YANGON UNIVERSITY OF ECONOMICS
DEPARTMENT OF STATISTICS

STUDY ON WOMEN'S EDUCATIONAL ATTAINMENT OF MYAUNGMYA DISTRICT

BY

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M.P.S

Roll No.1

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ABSTRACT

Women's educational attainment of Myaungmya District is studied with the aims to describe women's educational attainment and socioeconomic characteristics and to explore the determinants of women's educational attainment in Myaungmya District. The secondary data from the 2014 Myanmar Population and Housing Census is used in this study. Women aged 25 and over are only considered in analyzing women's educational attainment of Myaungmya District. In this study, principal component analysis was used to construct wealth index and multinomial logistic regression was used to explore the determinants of women's educational attainment. Based on the results, the number of women who have never attended, those women who are completed primary and middle schools are higher than those who have been completed high school, undergraduate and graduate levels. Firstly, in comparing primary school versus no schooling, single, age groups (25-44) and (45-64), and four quintiles of wealth index (richest, richer, middle and poorer) are statistically significant. And hence, in comparing middle school versus no schooling, single, urban, age groups (25-44) and (45-64), and four quintiles of wealth index (richest, richer, middle and poorer) are statistically significant. In comparing high school versus no schooling, single, urban, age groups (25-44) and (45-64), and four quintiles of wealth index (richest, richer, middle and poorer) are statistically significant. Additionally, in comparing undergraduate versus no schooling, urban, age groups (25-44) and (45-64), and four quintiles of wealth index (richest, richer, middle and poorer) are statistically significant. Lastly, in comparing graduate versus no schooling, single, urban, age groups (25-44) and (45-64), and four quintiles of wealth index (richest, richer, middle and poorer) are statistically significant.

ACKNOWLEDGEMENTS

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LIST OF ABBREVIATIONS

ASCED	Australian Standard Classification of Education
AMENA	Asia, Middle East and North Africa
ACT	Australian Capital Territory
BHPS	British Household Panel Survey
DOP	Department of Population
DHS	Demographic and Health Survey
ISCED	International Standard Classification of Education
IFLS	Indonesian Family Life Survey
IBM	International Business Machines Corporation
LFL	Learning for Life
MENA	Middle East and North Africa
NSW	New South Wales
OECD	Organization for Economic Co-operation and Development
UNICEF	United Nations Children's Fund
UNESCO	United Nations Educational, Scientific and Cultural Organization

CHAPTER I
INTRODUCTION

Education is the area of study that is related to teaching and learning. The goal of education is to shift one person's ideas to another or from one group to another. It provides people with knowledge, skill, technique, information, enables them to know their rights and duties toward their family, society as well as the nation. It widens vision and outlook to see the world. It extends the capabilities to fight against injustice, violence, corruption and many other bad elements in the society (Cdadmin, 2018).

To better understand and deal with life challenges, education provides knowledge and skills for girls. Education can give feeling not alone to girls and well-supported by their peers and teachers/educators as education involves social interaction. Educated girls start thinking about marriage only when old enough so that the number of child marriages and health problems tend to decrease. Educated girls who have knowledge about health are able to take better care of their families' health and well-being.

Many parents and teachers/educators claim that a mother is a child's first teacher and that an educated mother will instill to understand the importance of education in their children and can guide her children to become educated with her knowledge. With higher level of education, women can involve in leadership roles within the community and in the development plans of society. In addition, women can elevate voice against the injustice (Somani, 2017).

In the evolution of the nation, it is the most important element. Without education, new ideas will not be explored. Without ideas, there will be no creativity and as a result of without creativity, there will also no development of the nation. And the world can't also be able to develop. In the modern industrialized world, education plays an important role. People require a good education to survive in this competitive world.

If the citizens of a country are well-educated, trade and commerce of the country will also be grown easily. It assists to become self-dependent and build great confidence to accomplish difficult tasks. If all the people will be educated, this can lead to the promotion of economically weaker sections of society. Societies with

higher rates of education completion that can lead to lower crime, better overall health and civil involvement. By supporting education, poverty can be removed and every person can provide contribution to develop the country (Cdadmin, 2018).

1.1 Rationale of the Study

Swedish International Development Cooperation Agency found that school attendance of children is often influenced by gender in 2017. Across the world, girls are more likely to be out of school in comparing with boys, and the poorest girls/women from the most disadvantaged rural areas only have the lowest educational attainment levels. The reasons why girls are more likely than boys to be out of school due to the roles of boys/men and girls/women that are defined in social structures and norms. These gender roles have an effect on their rights, responsibilities, opportunities and capabilities, including their access to and treatment in school.

In 2019, UNICEF Myanmar stated that Myanmar has made powerful development in increasing children's access to education and improving the quality of education, yet many children stay out of school. Key challenges in Myanmar involve limitations in the quality of education services at all levels of education and the number of qualified teachers, as well as weak school infrastructure and outdated teaching methods. In addition, long lasting conflicts and emergencies are interrupting many children's path to learning.

According to 2014 Myanmar Population and Housing Census, 81 percent of children aged 6–10 years were attending primary school level. This meant that 1 in 5 children are not attending; this may be either because they never entered school or dropped out. Adolescence is a period of great not only opportunities but also special needs and potential risks. During this fragile period (age 10–19), many children were out of school, with school attendance to around 30 percent by age 17, according to the 2014 national census. The results from the Thematic Report on Education of 2014 Myanmar Population and Housing Census showed that educational attainment is still quite low: 45.17 percent of the population aged 25 and over had only finished in completed primary school with 42.22 percent for males and 47.73 percent for females. Only 8.25 percent of the population aged 25 and over had graduated from university or a higher level of education with 7.88 percent for males and 8.59 percent for females. This report also presented that women are more pursued higher education

than men. About 63 percent and 37 percent of people who hold a postgraduate degree were women and men respectively.

Similarly, educational attainment is also low in Ayeyarwady Region as a result of Ayeyarwady Region Report of 2014 Myanmar Population and Housing Census. Only 54.2 percent of the population aged 25 and over had finished the primary school and 5.02 percent of that aged had graduated from university or college. About 50.73 percent of males and 57.35 percent of females had finished the primary school. The percentages of population who had graduated from university or college were 4.46 percent for males and 5.53 percent for females. Compared to Union, these percentages were lower.

According to Census Report of Ayeyarwady Region from 2014 Myanmar Population and Housing Census, Myaungmya District had the lowest literacy rates (90.8 percent) among the literacy rate of population aged 15 and over in six districts of Ayeyarwady Region. Only 55.67 percent and 4.46 percent of the population aged 25 and over had completed primary school and university or college education. About 54.09 percent of males and 57.08 percent of females had finished the primary school. The percentages of population who had graduated from university or college were 3.37 percent for males and 5.11 percent for females.

Women outnumbered men at every level of education in Myanmar. Yet even with high levels of educational attainment, women in Myanmar still experience economically repressed and politically underrepresented. Both men and women have equal access to education but women have lower labour force participation, leading to weakened long term political and economic empowerment (Crisp & Clementi, 2020). Education can help people to become better citizens for their countries. It will also assist in finding a job. People can distinguish good and bad things with education and may work hard to grow and develop themselves. It will help to create a better society, to abide a respectable law and to strive for the betterment of the country by citizen. It will also support mothers who are single or alone and hence the children who are the future of the country will rightly be nurtured. It can solve unemployment problems in the country (Reddy, 2016). Education is very important for human resource development and country's development due to these reasons.

Myanmar is divided into six parts such as Central Burma, East Burma, Lower Burma, North Burma, South Burma and West Burma (Wikipedia, 2020). Among these parts, Lower Burma including Ayeyarwady Region, Bago Region and Yangon

Region which is mainly focused in this study. According to the Union Report of 2014 Myanmar Population and Housing Census, in Bago Region, the literate percentage is 94.2 percent in population aged 15 and over and 96.6 percent of those aged population is literate people of Yangon Region. Ayeyarwady Region possess the lowest percentage of literate population aged 15 and over with 93.8 percent. Therefore, among these Regions, Ayeyarwady Region is particularly studied.

Ayeyarwady Region composes six districts, namely, Pathein District, Hinthada District, Myaungmya District, Maubin District, Pyapon District and Labutta District. According to Census Report of Ayeyarwady Region from 2014 Myanmar Population and Housing Census, the literacy rates of population aged 15 and over were 93.8 percent for Pathein District, 95.7 percent for Hinthada District, 90.8 percent for Myaungmya District, 94.4 percent for Maubin District, 94.2 percent for Pyapon District and 92.6 percent for Labutta District. Among these districts, only Myaungmya District is studied for women's educational attainment because higher educated persons in this district are lower than that in the other districts. In addition, which factors are influencing on educational attainment that is needed to explore.

