

Ministry of Co-operatives and Rural Development
University of Co-operative and Management, Sagaing

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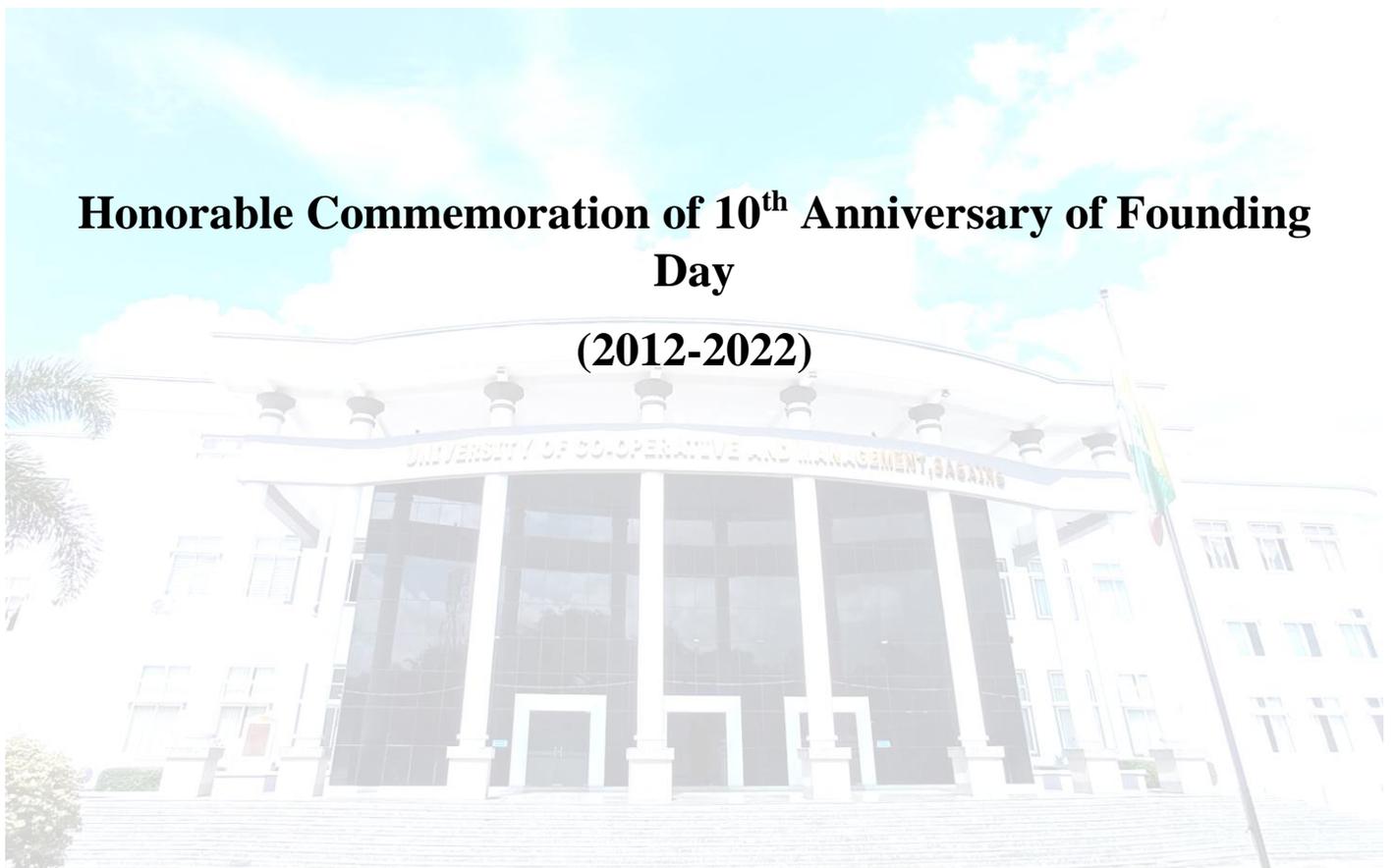
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Ministry of Cooperatives and Rural Development
University of Co-operative and Management, Sagaing

“Towards Better Research For Socio-economic Development”

**Honorable Commemoration of 10th Anniversary of Founding
Day
(2012-2022)**



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Research Journal Vol.5 , No.1
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FOREWORD

A decade has passed since the inauguration of the University of Cooperative and Management, Sagaing. The development of our institution can be obviously seen by observing our energetic efforts and successes in all relevant fields.

