%	100.0%
	Yes	Count	7	30	69	106
		Expected Count	12.5	33.1	60.4	106.0
		% within Parental Encouragement	6.6%	28.3%	65.1%	100.0%
Total		Count	17	45	82	144
		Expected Count	17.0	45.0	82.0	144.0
		% within Parental Encouragement	11.8%	31.3%	56.9%	100.0%

Table (D-8)

Supporting from Siblings and Pass Grade Level Cross Tabulation in Rural

			Pass Grade Level			Total
			Low	Moderate	Good	
Supporting from Siblings	No	Count	23	25	8	56
		Expected Count	15.1	29.3	11.6	56.0
		% within Supporting from Siblings	41.1%	44.6%	14.3%	100.0%
	Yes	Count	75	165	67	307
		Expected Count	82.9	160.7	63.4	307.0
		% within Supporting from Siblings	24.4%	53.7%	21.8%	100.0%
Total		Count	98	190	75	363
		Expected Count	98.0	190.0	75.0	363.0
		% within Supporting from Siblings	27.0%	52.3%	20.7%	100.0%

Table (D-9)**Interesting in Education and Pass Grade Level Cross Tabulation in Rural**

			Pass Grade Level			Total
			Low	Moderate	Good	
Interesting in Education	Weak	Count	20	36	6	62
		Expected Count	16.7	32.5	12.8	62.0
		% within Interesting in Education	32.3%	58.1%	9.7%	100.0%
	Strong	Count	78	154	69	301
		Expected Count	81.3	157.5	62.2	301.0
		% within Interesting in Education	25.9%	51.2%	22.9%	100.0%
Total	Count	98	190	75	363	
	Expected Count	98.0	190.0	75.0	363.0	
	% within Interesting in Education	27.0%	52.3%	20.7%	100.0%	

Table (D-10)**School Attendance and Pass Grade Level Cross Tabulation in Rural**

			Pass Grade Level			Total
			Low	Moderate	Good	
School Attendance	Weak	Count	11	6	6	23
		Expected Count	6.2	12.0	4.8	23.0
		% within School Attendance	47.8%	26.1%	26.1%	100.0%
	Strong	Count	87	184	69	340
		Expected Count	91.8	178.0	70.2	340.0
		% within School Attendance	25.6%	54.1%	20.3%	100.0%
Total		Count	98	190	75	363
		Expected Count	98.0	190.0	75.0	363.0
		% within School Attendance	27.0%	52.3%	20.7%	100.0%

Table (D-11)**Interesting in Study and Pass Grade Level Cross Tabulation in Rural**

			Pass Grade Level			Total
			Low	Moderate	Good	
Interesting in Study	Weak	Count	17	20	4	41
		Expected Count	11.1	21.5	8.5	41.0
		% within Interesting in Study	41.5%	48.8%	9.8%	100.0%
	Strong	Count	81	170	71	322
		Expected Count	86.9	168.5	66.5	322.0
		% within Interesting in Study	25.2%	52.8%	22.0 %	100.0%
Total		Count	98	190	75	363
		Expected Count	98.0	190.0	75.0	363.0
		% within Interesting in Study	27.0%	52.3%	20.7 %	100.0%

Table (D-12)

Birth Order in Family and Pass Grade Level Cross Tabulation in Urban

			Pass Grade Level			Total
			Only Fair	Good	Excellent	
Birth Order in Family	Only One	Count	8	7	21	36
		Expected Count	7.5	8.3	20.3	36.0
		% within Birth Order in Family	22.2%	19.4%	58.3%	100.0%
	Youngest	Count	4	18	24	46
		Expected Count	9.6	10.5	25.9	46.0
		% within Birth Order in Family	8.7%	39.1%	52.2%	100.0%
	Middle	Count	11	5	13	29
		Expected Count	6.0	6.6	16.3	29.0
		% within Birth Order in Family	37.9%	17.2%	44.8%	100.0%
	Oldest	Count	7	3	23	33
		Expected Count	6.9	7.6	18.6	33.0
		% within Birth Order in Family	21.2%	9.1%	69.7%	100.0%
Total	Count	30	33	81	144	
	Expected Count	30.0	33.0	81.0	144.0	
	% within Birth Order in Family	20.8%	22.9%	56.3%	100.0%	