1.2 Objectives of the Study

The objectives of the study are

i. To describe women's educational attainment and socioeconomic characteristics of Myaungmya District

ii. To explore the determinants of women's educational attainment in Myaungmya District.

1.3 Method of Study

Wealth index was calculated through principal component analysis. Furthermore, multinomial logistic regression was used to explore the determinants of women's educational attainment in Myaungmya District.

1.4 Scope and Limitations of the Study

The secondary data which are ten percent of population data received from the 2014 Myanmar Population and Housing Census are used in the data analysis of this study. In this study, women's educational attainment of Myaungmya District is studied since the literacy rate of Myaungmya District is the lowest percentage than the

other districts of Ayeyarwady Region. In analyzing women's educational attainment of Myaungmya District, according to UNESCO, women aged 25 and over are only considered in order to ensure that the majority of the population has completed their education since younger age groups are often still enrolled in the education system (UNESCO, 2020).

1.5   Organization of the Study

This study is formed by five chapters. Chapter one involves introduction, rationale of the study, objectives of the study, method of study, scope and limitations and organization of the study. Chapter two presents the literature review which was based on previous studies that are related to the educational attainment. Chapter three explains the details of the methodology of the study. Chapter four includes results and findings of women's educational attainment in Myaungmya District. Chapter five presents the conclusion with discussions, suggestions and recommendations.

CHAPTER II
LITERATURE REVIEW

This chapter is composed by four sections, namely educational attainment, description of women's education, review of the research work done by various scholars on the topic related to influencing factors on educational attainment, and conceptual framework.

2.1   Educational Attainment

Smith (1995) defined education is a complex subject for survey measurement and the individual's educational attainment is only a small part of possible measures relating to an individual's educational experience.

Barro and Lee (2001) observed countries recognized that educational attainment is important to the economy. These countries believed workforce will be become more highly skilled and productive by more years of schooling as a logic of reasoning. And, this can lead to higher output of goods and services and eventually a stronger economy.

Organization for Economic Co-operation and Development (OECD, 2003) defined educational attainment as the highest grade completed within the most advanced level attended in the educational system of the country where the education was received. But some countries described the educational attainment depending on the highest grade attended.

Jenkins and Sabates (2007) presented educational attainment as an important direct outcome of education received from filling requirements such as cognitive ability, effort, educational pathway taken, full-time or part time study and income, etc. The other direct outcomes of education are skills and competences and levels of performance in a specific exam or qualification.

Government of Canada (2011) defined the educational attainment as the highest level of schooling a person has attained in terms of grades of elementary or secondary school completed and certificates or diplomas obtained. Government of Canada (2016) also defined it as the post-secondary institutions attended and certificates, degrees or diplomas granted.

International Standard Classification of Education (ISCED, 2011) also defined educational attainment as the highest level of education successfully completed. It is usually measured with respect to the highest educational qualification completed.

Barro & Lee (2013) explained a country's economic and social status can be predicted by educational attainment. Countries should continue to invest in education to increase educational attainment and promote the attainment of 21st century skills and competences during schooling years for gaining a foothold in the new economy. Thus, how the 21st century skills and competences are incorporated into the educational curricula and which teaching techniques are effective that are needed to consideration.

Australian Standard Classification of Education (ASCED, 2014) defined as education is the lifetime process of achieving knowledge, attitudes, skills and socially valuable qualities of character and behavior. The willingness to learn is considered in education and communication from one person to another are also involved in education.

United Nations Educational, Scientific and Cultural Organization (UNESCO, 2016) stated that educational attainment refers to the highest level of education that an individual has completed. Moreover, UNESCO provided the unique insights into the benefits from education – from the earning potential of individuals to the economic growth and well-being of societies at large by tracking attainment levels across countries and over time.

The US Census Bureau Glossary (2018) defined educational attainment as the highest degree of education an individual has completed. Anonymous (2018) also defined educational attainment as the degree or level of completed education of a person on the basis of the followings: elementary, high school, technical vocational, Bachelor's degree in college, Masterate in Graduate School and Doctorate in Post Graduate Studies.

2.2   Description of Women's Education

Becker (1964) discussed investments in women's education become beneficial when women are able to convert their education into income and status at the labor market. In addition, the main factors behind the traditional pattern in lower educational participation of women had been their higher association to the household and to child-rearing activities, as well as their lower opportunities in the labor market.

The participation of women in education is increased by changing gender images and labor force participation of women is higher due to stronger demand for labor in service professions.

Yousif et al. (1996) stated that women's educational attainment has contributed significantly to the fertility transition in the Middle East and North Africa (MENA) countries. However, countries with declining fertility which have differed from each other with regard to the level of education (or years of schooling). In several countries with declining fertility experienced an increase in women's education.

Yousif et al. (2001) described the rapid increase in women's education during the period 1970–2000 reduced the influence of traditional values, attitudes and norms and strengthened women's social status within households and communities. It can also assist their employment in modern activities outside the home. As a result, the mean age at marriage for girls has increased to 25 or more years in several Asia, Middle East and North Africa (AMENA) countries. Moreover, generations of educated girls have obtained modern aspirations and family desires.

Buchmann et al. (2008) knew that the increasing women's educational returns is the major instrument of increasing educational motivation of women and their higher participation in secondary schooling and in higher education.

Breen et al. (2010) also presented female life-prospects and life plans altered very much - in particular, the decreasing marriage and the increasing importance of labor force participation for earning a living among women – and also changing educational and social systems make education more attractive both to women and men.

Becker and Müller (2011) argued that the change in the educational aspirations of girls and the expected greater opportunities for women in the labor market that is particularly regarding public services are the main causes to increase educational success of girls. Gendered interests and life plans – being related to socialized gender stereotypes – still reinforce work force separation in terms of women more often becoming nurses, teachers or engaging in other service professions, and men being more likely to choose professions that are characterized by higher authority, prestige and status.

World Bank (2020) expressed that 132 million girls around the world are out of school, including 34.3 million of primary school age, 30 million of lower-

secondary school age, and 67.4 million of upper-secondary school age. The girls in the countries affected by conflicts who are more than twice as likely to be out of school than girls living in non-affected countries.

Khalid (2012) stated that only education is a preventable way from abuse, poverty, and oppression of women. Education can also help women to achieve empowerment and to know certainly about their rights, and enable them to maintain good health and raise healthy children and families. Thus, education has a great influence on changing society. If women have higher education, they can keep hunger away, reduce the number of child marriages and early pregnancies, improve health status and overall socioeconomic circumstances, and create a better and peaceful society.

Hadjar et al. (2014) suggested that gender differences in education are a social problem as they can exist along with disadvantages within the labor market and, finally, reduced life chances. The policy makers should provide both boys and girls with environments that support well-being, motivation and, thus, academic achievement.

Somani (2017) described educating girls is a critical for the development of communities and society as a whole in the Journal of Educational Research and Practice. Additionally, it also described education is the most sustainable way to express global challenges like poverty, health issues, ignorance, lack of tolerance and conflicts, among others. The numbers of people who not only achieve their basic human rights, but also develop skills and abilities and support the overall society are increased by increasing access to girls' education and reducing gender disparities in education. In this case, girls will also have opportunities to use their skills and talents and their capabilities and potentials to improve the lives of their families, society, and themselves.

Olk (2018) found that the education of girls and women is the main importance for the success of individuals, communities and nations, leading to increased efforts to improve girls' education in Myanmar, among other countries. Higher educated women generally receive higher pay and tend to have fewer health problems. Additionally, education positively impact to get more job opportunities for women as well as employers.

Speller (2020) presented the right to education for man and woman is equal in Myanmar's Constitution. Although most of the females attend primary school, the

number of girls that continue onto secondary school or university observe decline. The adult women's literacy rate is 86 per cent compared to just over 90 per cent for men. Looking at this fact, despite the progress, there are continued concerns regarding female retention rates, performance levels and quality and gender sensitivity of education.