Union Minister of Cooperatives and Rural Development encourages the academic platform to carry out research in respective fields of our institution. Research and development are the lifeblood of the university essential to the socio-economic development of the nation. This journal aims at advancement of research in all areas of business and economics. We have published the first collection of research papers since 2014. I heartily appreciate the successful publication of this collection of research papers Volume 5, No(1). As our university signed with the KOMYRA on 29th October 2021, the academic staffs know the value and usefulness of research work well. Now, they have a good opportunity to participate in KOMYRA Journal.

I fully appreciate the innovation and strenuous efforts of all individuals who made their contributions towards the accomplishment of this collection. I would also like to thank all the faculty members of our university, University of Cooperative and Management, Sagaing who are trying to promote the community development through their noble profession.

Dr. Moe Moe Yee
Rector

University of Co-operative and Management, Sagaing, 2022

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The Determinants of Smallholder Tea Production in Yatsauk Township

Khin San Kyi¹

Abstract

This paper presents the tea production of the smallholders of tea farms in Yatsauk township. Three villages out of (26) tea cultivated villages in Yatsauk township were selected to analysis data by using cluster sampling method. Multiple regression analysis was used to analyze factors affecting tea production in Yatsauk township. There are (127) households in Htin Shu Pyar Village, (59) households in Nga Pyaw Kyin Village and (35) households in Yote Gyi Village, respectively. The purposes of this study are to study the current situation of tea cultivating and its constraints in Yatsauk township and to analyze the effect of inputs on tea production in Yatsauk township. Accounting to the survey, the male headed household in this township is higher than female headed one. Most households do not use fertilizer in tea farming. Most of the tea farmers got organic certificates. Most of tea farmers produce pickled tea. Most households own land in this township. Most of tea farmers need technical support, machine, transportation, financial support from government and other organizations. Among the fitted regression models, Model I was chosen as the best fitted or most suitable estimated model of the yield of tea. In the model I, all exogenous variables are significant and the yield of tea is explained by land of tea cultivation, age of tea plants, total number of labor, tea expenditure in tea farming. Therefore, the government should focus on research, develop new varieties and implement effective polices to support tea farmers.

Keywords: Tea production, Multiple Regression Model, Double Log Model, Lin Log Model Log Lin Model, Cluster Sampling Method

1. Introduction

Tea tree is an evergreen crop, one of the leading cash crops in world agriculture and one of the oldest beverages in the world. Tea is produced in tropical and semi-tropical countries and is grown in about (64) countries in the world. Tea plays a significant role in rural development, poverty reduction and food security in developing countries. Tea is used as a major source of base product for medicinal theophylline in the world. Today, tea is widely consumed as an ancient beverage and has become a part of modern life in China, India, Sri Lanka, Japan, Russia, UK, Myanmar and etc.

Tea is one of the most popular and lowest cost beverages in the world and consumed by a large number of people especially in Myanmar. Tea plays a vital role in mountainous regions' agriculture of Myanmar. In fact, one of the first tea plants is now over one thousand years old and exists on Mount Lwal Sal in the Northern Shan state. Myanmar has the longest history of tea cultivation. Kutkai, Kyaukme, Namhsan, Namkham and Manton from Northern Shan state, and Pindaya, Pinlaung, Yatsauk and Ywar Ngan from Southern Shan state are major tea production areas. The best tea in Myanmar is known to be produced in the mountain ranges of Shan state, where the tea leaf plantations extend from the rugged mountain-sides to the terraced farms.

In Myanmar, Shan state is bordered by Kachin to the north, Mandalay to the west, Bago to the south west and Kayin and Kayah to the south. Shan state is the Myanmar's biggest and the second populous administrative unit. Twenty-five per cent of the country's total tea production occurs in Southern Shan. Pindaya, Pinlaung, Yatsauk and Ywar Ngan from southern Shan state are major tea production areas, with most farming done by members of the Danu ethnic group.