Table (D-13)

Interesting in Education and Pass Grade Level Cross Tabulation in Urban

			Pass Grade Level			Total
			Only Fair	Good	Excellent	
Interesting in Education	Weak	Count	20	7	5	32
		Expected Count	6.7	7.3	18.0	32.0
		% within Interesting in Education	62.5%	21.9%	15.6%	100.0%
	Strong	Count	10	26	76	112
		Expected Count	23.3	25.7	63.0	112.0
		% within Interesting in Education	8.9%	23.2%	67.9%	100.0%
Total		Count	30	33	81	144
		Expected Count	30.0	33.0	81.0	144.0
		% within Interesting in Education	20.8%	22.9%	56.3%	100.0%

Table (D-14)

Interesting in Study and Pass Grade Level Cross Tabulation in Urban

			Pass Grade Level			Total	
			Only Fair	Good	Excellent		
Interesting in Study	Weak	Count	15	4	7	26	
		Expected Count	5.4	6.0	14.6	26.0	
		% within Interesting in Study	57.7%	15.4%	26.9%	100.0%	
	Strong	Count	15	29	74	118	
		Expected Count	24.6	27.0	66.4	118.0	
		% within Interesting in Study	12.7%	24.6%	62.7%	100.0%	
	Total		Count	30	33	81	144
			Expected Count	30.0	33.0	81.0	144.0
			% within Interesting in Study	20.8%	22.9%	56.3%	100.0%

Table (D-15)

Parents' Help in School Activities and Pass Grade Level Cross Tabulation in Urban

			Pass Grade Level			Total
			Only Fair	Good	Excellent	
Parents' Help in School Activities	Never	Count	14	5	8	27
		Expected Count	5.6	6.2	15.2	27.0
		% within Parents' Help in School Activities	51.9%	18.5%	29.6%	100.0%
	Sometimes	Count	10	20	62	92
		Expected Count	19.2	21.1	51.8	92.0
		% within Parents' Help in School Activities	10.9%	21.7%	67.4%	100.0%
	Always	Count	6	8	11	25
		Expected Count	5.2	5.7	14.1	25.0
		% within Parents' Help in School Activities	24.0%	32.0%	44.0%	100.0%
	Total	Count	30	33	81	144
		Expected Count	30.0	33.0	81.0	144.0
		% within Parents' Help in School Activities	20.8%	22.9%	56.3%	100.0%

Table (D-16)

Maturing in Reading and Pass Grade Level Cross Tabulation in Urban

			Pass Grade Level			Total
			Only Fair	Good	Excellent	
Maturing in Reading	Weak	Count	18	3	6	27
		Expected Count	5.6	6.2	15.2	27.0
		% within Maturing in Reading	66.7%	11.1%	22.2%	100.0%
	Fair	Count	6	8	28	42
		Expected Count	8.8	9.6	23.6	42.0
		% within Maturing in Reading	14.3%	19.0%	66.7%	100.0%
	Strong	Count	6	22	47	75
		Expected Count	15.6	17.2	42.2	75.0
		% within Maturing in Reading	8.0%	29.3%	62.7%	100.0%
Total		Count	30	33	81	144
		Expected Count	30.0	33.0	81.0	144.0
		% within Maturing in Reading	20.8%	22.9%	56.3%	100.0%