2.3   Review of Influencing Factors on Educational Attainment

Kaluge (1998) studied some factors related to educational attainment in Indonesian primary schools. This study mainly focused on educational attainment of Indonesian urban state primary schools. It aimed to identify factors at pupil, classroom and school level associated with pupil academic attainment and progress. It contained a sample of 5,118 pupils from 60 primary schools which is conducted with stratified random sampling. Among these primary schools, three upper grades (4-6) were selected from each school, with their 180 class teachers and 60 headteachers. In this study, Confirmatory Factor Analysis was used for validate complex variables which consisted of some indicators. Besides, multilevel statistical techniques were also used on assessments at the end of the school year by taking pupil prior year attainment as baseline to examine factors related to pupil, classroom and school levels which were related to pupil attainment a year later. From the results of this study found that the proportion of total variance in pupil attainment for language at the school level ranged from 14 to nearly 23 percent. The proportion of variance in pupil attainment for mathematics was larger with range 20 to 29 percent at the school level. The predictors such as pupil's gender and age, father's occupation, teacher's age, and the frequency of school meetings had negative significant while father's and mother's education, home language, books and newspapers at home, teacher's gender, in-service training in mathematics, teacher-gender proportion had positive significant for certain attainments and grades. Residual estimates from the multilevel analysis identified which schools are most effective and least effective for each subject and grade.

Ermisch and Francesconi (2000) studied that the Effect of Parents' Employment on Children's Educational Attainment. The empirical analysis uses data from various samples of young people drawn from the first seven waves (1991-1997) of the British Household Panel Survey (BHPS). Ordinary least squares (OLS) model was applied to minimize the error sum of square and logistic regression model on both

the cross-sectional samples and the sibling samples in this study. The results of this study showed that the mother's full-time employment implies a negative and significant effect on the child's educational attainment. Also, the mother's part-time employment had a negative effect but smaller. Similarly, the father's employment had a little effect, not always precisely estimated but again negative. These results also showed that a higher full family income increases the educational attainment of children, and given full family income, a higher mother's or father's wage reduces their children's educational attainment in the conditional demand function framework.

Considine and Zappalà (2002) analyzed the factors influencing the educational performance of students from disadvantaged backgrounds using the data from a sample of 3,329 students who were on the Smith Family's Learning for Life (LFL) Program in 1999. The sample involved students from Year 1 to 12 from state schools in New South Wales (NSW), Victoria, Queensland, South Australia and the Australian Capital Territory (ACT). This study intended to estimate the extent of socioeconomic, family, individual and contextual factors on school educational performance. In this study, odds ratio and binomial logistic regression are used to attain the objective and the Wald test of significance is used to show the coefficients of independent variables such as sex, ethnicity, unexplained absences, parent's educational attainment, housing type, and student age are significant or not. The Hosmer-Lemeshow test is also used to show the goodness of fit between the data and the model. According to the results, the coefficients of the independent variables were all statistically significant variables and predictors of academic performance. But family structure, the main source of family income and geographical location did not significantly predict variation in school performance while other factors remained constant. They found that even within a group with considerable financial disadvantage, socioeconomic status had distinct and separate influences on educational outcomes. It was also found that the financial assistance to schools and families in need is not only important but the policies and programs should also be assisted low-income parents in providing appropriate psychological and educational supports for their children.

Acharya and Joshi (2009) analyzed the influence of parents' education on achievement motivation of adolescents with the aims to study the influence of mothers' educational level on adolescents' achievement motivation in four areas such as academic, general interest, dramatics and sports and to study the influence of

fathers' educational level on adolescents' achievement motivation in similar four areas. Two hundred male and female adolescents of class XI and XII (16 to 19 years) studying in different schools of Varanasi City are selected in four groups (50 in each) on the basis of education level of their parents, particularly post-graduation, graduation, intermediate, and high school. The information regarding the parents' education is collected from the participants. Mean, standard deviation, one-way ANOVA and parametric statistics are used for the analysis of the data. To measure the achievement motivation of adolescents, Deo-Mohan achievement motivation scale (1985) was used and then the reliability of the scale is examined through test-retest method. From this study viewed that higher level of mothers' education can get higher level of achievement motivation in academic area but that cannot influence on other areas like dramatics, sports and general interest. Also, highly educated fathers can encourage their children to more participate in academic area than less educated fathers.

Aldin et al. (2011) studied the relationship between background variables and the educational performance. In this study, the current Master (post-graduate) students of Accounts in the Islamic Azad University (Yazd Branch) in the academic year of 2009-10 are used as the statistical population. Among this population, the students are selected who have been completed at least one semester during their course of study. The total average marks and the average marks of prior semesters of the current students studying are used to measure the educational performance. Educational success is measured based on average marks of undergraduate students and the amount of prior knowledge of students in the science of accounting in the study course at undergraduate level (Accounting or other than accounting) has been considered to study the prior knowledge. This study used a standard questionnaire with five Likert spectrums including 34 questions which is utilized in international studies. The results of the study pointed out that there is a significant relationship between prior educational success of students and their educational performance, also student studying in undergraduate accounting degree has a positive impact on their educational performance in the post-graduate studies. Student's educational performance was better when their motivation and expectation were high and therefore there has been a positive and direct relationship. The research study has also shown that 95 percent female student educational performance and the expectation of female students in the context of courses and academic level are better than the male

students. In choosing accounting course and university, female students were more under the influence of reference groups, but male students with high motivation have entered the university rather than the selection of accounting course. Also, the results have shown that at 95 percent level of confidence if the age of student is higher, then both of the educational performance and the influence of reference groups are lower.

Vallières et al. (2013) performed a cross-sectional household study that is head of household education level as a factor influencing whether delivery takes place in the presence of a skilled birth attendant in Busia, Uganda. This study analyzed the association between head of household education level and health seeking behaviours at delivery with a sample of 392 households. The strength of the relationship between no, some primary, or some secondary or higher education attained by the head of household and the presence or absence of a skilled birth attendant at that child's birth, and whether the birth took place at a health facility are measured by calculating chi-square analysis and odds ratio. Heads of household were primarily male that is observed in this study. This study also found that a significant difference in skilled birth attendance between heads of households with some primary education and those with some secondary or higher education. Heads of households with secondary or higher education were significantly more likely to seek a skilled birth attendant. There had a significant difference in health center delivery between heads of households with a primary education and those with a secondary or higher education. Heads of households with secondary or higher education were significantly more likely to deliver in a health facility. This study discovered improving the rates of health center deliveries and utilization of services provided by skilled health workers may lay, in part, in increasing overall education levels of heads of households, specifically the education of male heads of households.

Megens (2015) analyzed educational attainment as a determinant of internal migration evidence from Indonesia. This study used the data from the Indonesian Family Life Survey (IFLS) conducted in 2000 and 2007. The sample included information on 21,103 individuals and 5,489 household heads. The aim of this thesis was to examine the relationship between educational attainment and internal migration by focusing on an individual's decision to move in Indonesia. Binomial logit model was used to analyze the effect of educational attainment on the migration decision for three different spatial levels; sub-district, district and province level. The results indicated that educational attainment has a significant and positive effect on an

individual's decision to move for higher levels of education. Unlike higher levels of education, there had no significant effect on the decision to move for lower levels of education.

2.4   Conceptual Framework

In this section, the conceptual framework is illustrated to find the effect on women's educational attainment. Thus, the response variable is woman's educational attainment. The predictor variables that can be influenced on the response variable are female-headed, woman's marital status, residence, woman's age and wealth index.

Predictor Variables   **Response Variable**

```
┌─────────────────────────────┐
│  Woman's Socioeconomic      │
│       Characteristics       │              ┌──────────────────────────────────┐
│                             │              │  Woman's Educational Attainment  │
│   –  Female-Headed          │              │                                  │
│   –  Woman's Marital        │─────────────▶│   –  the highest education level │
│      Status                 │              │      completed (primary school,  │
│   –  Residence              │              │      middle school, high school, │
│   –  Woman's Age            │              │      undergraduate and graduate) │
│   –  Wealth Index           │              └──────────────────────────────────┘
│                             │
└─────────────────────────────┘
```
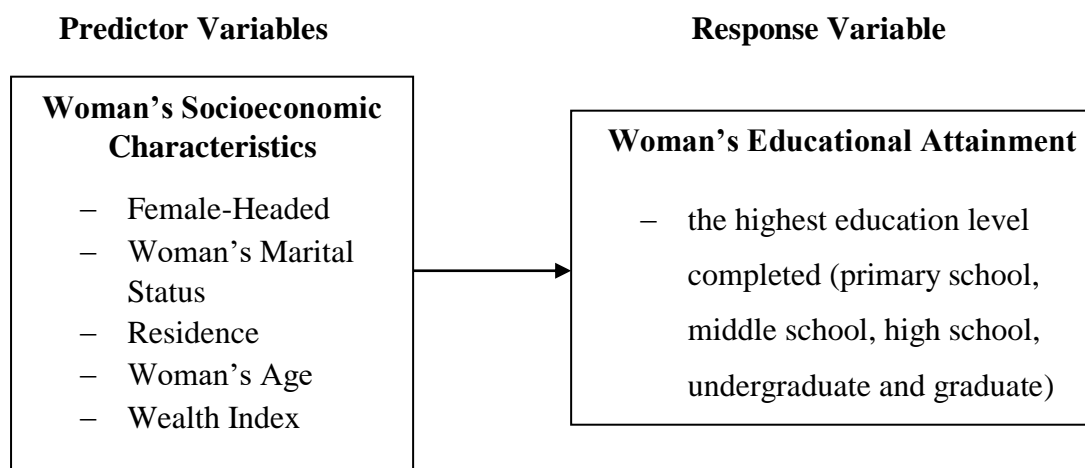
Figure (2.1) Conceptual Framework for Women's Educational Attainment

CHAPTER III
RESEARCH METHODOLOGY

In this chapter, the requiring methodologies in analyzing women's educational attainment of Myaungmya District are discussed in detail.