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Yatsauk township is also known as Yan Aung, Nagar Gi, Yatha WaTi, Yatsaut and Yatsauk, was established by King Kawvira. Yatsauk Township is a Township of Taungyi District in Southern Shan State of Myanmar and is located on the east of Myanmar. According to Myanmar Population and Housing Census (2014), Yatsauk Township consists of (13) village tracts.

Farming is a main source of livelihood for many people in this township. Farmers in this Township plant seasonally many crops for earn. Tea and orange farming are the main source of livelihood for farmers in these villages. According to data from the Food and Agriculture Organization, Myanmar has been the eighth largest producer of tea in the world with an estimated (143,571) metric tons produced in 2019, with production steadily increasing year by year. Myanmar produces pickled tea in different forms other than tea producing countries in addition to green tea and black tea.

Nowadays, addressing the emerging issues requires adoption of technologies and practices that are easily accessible to and effective for tea farmers and can lead to improvements in tea productivity and have positive side-effects on environment. Most of rural farmers are not exposed to these modernized technologies and do not have access to basic resource. In cases, financial constraints will not afford them the opportunity to use the technology. Hence, most tea farmers still depend on the conventional methods for farming. Furthermore, when farmers cultivate these crops with the existing technology inefficiently, applying new technologies is less cost-effective than using the existing technology (Belbase & Grabowki, 1985; Shapiro, 1977). As such Myanmar tea productivity should be increased by using the existing resources efficiently.

Resource use efficiency in agricultural production has been an important subject of empirical investigation in developing countries, where majority of the farmers are poor in resources. Through efficient use of resources, productivity of agricultural production can be expanded and sustained by farmers. Agricultural production is the process of transforming inputs such as seeds, fertilizers, pesticides, water, labor, capital and other inputs to goods and services called output. These resources can be organized in a farm whose ultimate objectives are output maximization, cost minimization, and profit maximization.

Processing in southern Shan state is largely done at the household level using the traditional methods, which tend to result in lower quality end-products and a corresponding low value. The limited ownership over the different stages of the value chain by producers themselves reduces the added-value. The greater the number of different actors along the tea value chain, the more likely it is to lead to higher prices for end consumers. Tea farming is almost exclusively composed of SMEs and micro-producers and processors, most of whom are relatively poor. Many poor farmers in southern Shan state are already cultivating tea on naturally organic land, not using any chemicals. However, the land requires organic certification which is expensive before produce can be sold as such.

There are also limited papers about tea sector in Myanmar. Tea plantation in Southern Shan state takes place as a very small scales enterprise. Moreover, tea leaves in Southern Shan state leads to minimize the market price due to poorer taste and lower quality. Then, tea is sold through local tea dealers by tea farmers because there is not any tea whole sale market in

Southern Shan state. So, smallholder tea production is studied in order to develop tea farming sector in Yatsauk township of Southern Shan state.

1.1 Objectives of the Study

The objectives of this study are to study the current situation of tea farming and its constraints in Yatsauk township and to analyze the effect of inputs on tea production of Yatsauk township.

1.2 Material and Methods

The main sources of data are collected by using structural questionnaires with interview in quantitative and qualitative method. In this paper, descriptive statistics is applied for the analysis of data using simple statistical tools like average and percentages. Multiple regression analysis is applied for studying the effect of input on tea production of Yatsauk township. Primary data had been collected by questionnaire survey method. Research instruments that had been used for this research were questionnaire and personal interviews. A single questionnaire had been created and administered at Yatsak township by the researcher. The target population for this study was tea cultivating households from Yatsauk township. Cluster sampling method is an approach in which selection is conducted at tea farmer villages in Yatsauk township. There are (26) tea cultivating villages (clusters) in Yatsauk township. Three villages (clusters) which represent (11.5%) of total number of tea farmer villages (clusters) in Yatsauk were randomly selected from the total number of (26) tea farmer villages. Among them, (127) households of Htin Shu Pyar village in Ah Lel Chaung village Tract, (59) households of Nga Pyaw Kyin village and (35) households of Yote Gyi village are selected to analyze tea production by using cluster sampling method.