Table (D-17)**School Distance and Pass Grade Level Cross Tabulation in Rural**

			Pass Grade Level			Total
			Low	Moderate	High	
School Distance	4-12 Minutes	Count	11	210	89	310
		Expected Count	30.7	187.9	91.4	310.0
		% within School Distance	3.5%	67.7%	28.7%	100.0%
	13-21 Minutes	Count	25	10	18	53
		Expected Count	5.3	32.1	15.6	53.0
		% within School Distance	47.2%	18.9%	34.0%	100.0%
Total		Count	36	220	107	363
		Expected Count	36.0	220.0	107.0	363.0
		% within School Distance	9.9%	60.6%	29.5%	100.0%

Table (D-18)

Neighborhood Education and Pass Grade Level Cross Tabulation in Rural

			Pass Grade Level			Total	
			Low	Moderate	High		
Neighborhood Education	Illiterate	Count	11	65	22	98	
		Expected Count	9.7	59.4	28.9	98.0	
		% within Neighborhood Education	11.2 %	66.3%	22.4%	100.0 %	
	Basic Education	Count	19	131	40	190	
		Expected Count	18.8	115.2	56.0	190.0	
		% within Neighborhood Education	10.0 %	68.9%	21.1%	100.0 %	
	Graduate	Count	6	24	45	75	
		Expected Count	7.4	45.5	22.1	75.0	
		% within Neighborhood Education	8.0%	32.0%	60.0%	100.0 %	
	Total		Count	36	220	107	363
			Expected Count	36.0	220.0	107.0	363.0
			% within Neighborhood Education	9.9%	60.6%	29.5%	100.0 %

Table (D-19)**Advice from Parent's Friend and Pass Grade Level Cross Tabulation in Rural**

			Pass Grade Level			Total
			Low	Moderate	High	
Advice from Parent's Friend	No	Count	18	92	22	132
		Expected Count	13.1	80.0	38.9	132.0
		% within Advice from Parent's Friend	13.6%	69.7%	16.7%	100.0%
	Yes	Count	18	128	85	231
		Expected Count	22.9	140.0	68.1	231.0
		% within Advice from Parent's Friend	7.8%	55.4%	36.8%	100.0%
Total		Count	36	220	107	363
		Expected Count	36.0	220.0	107.0	363.0
		% within Advice from Parent's Friend	9.9%	60.6%	29.5%	100.0%

Table (D-20)

Neighborhood Education and Pass Grade Level Cross Tabulation in Urban

			Pass Grade Level			Total	
			Low	Moderate	Good		
Neighborhood Education	Illiterate	Count	19	4	3	26	
		Expected Count	5.4	7.6	13.0	26.0	
		% within Neighborhood Education	73.1%	15.4%	11.5%	100.0%	
	Basic Education	Count	8	14	17	39	
		Expected Count	8.1	11.4	19.5	39.0	
		% within Neighborhood Education	20.5%	35.9%	43.6%	100.0%	
	Graduate	Count	3	24	52	79	
		Expected Count	16.5	23.0	39.5	79.0	
		% within Neighborhood Education	3.8%	30.4%	65.8%	100.0%	
	Total		Count	30	42	72	144
			Expected Count	30.0	42.0	72.0	144.0
			% within Neighborhood Education	20.8%	29.2%	50.0%	100.0%

Table (D-21)**Advice from Parent's Friend and Pass Grade Level Cross Tabulation in Rural**

			Pass Grade Level			Total
			Low	Moderate	Good	
Advice from Parent's Friend	No	Count	10	9	8	27
		Expected Count	5.6	7.9	13.5	27.0
		% within Advice from Parent's Friend	37.0%	33.3%	29.6%	100.0%
	Yes	Count	20	33	64	117
		Expected Count	24.4	34.1	58.5	117.0
		% within Advice from Parent's Friend	17.1%	28.2%	54.7%	100.0%
Total		Count	30	42	72	144
		Expected Count	30.0	42.0	72.0	144.0
		% within Advice from Parent's Friend	20.8%	29.2%	50.0%	100.0%

Appendix (E)

Table (E-1)

Chi-Square Tests for Father Education in Rural

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.152	2	.076
Likelihood Ratio	4.860	2	.088
Linear-by-Linear Association	2.723	1	.099
N of Valid Cases	363		