3.1   Sources of Data

The secondary data to describe the demographic and socioeconomic characteristics of Myaungmya District by using descriptive analysis which are received from Myaungmya, Wakema and Einme Township Reports of 2014 Myanmar Population and Housing Census.

The data to explore the determinants of women's educational attainment in Myaungmya District are obtained from 2014 Myanmar Population and Housing Census.

3.2   Principal Component Analysis

A principle component analysis is concerned with explaining the variance-covariance structure of a set of variables through a few linear combinations of these variables. Its general objectives are data reduction and interpretation.

Although p components are required to reproduce the total system variability, often much of this variability can be accounted for by a small number k of the principle components. If so, there is as much information in the k components as there is in the original p variables. The k principal components can then replace the initial p variables, is reduced to a data set consisting of n measurement on k principal components.

An analysis of principal component often reveals relationships that were not previously suspected and thereby allows interpretations that would not ordinarily results.

Algebraically, principal components are particular linear combinations of the p random variables X_1, X_2, …, X_p. Geometrically, these linear combinations represent the selection of a new coordinate system obtained by rotating the original system with

X_1, X_2, …, X_p as the coordinate axes. The new axes represent the directions with maximum variability and provide a simpler and more parsimonious description of the covariance structure.

Principal components depend solely on the covariance matrix $\sum$ (or the correlation matrix P) of X_1, X_2, …, X_p. Their development does not require a multivariate normal assumption. On the other hand, principal components derived for multivariate normal populations have useful interpretations in terms of the constant density ellipsoids.

Let the random vector $X' = [X_1, X_2, \ldots, X_p]$ have the covariance matrix Σ with eigenvalues $\lambda_1 \geq \lambda_2 \geq \cdots \geq \lambda_p \geq 0$.

Consider the linear combinations

$$
\begin{aligned}
Y_1 &= a_1'X = a_{11}X_1 + a_{12}X_2 + \cdots + a_{1p}X_p \\
Y_2 &= a_2'X = a_{21}X_1 + a_{22}X_2 + \cdots + a_{2p}X_p \\
&\vdots \\
Y_p &= a_p'X = a_{p1}X_1 + a_{p2}X_p + \cdots + a_{pp}X_p
\end{aligned}
\tag{3.1}
$$

Then, it obtains

$$
\text{Var } (Y_i) = a_i' \sum a_i \qquad\qquad i = 1,2,\ldots,p \tag{3.2}
$$

$$
\text{Cov } (Y_i, Y_k) = a_i' \sum a_k \qquad\qquad i,k = 1,2,\ldots,p \tag{3.3}
$$

The principal components are those uncorrelated linear combinations $Y_1, Y_2, \ldots, Y_p$ whose variances in (3.1) are as large as possible.

The first principal component is the linear combination with maximum variance. That is, it maximizes Var $(Y_1) = a_1' \sum a_1$. It is clear that Var $(Y_1) = a_1' \sum a_1$ can be increased by multiplying any a_1 by some constant. To eliminate this indeterminacy, it is convenient to restrict attention to coefficient vector of unit length. It can define

First principal component = linear combination $a_1'X$ that maximizes

$$
\text{Var } (a_1'X) \text{ subject to } a_1'a_1 = 1
$$

$$\text{Second principal component} = \text{linear combination } a_2' X \text{ that maximizes}$$

$$\text{Var }(a_2' X) \text{ subject to } a_2' a_2 = 1 \text{ and}$$

$$\text{Cov }(a_1' X, a_2' X) = 0$$

At the i$^{\text{th}}$ step,

$$\text{i}^{\text{th}} \text{ principal component} = \text{linear combination } a_i' X \text{ that maximizes}$$

$$\text{Var }(a_i' X) \text{ subject to } a_i' a_i = 1 \text{ and}$$

$$\text{Cov }(a_i' X, a_k' X) = 0 \text{ for } k < i$$

3.3 Multinomial Logistic Regression Model

The Multinomial Logistic Regression (MLR) model used in generally effective where the response variable is composed of more than two levels or categories. The basic concept was generalized from binary logistic regression. Continuous variables are not used as response variable in logistic regression, and only one response variable can be used. The MLR model can be used to predict a response variable on the basis of continuous and/or categorical explanatory variables to determine the percent of variance in the response variable explained by the explanatory variables, to rank the relative importance of independents, to assess interaction effects, and to understand the impact of covariate control variables. The logistic regression model assumes that the categorical response variable has only two values, in general, 1 for presence and 0 for absence. The logistic regression model can be extended to situations where the response variable has more than two values, and there is no natural ordering of the categories. Natural ordering can be treated as nominal scale, such data can be analyzed by slightly modified methods used in dichotomous outcomes, and this method is called the multinomial logistic.

Let k denotes number of predictors for a binary response Y by the model for log odds is

$$\log[P(Y = 1)] = \alpha + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_k X_k \tag{3.4}$$

And the alternative formula, directly specifying, is

$$\pi(x) = \frac{\exp(\alpha + \beta_1 x_1 + \cdots + \beta_k x_k)}{1 + \exp(\alpha + \beta_1 x_1 + \cdots \beta_k x_k)} \tag{3.5}$$

The parameter β_i refers to the effect of x_i on the log odds that Y =1, controlling other x_j, for instance, exp (β_i) is the multiplicative effect on the odds of a one-unit increase in x_i, at fixed levels of other x_j.

If there have n independent observations with p-explanatory variables, and the qualitative response variable has k categories, to construct the logits in the multinomial case, one of the categories must be considered the base level and all the logits are constructed relative to it. Any category can be taken as the base level; here category k will be taken as the base level. Since there is no ordering, it is apparent that any category may be labeled k. Let π_j denote the multinomial probability of an observation falling in the jth category, to find the relationship between this probability and the p explanatory variables, X_1, X_2, ..., X_p, the multiple logistic regression model then is

$$\log\left[\frac{\pi_j(x_i)}{\pi_k(x_i)}\right] = \alpha_{0i} + \beta_{1j} x_{1i} + \beta_{2j} x_{2i} + \cdots + \beta_{pj} x_{pi} \tag{3.6}$$

where j = 1, 2, ..., (k-1), i = 1, 2, ..., n. Since all the π's adds to unity, this reduces to

$$\log\left(\pi_j(x_i)\right) = \frac{\exp(\alpha_{0i} + \beta_{1j} x_{1i} + \beta_{2j} x_{2i} + \cdots + \beta_{pj} x_{pi})}{1 + \sum_{j=1}^{k-1} \exp(\alpha_{0i} + \beta_{1j} x_{1i} + \beta_{2j} x_{2i} + \cdots + \beta_{pj} x_{pi})} \tag{3.7}$$

for j = 1, 2, ..., (k-1), the model parameters are estimated by the method of Maximum Likelihood (ML).

In multinomial logistic regression model, in addition, the estimate for the parameter can be identified compared to a baseline category. Let at a fixed setting x for explanatory variables, with , for observations at that setting, the counts at the J categories of Y will be treated as multinomial with probabilities, , logit models pair each response category with a baseline category, often the most common model is:

$$\log\frac{\pi_j(x)}{\pi_j(x)} = \alpha_j + \beta'_j(x) \tag{3.8}$$

where; j = 1, ..., (J-1), simultaneously describes the effects of x on these (J-1) logits, the effects vary according to the response paired with the baseline, these (J-1) equations determine parameters for logits with other pairs of response categories. Since $\log\frac{\pi_a(x)}{\pi_b(x)} = \log\frac{\pi_a(x)}{\pi_J(x)} - \log\frac{\pi_b(x)}{\pi_J(x)}$ with categorical predictors, the likelihood ratio

chi-square statistic G^2 goodness-of-fit statistics provides a model check when data are not sparse.