2. Literature Review

In order to understand the subject of socio-economic factors influencing tea production, it needs to investigate the existing previous studies that have been carried out on tea production and the extent to which some of them have paid attention to these factors. The information is relevant in identifying the gaps that need to be filled by this current study, and hence the justification for this particular work.

Laskar (2018) studied development of productivity measurement model with special reference to tea production in Assam. This study aimed to analyze the total productivity and partial productivity for tea production in Assam by using Multiple Regression model. As a result, welfare productivity, worker productivity and energy productivity had major influence in the total productivity of tea production in Assam.

Ateka, et al. (2018) studied productivity and its determinants in smallholder tea production in Bomet and Nyamira counties of Kenya. This study used a semi-log productivity regression model to investigate the determinants of productivity in smallholder tea production in Kenya. The results show that location specific heterogeneities, farm size, the intensity of family labor applied in tea farming, access to extension through the farmer field schools, credit utilization and the tea marketing arrangements have significant influence on tea productivity. The policy formulation and implementation process should take into account the existent regional heterogeneities in the different tea growing areas of Kenya.

Minh (2019) studied strategy for tea farming promotion in Vietnam: Case study of Tan Phu commune, Tan Son District, Phu Tho Province. This study aimed at bringing additional light on tea farming in Vietnam by studying how the socio-demographic factors, farming factors and communication factors affects strategies for tea farming promotion in Vietnam by using Multiple regression analysis. As a result, the adoption of new varieties, cultivate area changed and level of education were highly significant in influencing farmer's income. Farm size, number of family labor, number of years cultivating and farming expenditure also affected to tea farmer's income. Therefore, the government should focus on research, develop new varieties and implement effective policies to support tea farmers.

The above literature review has shown various studies that have been carried out in the world. These studies carried out some factors affecting of tea production by using multiple regression analysis. Though literature provided the variables used in the study was to facilitate some factors affecting of tea production above these methods.

3. Analysis of Tea Production in Yatsauk Township

In this section, these data represent the demographic characteristics of tea farmers in Htin Shu Pyar, Nga Pyaw Kyin and Yote Gyi villages.

3.1 Demographic Characteristics of Tea Farmers

Table (3.1) illustrates the socio-demographic characteristics and concerning factors in production of tea farmers in Htin Shu Pyar, Nga Pyaw Kyin and Yote Gyi villages.

Table 3.1 Demographic Characteristics of Tea Farmers (Percentage)

Variables	Measuring Group	Frequency	Percentage
Gender	Male	213	96.4
	Female	8	3.6
Age	18-27	23	10.4
	28-37	62	28.1
	38-47	47	21.3
	48-57	53	24.0
	58-67	24	10.9
	68-77	9	4.1
	78-87	3	1.4
Education	Illiterate	49	22.2
	Primary	164	74.2
	Middle	5	2.3
	High School	2	0.9
	Graduate	1	0.5
Number of Family Member	1-3	67	30.3
	4-6	134	60.6
	7-9	18	8.1
	10-12	2	0.9

Source: Survey Data (May, 2019)

According to this table, (96.4%) of household heads are male and (3.6%) are female in these villages. Almost all household heads are farmers. The proportion of the total population, age between (18) to (27) years is (10.4%), age between (28) to (37) years is (28.1%), age between (38) to (47) years is (21.3%), age between (48) to 57 years is (24%), age between (58) to (67) years is (10.9%), age between (68) to (77) years is (4.1%), age between (78) to (87) years is (1.4%) in these villages.

According to this table, the household heads who studied up to primary are (74.2%) and illiterate levels are (22.2%) in these villages. Then, (2.3%) of household heads are at middle school level. Next, (0.9%) of household heads and (0.5%) of household heads are at high school and graduate levels, respectively. It shows that most of the household heads are at primary school level.

According to this table, (30.3%) of households has from (1) to (3) family members, (60.6%) of households has from (4) to (6) family members, (8.1%) of households has from (7) to (9) family members. In addition, (0.9 %) of households has from (10) to (12) family members.