Table (E-2)

Chi-Square Tests for Father's Health in Rural

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.442	4	.051
Likelihood Ratio	14.886	4	.005
Linear-by-Linear Association	1.842	1	.175
N of Valid Cases	363		

Table (E-3)

Chi-Square Tests for Supporting Facilities in Rural

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.792	4	.100
Likelihood Ratio	8.135	4	.087
Linear-by-Linear Association	3.975	1	.046
N of Valid Cases	363		

Table (E-4)

Chi-Square Tests for Supporting Knowledgeable Book in Rural

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	16.840 ^a	4	.002
Likelihood Ratio	16.289	4	.003
Linear-by-Linear Association	13.541	1	.000
N of Valid Cases	363		

Table (E-5)

Chi-Square Tests for Mother Occupation in Urban

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.763 ^a	2	.021
Likelihood Ratio	7.814	2	.020
Linear-by-Linear Association	7.403	1	.007
N of Valid Cases	144		

Table (E-6)

Chi-Square Tests for Supporting School Facilities in Urban

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.996 ^a	2	.007
Likelihood Ratio	8.969	2	.011
Linear-by-Linear Association	9.803	1	.002
N of Valid Cases	144		

Table (E-7)

Chi-Square Tests for Maturing in Reading in Urban

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.996 ^a	2	.007
Likelihood Ratio	8.969	2	.011
Linear-by-Linear Association	9.803	1	.002
N of Valid Cases	144		

Table (E-8)

Chi-Square Tests for Interesting in Education in Rural

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.600	2	.061
Likelihood Ratio	6.424	2	.040
Linear-by-Linear Association	4.164	1	.041
N of Valid Cases	363		

Table (E-9)

Chi-Square Tests for Attitude on Education in Rural

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.642	2	.036
Likelihood Ratio	7.887	2	.019
Linear-by-Linear Association	6.385	1	.012
N of Valid Cases	363		

Table (E-10)

Chi-Square Tests for Interesting in Study in Rural

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.355	2	.042
Likelihood Ratio	6.488	2	.039
Linear-by-Linear Association	6.278	1	.012
N of Valid Cases	363		

Table (E-11)

Chi-Square Tests for Interesting in Education in Urban

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	11.107	2	.004
Likelihood Ratio	11.235	2	.004
Linear-by-Linear Association	8.228	1	.004
N of Valid Cases	144		

Table (E-12)

Chi-Square Tests for Interesting in Study in Urban

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.778	2	.092
Likelihood Ratio	4.694	2	.096
Linear-by-Linear Association	3.013	1	.083
N of Valid Cases	144		

Table (E-13)

Chi-Square Tests for Parent Help in School Activities in Urban

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.746	4	.045
Likelihood Ratio	11.216	4	.024
Linear-by-Linear Association	7.465	1	.006
N of Valid Cases	144		

Table (E-14)

Chi-Square Tests for Maturing in Reading in Urban

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	31.773	4	.000
Likelihood Ratio	19.444	4	.001
Linear-by-Linear Association	4.956	1	.026
N of Valid Cases	144		

Table (E-15)

Chi-Square Tests for Neighborhood Education in Rural

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	43.207	4	.000
Likelihood Ratio	40.374	4	.000
Linear-by-Linear Association	17.262	1	.000
N of Valid Cases	363		

Table (E-16)

Chi-Square Tests for Advice from Parent's Friend in Rural

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	17.269	2	.000
Likelihood Ratio	18.177	2	.000
Linear-by-Linear Association	15.889	1	.000
N of Valid Cases	363		

Table (E-17)

Chi-Square Tests for Neighborhood Education in Urban

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.581	4	.032
Likelihood Ratio	10.471	4	.033
Linear-by-Linear Association	9.562	1	.002
N of Valid Cases	144		

မိတ္ထီလာမြို့နယ်