3.4   Goodness of Fit Test

Before estimating the coefficient, there are various evaluation parameters or test need to be conducted for assessing the appropriateness, usefulness and adequacy of the developed logistic regression model. These evaluation parameters are the statistical test of each predictor variable and goodness-of-fit statistics.

3.4.1   Likelihood-Ratio Test

The likelihood-ratio test (sometimes called the likelihood-ratio chi-squared test) is a hypothesis test that helps to choose the "best" model between two nested models. "Nested models" means that one is a special case of the other. The best model is the one that makes the data most likely, or maximizes the likelihood function. The likelihood-ratio test can be easily calculated after knowing the log-likelihood functions for the two models as the ratio between the log-likelihood of the simpler model (s) to the model with more parameters (g):

$$LRT = -2\log_e \left[\frac{L_s(\hat{\theta})}{L_g(\hat{\theta})} \right]$$ (3.9)

In this equation, "s" is written as the likelihood for the null model and "g" is written as the likelihood for the alternative model. The test statistic approximates a chi-squared random variable. Degrees of freedom for the test equal the difference in the number of parameters for the two models.

3.4.2   Pseudo R Squared

In multinomial logistic regression, three Pseudo R Squared values are indicating that the percentage of variation in the dependent variable can be predicted from the linear combination of independent variables. Cox and Snell's R-Square reproduces multiple R-Square based on 'likelihood', but its maximum can be less than 1.0. The Nagelkerke modification is a more reliable measure of the relationship with ranging from 0 to 1. Nagelkerke's R^2 will usually be higher than the Cox and Snell measure. McFadden is received from dividing the change in log-likelihood by log-likelihood of null model.

3.5   Wald Test

The Wald test (also called the Wald Chi-Squared Test) is a way to find out if explanatory variables in a model are significant. Wald statistic equals to square of the ratio of the coefficient to its standard error. If the significance level of the Wald statistic is small (less than 0.05) then the parameter is different from 0. Parameters with significant negative coefficients decrease the likelihood of that response category with respect to the reference category. Parameters with positive coefficients increase the likelihood of that response category. The parameter associated with the last category of each factor is redundant given the intercept term.

3.6   Odds Ratio

An odds ratio (OR) is a measure of association between an exposure and an outcome. The OR represents the odds that an outcome will occur given a particular exposure, compared to the odds of the outcome occurring in the absence of that exposure. The regression coefficient (b) is the estimated increase in the log odds of the outcome per unit increase in the value of the exposure. An odds ratio > 1 suggests exposure associated with higher odds of outcome, whereas a ratio < 1 suggests exposure associated with lower odds of outcome. An odds ratio = 1 suggests.

3.7   Wealth Index and Principal Component Analysis (PCA)

Before analyzing data by multinomial logistic regression, wealth index that is a necessary predictor variable for analyzing is needed to find. The wealth index is a composite measure of a household's cumulative living standard. In countries that lack reliable data on income and expenditures, the wealth index is particularly valuable to measure household economic status. The wealth index is calculated using data on a household's ownership of selected assets, such as televisions and bicycles; materials used for housing construction; and types of water access and sanitation facilities and other characteristics that are related to wealth status. These assets variables are needed to recode into binary variables to calculate wealth index. Each household asset is assigned as a weight or factor score generated with Principal Component Analysis. The resulting asset scores are standardized with respect to a standard normal distribution with mean zero and standard deviation of one. Theses standardized scores can be used in creating break points that define wealth quintiles. The first principal component can explain the largest proportion of the total variance and it can be used

as the wealth index to represent the household's wealth. The wealth index quintiles divide the population into five equally large groups as: poorest, poorer, middle, richer and richest, based on their wealth rank. The following set of variables is used in PCA methodology for determining wealth quintiles of women in Myaungmya District.

Table (3.1) Selected Variables for Constructing Wealth Index

Housing Materials Indicators	Code
Types of residence	0 = Other
	1 = Brick or wooden house
Roof	0 = Other
	1 = Corrugated sheet or concrete
Floor	0 = Other
	1 = Wood or concrete
Electricity, Water Source and Sanitation	**Code**
Lighting	0 = Non electricity
	1 = Electricity
Drinking water	0 = Other
	1 = Tap water/tube well/ protected well
Toilet	0 = Other
	1 = Flush or water seal
Ownership of Household Assets	**Code**
Radio	0 = No
	1 = Yes
Television	0 = No
	1 = Yes
Land line phone	0 = No
	1= Yes
Mobile phone	0 = No
	1 = Yes
Motorcycle	0 = No
	1= Yes
Bicycle	1 = Yes
	0 = No
Boat	0 = No
	1= Yes
Motorboat	0 = No
	1= Yes
Cart (bullock)	0 = No
	1= Yes

3.8 The Determinants of Women's Educational Attainment in Myaungmya District

The variables used in this study were distinguished into two types, namely woman's educational attainment as the response variable (Y) and which is measured by six levels and female-headed, woman's marital status, residence, woman's age and wealth index as predictor variables ($X_1, \ldots, X_5$).

Woman's Educational Attainment: The woman's educational attainment variable was coded to 1 for no schooling, 2 for primary school (grade 1-5), 3 for middle school (grade 6-9), 4 for high school (grade 10-11), 5 for undergraduate (college, vocational training and undergraduate diploma) and 6 for graduate (graduate, postgraduate diploma, master degree and PhD). Table (3.2) displays the response variable with categories' names and codes.

Table (3.2) Categories' Names and Codes of the Response Variable

Categories (Y)	The Highest Education Level Completed	Code
No schooling	None	1
Primary School	Grade 1 to 5	2
Middle School	Grade 6 to 9	3
High School	Grade 10 to 11	4
Undergraduate	College, Vocational Training and Undergraduate	5
Graduate	Graduate, Postgraduate Diploma, Master Degree and PhD	6

Each predictor variable that is used in this study consists of several categories. These are:

Female-Headed: Female-headed is assigned to 1 for yes and 2 for no.

Woman's Marital Status: Woman's marital status is described by two categories coded 1 for single and 2 for married woman including widowed, divorced and renounced.

Residence: A woman who lived in urban is coded to 1 and a woman who lived in rural is coded to 2.

Woman's Age: Woman's age is separated into three groups coded 1 for 25-44, 2 for 45-64 and 3 for 65 and over.

Wealth Index: The residents of sample women population were divided into five groups of wealth index. Number of coding used 1 for richest, 2 for richer, 3 for middle, 4 for poorer, and 5 for poorest.

Predictor variables to estimate women's educational attainment are shown in Table (3.3).

Table (3.3) Predictor Variables for Women's Educational Attainment

Variable designation	Description	Value labels
X_1	Female-Headed	1 = Yes
		2 = No
X_2	Woman's marital status	1 = Single
		2 = Married
X_3	Residence	1 = Urban
		2 = Rural
X_4	Woman's age	1 = 25-44
		2 = 45-64
		3 = 65 and over
X_5	Wealth index	1 = Richest
		2 = Richer
		3 = Middle
		4 = Poorer
		5 = Poorest

CHAPTER IV
RESULTS AND FINDINGS

In this chapter, results and findings are presented with descriptive analysis and data analysis by using multinomial logistic regression.

4.1   Descriptive Analysis of Women's Educational Attainment

This section is composed by construction of wealth index, level of women's educational attainment and women's socioeconomic characteristics.

4.1.1   Construction of Wealth Index

Wealth index is constructed through Principal Component Analysis (PCA). To compute PCA, housing materials indicators, electricity, water source and sanitation, and ownership of household assets are used in this study. Housing materials indicators include types of residence, roof and floor. Besides, lighting, drinking water and toilet are involved in electricity, water source and sanitation. In addition, ownership of household assets is composed of radio, television, land line phone, mobile phone, motorcycle, bicycle, boat, motorboat and cart (bullock). Factor weights, means and standard deviation obtained from calculating PCA are described in Table (4.1).