3.2 Production Functions of Tea Farmers in Yatsauk Township

Table (3.2) shows the number of households that owned land and the number of households whose possessions are tenants in Htin Shu Pyar, Nga Pyaw Kyin and Yote Gyi villages.

Table 3.2 Land Ownership

Villages	Owned Land	Tenant
Htin Shu Pyar	126	1
Nga Pyaw Kyin	59	-
Yote Gyi	34	1

Source: Survey Data (May, 2019)

According to this table, there are (126) households own land in Htin Shu Pyar village. All households own land in Nga Pyaw Kyin village. There are (34) households own land in Yote Gyi village.

Table (3.3) presents that total land ownership, tea sown acreage and tea yield in Htin Shu Pyar, Nga Pyaw Kyin and Yote Gyi villages.

Table 3.3 Total Land Ownership, Tea Sown Acreage and Tea Yield

Villages	Total Land Ownership (Acre)	Tea Sown Area (Acre)	Tea Yield (Viss)
Htin Shu Pyar	505	486	186,130
Nga Pyaw Kyin	508	499	1,165,015
Yote Gyi	269	259	51,105

Source: Survey Data (May, 2019)

According to this table, tea is planted in an area of (486) acres with production of (186,130) visses in Htin Shu Pyar village. Tea is planted in an area of (499) acres with production of (1,165,015) visses in Nga Pyaw Kyin village. Tea is planted in an area of (259) acres with production of (51,105) visses in Yote Gyi village.

Table (3.4) displays that the number and percentage of households currently use hat in tea farming in Htin Shu Pyar, Nga Pyaw Kyin and Yote Gyi villages.

Table 3.4 Current Use of Hat in Tea Farming

Villages		Yes	No	Total
Htin Shu Pyar	Count	122	5	127
	% of Total	55.2	2.3	57.5
Nga Pyaw Kyin	Count	53	6	59
	% of Total	24	2.7	26.7
Yote Gyi	Count	34	1	35
	% of Total	15.4	0.5	15.9
Total	Total	209	12	221
	% of Total	94.6	5.5	100

Source: Survey Data (May, 2019)

According to this table, almost all of households currently use hat in tea farming in these villages. Most of the households currently use hat in tea farming in Htin Shu Pyar village.

3.3 Characteristics of Pickled Tea

Table (3.5) presents that the number and percentage of households produce pickled tea in Htin Shu Pyar, Nga Pyaw Kyin and Yote Gyi villages.

Table 3.5 Production of Pickled Tea

Villages		Yes	No	Total
Htin Shu Pyar	Count	126	1	127
	% of Total	57	0.5	57.5
Nga Pyaw Kyin	Count	58	1	59
	% of Total	26.2	0.5	26.7
Yote Gyi	Count	34	1	35
	% of Total	15.4	0.5	15.9
Total	Total	218	3	221
	% of Total	98.6	1.5	100

Source: Survey Data (May, 2019)

According to this table, pickled tea was mainly produced in these three villages. Most of the households produce pickled tea in Htin Shu Pyar village.

Table (3.6) shows that the loss caused by insects and viruses in tea farms during a few years in Htin Shu Pyar, Nga Pyaw Kyin and Yote Gyi villages.

Table 3.6 Loss caused by Insects and Viruses in Tea Farms during a Few Years

Villages		Yes	No	Total
Htin Shu Pyar	Count	95	32	127
	% of Total	43	14.5	57.5
Nga Pyaw Kyin	Count	36	23	59
	% of Total	16.3	10.4	26.7
Yote Gyi	Count	23	12	35
	% of Total	10.4	5.4	15.8
Total	Total	154	67	221
	% of Total	69.7	30.3	100

Source: Survey Data (May, 2019)

According to this table, most of the households lost tea yield caused by insects and viruses during a few years in Htin Shu Pyar village. Some households lost tea yield caused by insects and viruses during a few years in Yote Gyi village.

Table (3.7) shows that the scarcity of labor during a few years in Htin Shu Pyar, Nga Pyaw Kyin and Yote Gyi villages.