Table (4.1) Factor Weights, Means and Standard Deviation

Using Variables	Component 1	Mean	Std. Deviation
Type residence	0.189	0.57	0.495
Lighting	0.150	0.14	0.345
Drinking water	0.052	0.31	0.464
Toilet	0.111	0.78	0.415
Roof	0.189	0.38	0.486
Floor	0.159	0.76	0.429
Radio	0.056	0.46	0.499
Television	0.178	0.50	0.500
Land line phone	0.105	0.06	0.238
Mobile phone	0.183	0.22	0.413
Motorcycle/Moped	0.164	0.18	0.381
Bicycle	0.144	0.37	0.483
Canoe/Boat	-0.003	0.17	0.374
Motorboat	0.057	0.09	0.281
Cart (bullock)	0.054	0.12	0.323

Source: The 2014 Myanmar Population and Housing Census

The values of component 1 for each variable are assigned as "factor weights" in constructing wealth index. Means and standard deviation are standardized scores which are used in creating break points that define wealth quintiles. Wealth index scores that are received from calculating wealth index using these factor weights are presented with range of scores in Table (4.2).

Table (4.2) Range of Wealth Index Values

Quintile	Wealth Index Score	Wealth Index Score
Poorest	-0.22182	0.05018
Poorer	0.05118	0.39818
Middle	0.40018	0.71918
Richer	0.71924	1.05724
Richest	1.05824	1.71124

Source: The 2014 Myanmar Population and Housing Census

4.1.2   Level of Women's Educational Attainment

Table (4.3) provides the distribution of women's educational attainment of Myaungmya District. The level of women's educational attainment is classified into six levels: no schooling, primary school, middle school, high school, undergraduate and graduate.

Table (4.3) Level of Women's Educational Attainment

Variable		Number	Percentage (%)
Woman's Educational Attainment	No Schooling	3,654	16.8
	Primary School	12,440	57.2
	Middle School	2,786	12.8
	High School	1,402	6.4
	Undergraduate	423	1.9
	Graduate	1,045	4.8

Source: The 2014 Myanmar Population and Housing Census

There are 3,654 women aged 25 and over who have never attended school. The number of women aged 25 and over who have been completed primary school, middle school and high school are 12,440 women, 2,786 women and 1,402 women respectively. The percentages of women's educational attainment of Myaungmya District are 16.8 percent for no schooling, 57.2 percent for primary school, 12.8 percent for middle school and 6.4 percent for high school. In addition, there are 423 women and 1,045 women have been finished undergraduate and graduate. Their percentages are 1.9 percent and 4.8 percent respectively.

4.1.3   Women's Socioeconomic Characteristics

In this section, women's socioeconomic characteristics which are used in analysis are described by number and percentage in Table (4.4).

Table (4.4) Women's Socioeconomic Characteristics

Variables		Number	Percentage (%)
Female-Headed	Yes	3,494	16.1
	No	18,256	83.9
Woman's Marital Status	Single	3,240	14.9
	Other	18,510	85.1
Residence	Urban	3,091	14.2
	Rural	18,659	85.8
Woman's Age	25-44	11,845	54.5
	45-64	7,649	35.2
	65 and over	2,256	10.4
Wealth Index	Richest	4,331	19.9
	Richer	4,380	20.1
	Middle	4,340	20.0
	Poorer	4,347	20.0
	Poorest	4,352	20.0

Source: The 2014 Myanmar Population and Housing Census

The number of women aged 25 and over who are heads of household and others have 3,494 women and 18,256 women with 16.1 percent and 83.9 percent respectively. The number of single women and married women who reached at aged 25 and over are 3,240 and 18,510 women and their percentages are 14.9 percent and 85.1 percent. There are 3,091 women aged 25 and over who are living in urban area and 18,659 women at those aged who are living in rural area. The percentage of women living in urban area is 14.2 percent and that of women living in rural area is 85.8 percent.

Woman's age is divided into three groups; there are 11,845 women in age group (25-44) with 54.5 percent, 7,649 women in age group (45-64) with 35.2 percent and 2,256 women in age group (65 and over) with 10.4 percent. The first category of wealth index labeled richest includes 4,331 women with 19.9 percent. The second category of wealth index named richer has 4,380 women with 20.1 percent. The third and fourth categories of wealth index called middle and poorer involve 4,340 and

4,347 women and both of their percentages are 20 percent. The last category of wealth index labeled poorest includes 4,352 women with 20 percent.

4.2   Data Analysis of Women's Educational Attainment

In this part, women's educational attainment of Myaungmya District is analyzed by multinomial logistic regression.

4.2.1   Model Fitting Information

In multinomial logistic regression, -2 log likelihood, Cox & Snell R^2, Nagelkerke R^2, McFadden R^2 and overall correct prediction are used to test whether the model is fit or not.

Table (4.5) Model Fitting Information

Model Fitting Criteria	Chi-Square Value	df	P-value
-2 Log Likelihood	6,514.516	45	0.000
Cox & Snell R Square	0.259		
Nagelkerke R Square	0.280		
McFadden R Square	0.117		
Overall Correct Prediction	58.4%		

Source: The 2014 Myanmar Population and Housing Census

In the above Table (4.5), the likelihood ratio chi-square of 6,514.516 with a p-value (0.000) shows that model containing the full set of predictors fits significantly better than an empty or null model (i.e., a model with no predictors). The model fitting information includes three different ways of estimating R-square (Cox & Snell R^2, Nagelkerke R^2 and McFadden R^2). These "Pseudo" R squared values indicate that 25.9 percent, 28 percent and 11.7 percent of the variation in woman's educational attainment can be explained from the linear combination of head of household, woman's marital status, residence, woman's age and wealth index. Overall, 58.4 percent of the women are predicted correctly.

4.2.2 Parameter Estimates for Women's Educational Attainment

The parameter estimates for the women's educational attainment of Myaungmya District by using multinomial logistic regression model are shown in Table (4.6).

Table (4.6) Results of Fitting Multinomial Logistic Regression

No Schooling			B	S. E	Wald	df	Sig.	Exp(B)
Primary School		Intercept	-0.781	.065	143.584	1	.000	
	Female-Headed	Yes	-0.069	.051	1.834	1	.176	.933
		No (ref)						
	Woman's Marital Status	Single	0.134*	.069	3.782	1	.052	1.143
		Married (ref)						
	Residence	Urban	0.107	.076	1.990	1	.158	1.113
		Rural (ref)						
	Woman's Age	25-44	1.917***	.062	970.596	1	.000	6.803
		45-64	1.216***	.058	443.347	1	.000	3.375
		65 and over (ref)						
	Wealth Index	Richest	1.415***	.080	315.841	1	.000	4.118
		Richer	1.121***	.063	314.755	1	.000	3.067
		Middle	0.834***	.057	211.661	1	.000	2.303
		Poorer	0.530***	.054	96.065	1	.000	1.699
		Poorest (ref)						
Middle School		Intercept	-3.492	.114	930.420	1	.000	
	Female-Headed	Yes	-0.103	.076	1.825	1	.177	.902
		No (ref)						
	Woman's Marital Status	Single	0.273***	.083	10.768	1	.001	1.314
		Married (ref)						
	Residence	Urban	0.907***	.086	110.561	1	.000	2.477
		Rural (ref)						

			B	S.E.	Wald	df	Sig.	Exp(B)
	Woman's Age	25-44	2.458***	.098	633.367	1	.000	11.677
		45-64	1.358***	.095	202.969	1	.000	3.887
		65 and over (ref)						
	Wealth Index	Richest	2.842***	.104	752.103	1	.000	17.147
		Richer	2.085***	.092	513.083	1	.000	8.048
		Middle	1.370***	.091	225.446	1	.000	3.935
		Poorer	0.910***	.090	102.550	1	.000	2.485
		Poorest (ref)						
High School		Intercept	-5.824	.197	874.812	1	.000	
	Female-Headed	Yes	0.019	.102	.036	1	.849	1.020
		No (ref)						
	Woman's Marital Status	Single	0.577***	.093	38.442	1	.000	1.781
		Married (ref)						
	Residence	Urban	1.379***	.095	208.766	1	.000	3.972
		Rural (ref)						
	Woman's Age	25-44	3.343***	.154	469.604	1	.000	28.299
		45-64	1.980***	.153	168.013	1	.000	7.241
		65 and over (ref)						
	Wealth Index	Richest	3.847***	.151	644.931	1	.000	46.842
		Richer	2.807***	.146	371.235	1	.000	16.553
		Middle	1.855***	.151	151.347	1	.000	6.389
		Poorer	1.110***	.156	50.294	1	.000	3.033
		Poorest (ref)						
Undergraduate		Intercept	-3.658	.188	378.695	1	.000	
	Female-Headed	Yes	0.174	.130	1.781	1	.182	1.190
		No (ref)						
	Woman's Marital Status	Single	0.165	.160	1.060	1	.303	1.179
		Married (ref)						
	Residence	Urban	0.266*	.162	2.710	1	.100	1.305

			B	S.E.	Wald	df	Sig.	Exp(B)
		Rural (ref)						
	Woman's Age	25-44	0.745***	.155	23.235	1	.000	2.106
		45-64	0.497***	.141	12.452	1	.000	1.644
		65 and over (ref)						
	Wealth Index	Richest	2.188***	.184	140.961	1	.000	8.922
		Richer	1.380***	.178	59.960	1	.000	3.973
		Middle	1.161***	.171	46.131	1	.000	3.194
		Poorer	0.429**	.187	5.264	1	.022	1.535
		Poorest (ref)						
Graduate		Intercept	-8.065	.334	581.362	1	.000	
	Female-Headed	Yes	-0.148	.136	1.184	1	.277	.863
		No (ref)						
	Woman's Marital Status	Single	1.221***	.097	158.204	1	.000	3.392
		Married (ref)						
	Residence	Urban	1.571***	.103	231.464	1	.000	4.813
		Rural (ref)						
	Woman's Age	25-44	4.102***	.219	350.165	1	.000	60.434
		45-64	2.295***	.220	108.556	1	.000	9.922
		65 and over (ref)						
	Wealth Index	Richest	5.278***	.267	389.630	1	.000	195.958
		Richer	3.590***	.268	179.129	1	.000	36.236
		Middle	2.308***	.281	67.255	1	.000	10.053
		Poorer	1.011***	.316	10.247	1	.001	2.750
		Poorest (ref)						

Source: The 2014 Myanmar Population and Housing Census

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

Reference category = No Schooling

Since no schooling is specified as the reference category, the other categories such as primary school, middle school, high school, undergraduate and graduate have to be compared against no schooling. In comparing primary school versus no schooling, the coefficients of female-headed and urban area are not statistically significant. In the case of woman's marital status, the coefficient of single woman is statistically significant at 10% level and its sign is positive. The odds ratio shows that single women are more likely to be finished primary school than married women.

It has been found that the coefficients of age groups (25-44) and (45-64) are also statistically significant at 1% level and their signs are positive. The odds ratios indicate that women in these age groups are more likely to be fulfilled primary school than those in age group (65 and over). In the case of wealth index, the coefficients of the all quintiles of wealth index (richest, richer, middle and poorer) are statistically significant at 1% level and their signs are positive. The odds ratios point out richest women, richer women, women who are in the middle wealth quintile and poorer women have more chance to be accomplished primary school than poorest women.

In comparing middle school versus no schooling, the coefficient of female-headed is not statistically significant. In the case of woman's marital status, the coefficient of single woman is statistically significant at 1% level and its sign is positive. The odds ratio shows that single women are more likely to be finished middle school than married women. It has been found that the coefficient of urban area is also statistically significant at 1% level and its sign is positive. The odds ratio points out women who live in the urban area have been more completed middle school than women living in rural area.

It can also be found that the coefficients of age groups (25-44) and (45-64) are statistically significant at 1% level and their signs are positive. The odds ratios indicate that women in these age groups are more likely to be fulfilled middle school than those in age group (65 and over). In the case of wealth index, the coefficients of the all quintiles of wealth index (richest, richer, middle and poorer) are statistically significant at 1% level and their signs are positive. The odds ratios point out richest women, richer women, women who are in the middle wealth quintile and poorer women have more chance to be accomplished middle school than poorest women.

In comparing high school versus no schooling, the coefficient of female-headed is not statistically significant. In the case of woman's marital status, the coefficient of single woman is statistically significant at 1% level and its sign is

positive. The odds ratio shows that single women are more likely to be finished high school than married women. It has been found that the coefficient of urban area is also statistically significant at 1% level and its sign is positive. The odds ratio points out women who live in the urban area have been more completed high school than women living in rural area.

It can also be found that the coefficients of age groups (25-44) and (45-64) are statistically significant at 1% level and their signs are positive. The odds ratios indicate that women in these age groups are more likely to be fulfilled high school than those in age group (65 and over). In the case of wealth index, the coefficients of the all quintiles of wealth index (richest, richer, middle and poorer) are statistically significant at 1% level and their signs are positive. The odds ratios point out richest women, richer women, women who are in the middle wealth quintile and poorer women have more chance to be accomplished high school than poorest women.

In comparing undergraduate versus no schooling, the coefficients of female-headed and single woman are not statistically significant. But the coefficient of urban area is statistically significant at 10% level and its sign is positive. The odds ratio points out women who live in the urban area have been more completed undergraduate level than women living in rural area.

It has been found that the coefficients of age groups (25-44) and (45-64) are statistically significant at 1% level and their signs are positive. The odds ratios indicate that women in these age groups are more likely to be fulfilled undergraduate level than those in age group (65 and over). In the case of wealth index, the coefficients of the first three quintiles of wealth index (richest, richer and middle) are statistically significant at 1% level and the coefficient of the poorer quintile is statistically significant at 5% level with positive signs. The odds ratios point out richest women, richer women, women who are in the middle wealth quintile and poorer women have more chance to be accomplished undergraduate level than poorest women.

In comparing graduate versus no schooling, the coefficient of female-headed is not statistically significant. In the case of woman's marital status, the coefficient of single woman is statistically significant at 1% level and its sign is positive. The odds ratio shows that single women are more likely to be finished graduate level than married women. It has been found that the coefficient of urban area is also statistically significant at 1% level and its sign is positive. The odds ratio points out women who

live in the urban area have been more completed graduate level than women living in rural area.

It can also be found that the coefficients of age groups (25-44) and (45-64) are statistically significant at 1% level and their signs are positive. The odds ratios indicate that women in these age groups are more likely to be fulfilled graduate level than those in age group (65 and over). In the case of wealth index, the coefficients of the all quintiles of wealth index (richest, richer, middle and poorer) are statistically significant at 1% level and their signs are positive. The odds ratios point out richest women, richer women, women who are in the middle wealth quintile and poorer women have more chance to be accomplished graduate level than poorest women.

CHAPTER V
CONCLUSION

In this chapter, the findings of women's educational attainment are presented with recommendations and further studies.

5.1 Findings

In most developing countries, employment opportunities and earnings differ greater by gender and education. Higher level of women's education can increase females' productivity by rising output in economic activities. Educated women can easily get a good job and complement all the basic needs and requirements of family. In this study, women's educational attainment of Myaungmya District is studied especially for who aged 25 and over. There have been seen that the number of women who have never attended, those women who are completed primary and middle schools are higher than those who have been completed high school, undergraduate level and graduate level.

In the data analysis using multinomial logistic regression, since no schooling is specified as the reference category, the other categories such as primary school, middle school, high school, undergraduate and graduate have to be compared against no schooling. In comparing primary school versus no schooling, single, age groups (25-44) and (45-64), and four quintiles of wealth index (richest, richer, middle and poorer) are statistically significant. There can also be seen that single women are more likely to be finished primary school than married women. Women in age groups (25-44) and (45-64) are more likely to be fulfilled primary school than those in age group (65 and over). According to the results of wealth index, there have been seen that women who are existing in the four levels of wealth index (richest, richer, middle and poorer) are more likely to be accomplished primary school than who are existing in poorest level.

In comparing middle school versus no schooling, single, urban, age groups (25-44) and (45-64), and four quintiles of wealth index (richest, richer, middle and poorer) are statistically significant. There can also be seen that single women are more likely to be finished middle school than married women. Women living in urban area have been more completed middle school than women living in rural area. Women in

age groups (25-44) and (45-64) are more likely to be fulfilled middle school than those in age group (65 and over). According to the results of wealth index, there have been seen that women who are existing in the four levels of wealth index (richest, richer, middle and poorer) are more likely to be accomplished middle school than who are existing in poorest level.

In comparing high school versus no schooling, single, urban, age groups (25-44) and (45-64), and four quintiles of wealth index (richest, richer, middle and poorer) are statistically significant. There can also be seen that single women are more likely to be finished high school than married women. Women living in urban area have been more completed high school than women living in rural area. Women in age groups (25-44) and (45-64) are more likely to be fulfilled high school than those in age group (65 and over). According to the results of wealth index, there have been seen that women who are existing in the four levels of wealth index (richest, richer, middle and poorer) are more likely to be finished high school than who are existing in poorest level.