Table 3.7 Scarcity of Labor During a Few Years

Villages		Yes	No	Total
Htin Shu Pyar	Count	95	32	127
	% of Total	43	14.5	57.5
Nga Pyaw Kyin	Count	44	15	59
	% of Total	19.9	6.8	26.7
Yote Gyi	Count	20	15	35
	% of Total	9	6.8	15.8
Total	Total	159	62	221
	% of Total	71.9	28	100

Source: Survey Data (May, 2019)

According to this table, most of the households have scarcity of labor during a few years in these villages. Most of the households have scarcity of labor during a few years in Htin Shu Pyar village. Half of the households have scarcity of labor during a few years in Yote Gyi village.

Table (3.8) shows that technical support from government and other organizations in Htin Shu Pyar, Nga Pyaw Kyin and Yote Gyi villages.

Table 3.8 Technical Support from Government and Other Organizations

Villages		Yes	No	Total
Htin Shu Pyar	Count	125	2	127
	% of Total	56.6	0.9	57.5
Nga Pyaw Kyin	Count	50	9	59
	% of Total	22.6	4	23
Yote Gyi	Count	32	3	35
	% of Total	14.5	1.4	15.9
Total	Total	207	14	221
	% of Total	93.7	6.3	100

Source: Survey Data (May, 2019)

According to this table, most of the households get technical support from government and other organizations in these villages. Most of the households get technical support from government and other organizations in Htin Shu Pyar village and nga Pyaw Kyin village. Some households get technical support from government and other organizations in Yote Gyi village.

Table (3.9) states that tendency to get financial support from government organization in Htin Shu Pyar, Nga Pyaw Kyin and Yote Gyi villages.

Table 3.9 Tendency to get Financial Support from Government and Other Organizations

Villages		Yes	No	Total
Htin Shu Pyar	Count	119	8	127
	% of Total	53.8	3.6	57.4
Nga Pyaw Kyin	Count	49	10	59
	% of Total	22.2	4.5	267
Yote Gyi	Count	30	5	35
	% of Total	13.6	2.3	15.9
Total	Total	198	23	221
	% of Total	89.6	10.4	100

Source: Survey Data (May, 2019)

According to this table, most of the households want financial support from government and other organizations in these villages. Most of the households want financial support from government and other organizations in Htin Shu Pyar village. Some households want financial support from government and other organizations in Yote Gyi village.

Table (3.10) illustrates the important factors for tea farming improvement in Htin Shu Pyar, Nga Pyaw Kyin and Yote Gyi villages.

Table 3.10 Important Factors for Tea Farming Improvement

Villages	Htin Shu Pyar		Nga Pyaw Kyin		Yote Gyi		Total	
	Count	%	Count	%	Count	%	Count	%
Technology	24	18.9	18	30.5	6	17.1	48	66.5
Transportation	18	14.2	6	10.2	11	31.4	35	55.8
Price	45	35.4	13	22	16	45.7	74	103.1
Electricity	3	2.4	-	-	4	11.4	7	13.8
Machines	5	3.9	5	8.5	3	8.6	13	21
Labor	1	0.8	4	6.8	1	2.9	6	10.5
Market	19	15	4	6.8	2	5.7	25	27.5
Tea Land	8	6.3	5	8.5	1	2.9	14	17.8
Investment	16	12.6	4	6.8	2	5.7	22	25.1
Take Loan	5	3.9	-	-	-	-	5	3.9
Education	6	4.7	-	-	-	-	6	4.7
Packaging	10	7.9	1	1.7	-	-	11	9.6

Source: Survey Data (May, 2019)

According to this table, there are many important factors to improve their tea farming in these villages. There is (103.1%) of households need good tea price and (66.5%) of households need technology, (55.8%) of households need transportation access to tea market. Most of the households need technology, transportation and good tea price for tea farming improvement.

3.4 Various Functional Forms of Multiple Regression Models

In most situations, the relevant theoretical information is a qualitative nature, suggesting which economic variables play a role and perhaps whether variables are positively

or negatively related. In practice, it often occurs that an initially chosen econometric model does not fit well to the data.