In comparing undergraduate versus no schooling, urban, age groups (25-44) and (45-64), and four quintiles of wealth index (richest, richer, middle and poorer) are statistically significant. There can also be seen that women living in urban area have been more completed undergraduate level than women living in rural area. Women in age groups (25-44) and (45-64) are more likely to be fulfilled undergraduate level than those in age group (65 and over). According to the results of wealth index, there have been seen that women who are existing in the four levels of wealth index (richest, richer, middle and poorer) are more likely to be finished undergraduate level than who are existing in poorest level.

In comparing graduate versus no schooling, single, urban, age groups (25-44) and (45-64), and four quintiles of wealth index (richest, richer, middle and poorer) are statistically significant. There can also be seen that single women are more likely to be finished graduate level than married women. Women living in urban area have been more completed graduate level than women living in rural area. Women in age groups (25-44) and (45-64) are more likely to be fulfilled graduate level than those in age group (65 and over). According to the results of wealth index, there have been seen that women who are existing in the four levels of wealth index (richest, richer, middle and poorer) are more likely to be finished graduate level than who are existing in poorest level.

5.2   Recommendations

Throughout the developing world, girls are disproportionately carried out household works such as preparing food and washing clothes, etc. It can be the primary reason that girls are kept in home rather than attending school. Thus, all members of the family should help them to reduce the burden of chores. In addition, since women who are not heads of household do not have empowerment, their family or their heads of household should be allowed and supported if these women wished to attend the school. In many countries, married women who become pregnant while attending school are prohibited to return to their studies. To increase married women's educational attainment in such situation, there are needed to give the chance for these women to re-admit after giving birth or to introduce the alternative education for them to complete their education.

People who are living in rural area are usually less interest in education than those living in urban area. Since their main livelihood is agriculture, many labour are needed in cultivation time and harvest time. Thus, those people may not attend school normally in this time. Therefore, knowledge about how much education is important should be shared to people who are living in rural area. Generally, only small number of schools has in most rural areas. And some schools are located in difficult places to go. These facts may also be affected on the educational attainment of women living in rural area. Therefore, government should be more constructed schools in the places of easy to go in such rural areas. Moreover, government should be performed to achieve the right to free education and should be supplied the necessary education facilities for poor women in order to involve in the higher levels of women educational attainment.

5.3   Further Studies

This study is analyzed only educational attainment of women for Myaungmya District. Nevertheless, educational attainment can be studied for males. Moreover, educational attainment of younger adults can be compared with that of older adults when the educational attainment of an age group today and a group of the same age in the past had in the data. If the predictor variables such as parents' academic achievements, emerging adult children's perception of their parent's socio-economic status and educational attainment of the emerging adult children a response variable can be got, the correlation between these two predictor variables and educational

attainment of the emerging adult children can be analyzed. Although multinomial logistic regression was used in this study, ordinal logistic regression is more suitable for the education data. If the data met with ordinal logistic regression's assumptions, this method can be used.

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APPENDIX

Table (A-1)

Results of Fitting Multinomial Logistic Regression

No Schooling			B	S. E	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
									Lower Bound	Upper Bound
Primary School		Intercept	-.781	.065	143.584	1	.000			
	Female-Headed	Yes	-.069	.051	1.834	1	.176	.933	.844	1.031
		No (ref)								
	Woman's Marital Status	Single	0.134*	.069	3.782	1	.052	1.143	.999	1.308
		Married (ref)								
	Residence	Urban	0.107	.076	1.990	1	.158	1.113	.959	1.292
		Rural (ref)								
	Woman's Age	25-44	1.917***	.062	970.596	1	.000	6.803	6.030	7.675
		45-64	1.216***	.058	443.347	1	.000	3.375	3.014	3.780
		65 and over (ref)								
	Wealth Index	Richest	1.415***	.080	315.841	1	.000	4.118	3.523	4.813
		Richer	1.121***	.063	314.755	1	.000	3.067	2.710	3.471
		Middle	0.834***	.057	211.661	1	.000	2.303	2.058	2.577
		Poorer	0.530***	.054	96.065	1	.000	1.699	1.528	1.889
		Poorest (ref)								
Middle School		Intercept	-3.492	.114	930.420	1	.000			
	Female-Headed	Yes	-0.103	.076	1.825	1	.177	.902	.777	1.048
		No (ref)								
	Woman's Marital Status	Single	0.273***	.083	10.768	1	.001	1.314	1.116	1.546
		Married (ref)								
	Residence	Urban	0.907***	.086	110.561	1	.000	2.477	2.092	2.933

			B	S.E.	Wald	df	Sig.	Exp(B)	Lower	Upper
		Rural (ref)								
	Woman's Age	25-44	2.458***	.098	633.367	1	.000	11.677	9.643	14.140
		45-64	1.358***	.095	202.969	1	.000	3.887	3.225	4.685
		65 and over (ref)								
	Wealth Index	Richest	2.842***	.104	752.103	1	.000	17.147	13.995	21.008
		Richer	2.085***	.092	513.083	1	.000	8.048	6.719	9.639
		Middle	1.370***	.091	225.446	1	.000	3.935	3.291	4.706
		Poorer	0.910***	.090	102.550	1	.000	2.485	2.083	2.963
		Poorest (ref)								
High School		Intercept	-5.824	.197	874.812	1	.000			
	Female-Headed	Yes	0.019	.102	.036	1	.849	1.020	.835	1.244
		No (ref)								
	Woman's Marital Status	Single	0.577***	.093	38.442	1	.000	1.781	1.484	2.138
		Married (ref)								
	Residence	Urban	1.379***	.095	208.766	1	.000	3.972	3.294	4.789
		Rural (ref)								
	Woman's Age	25-44	3.343***	.154	469.604	1	.000	28.299	20.916	38.290
		45-64	1.980***	.153	168.013	1	.000	7.241	5.368	9.769
		65 and over (ref)								
	Wealth Index	Richest	3.847***	.151	644.931	1	.000	46.842	34.810	63.034
		Richer	2.807***	.146	371.235	1	.000	16.553	12.442	22.022
		Middle	1.855***	.151	151.347	1	.000	6.389	4.755	8.586
		Poorer	1.110***	.156	50.294	1	.000	3.033	2.232	4.121
		Poorest (ref)								
Undergraduate		Intercept	-3.658	.188	378.695	1	.000			
	Female-Headed	Yes	0.174	.130	1.781	1	.182	1.190	.922	1.536
		No (ref)								
	Woman's Marital Status	Single	0.165	.160	1.060	1	.303	1.179	.862	1.613
		Married (ref)								
	Residence	Urban	0.266*	.162	2.710	1	.100	1.305	.951	1.791
		Rural (ref)								

			B	S.E.	Wald	df	Sig.	Exp(B)	Lower	Upper
	Woman's Age	25-44	0.745***	.155	23.235	1	.000	2.106	1.556	2.851
		45-64	0.497***	.141	12.452	1	.000	1.644	1.247	2.167
		65 and over (ref)								
	Wealth Index	Richest	2.188***	.184	140.961	1	.000	8.922	6.216	12.804
		Richer	1.380***	.178	59.960	1	.000	3.973	2.802	5.634
		Middle	1.161***	.171	46.131	1	.000	3.194	2.284	4.465
		Poorer	0.429**	.187	5.264	1	.022	1.535	1.064	2.214
		Poorest (ref)								
Graduate		Intercept	-8.065	.334	581.362	1	.000			
	Female-Headed	Yes	-0.148	.136	1.184	1	.277	.863	.661	1.126
		No (ref)								
	Woman's Marital Status	Single	1.221***	.097	158.204	1	.000	3.392	2.804	4.102
		Married (ref)								
	Residence	Urban	1.571***	.103	231.464	1	.000	4.813	3.931	5.893
		Rural (ref)								
	Woman's Age	25-44	4.102***	.219	350.165	1	.000	60.434	39.329	92.865
		45-64	2.295***	.220	108.556	1	.000	9.922	6.443	15.277
		65 and over (ref)								
	Wealth Index	Richest	5.278***	.267	389.630	1	.000	195.958	116.029	330.949
		Richer	3.590***	.268	179.129	1	.000	36.236	21.420	61.301
		Middle	2.308***	.281	67.255	1	.000	10.053	5.791	17.452
		Poorer	1.011***	.316	10.247	1	.001	2.750	1.480	5.108
		Poorest (ref)								

Source: The 2014 Myanmar Population and Housing Census

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