The model may turn out to weak because important aspects of the data are left unexplained or because some of the basic assumptions underlying the econometric model are violated. So, the selection and adjustment of models is required to relevant data characteristics, relevant economic and business phenomena. And then several diagnostic tests need to be used that help to get the best fitted model.

Four types of functional form of multiple regression models are considered for tea yield. They are

Model I	Multiple Linear Regression Model,
Model II	Double Log Model,
Model III	Log-Lin Model and
Model IV	Lin-Log Model.

3.4.1 Multiple Linear Regression Model for Tea Yield

The multiple linear regression model for tea yield is as follows:

$$TYLD = \alpha + \beta_1 LAND + \beta_2 LBOR + \beta_3 AGET + \beta_4 TEXP + \beta_5 LOAN + \beta_6 UFER + \beta_7 UHAT + \varepsilon$$

Where

<i>TYLD</i>	= tea yield,
<i>LAND</i>	= land of tea cultivation,
<i>LBOR</i>	= total number of labor,
<i>AGET</i>	= age of tea plants,
<i>TEXP</i>	= tea expenditure,
<i>LOAN</i>	= loan (1= yes, 0= no),
<i>UFER</i>	= use of fertilizer (1= yes, 0= no),
<i>UHAT</i>	= current use of hat in tea farming (1= yes, 0= no) and
ε	= the disturbance terms.

The disturbance term is assumed to be independent and identically distributed normal random variable with mean zero and constant variance.

3.4.2 Double Log Model for Tea Yield

Though theory suggests conditioning variables that should be included, and suggests the signs of certain derivatives, it is usually silent regarding the functional form of the relationship between the dependent and independent variables. The double log model for tea yield is as follows:

This model, after taking logarithms, gives

$$\ln TYLD = \ln \alpha + \beta_1 \ln LAND + \beta_2 \ln LBOR + \beta_3 \ln AGET + \beta_4 \ln TEXP + \beta_5 LOAN + \beta_6 UFER + \beta_7 UHAT + \varepsilon$$

This model is linear in the parameters $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6$ and β_7 as well as linear in the logarithms of the variables *LAND, LBOR, AGET* and *TEXP*, except dummy variables such as *LOAN, UFER* and *UHAT*. Therefore, it can be estimated by the method of OLS. Because of this linearity, such models are called log-log or double-log models.

3.4.3 Log-Lin Model for Tea Yield

Economists, business people, and governments are often interested in finding out the rate of growth of certain economic variable. For descriptive purposes a model in which the dependent variable is logarithmic is called a log-lin model. The Log-Lin model of tea yield is as follows:

$$\ln TYLD = \alpha + \beta_1 LAND + \beta_2 LBOR + \beta_3 AGET + \beta_4 TEXP + \beta_5 LOAN + \beta_6 UFER + \beta_7 UHAT + \varepsilon$$

This model is also called semi-log model.

3.4.4 Lin-Log Model for Tea Yield

The model in which the dependent variable is linear but the independent variables(s) are logarithmic is called the lin-log model. The Lin-Log Model of tea yield is as follows:

$$TYLD = \ln \alpha + \beta_1 \ln LAND + \beta_2 \ln LBOR + \beta_3 \ln AGET + \beta_4 \ln TEXP + \beta_5 LOAN + \beta_6 UFER + \beta_7 UHAT + \varepsilon$$

This model is also called semi-log model.

3.5 Criteria of Selected Best Fitted Regression Line Equation

The best regression models are fitted and the results are shown in this research paper. Four possible regression models are fitted by the method of Ordinary Least Square. The best fitted regression model is chosen according to (1) global for evaluating the multiple regression model, (2) tests for individual regression coefficients and (3) adjusted R^2 .

3.6 Best Fitted Regression Models for Tea Yield

The proposed functional multiple regression models for tea yield in Yatsauk township on land of tea cultivation, total number of labor, age of tea plants and tea expenditure were fitted. Therefore, it also depends on loan, use of fertilizer and current use of hat in tea farming. The summary results are presented in Table (3.11).

Table 3.11 Summary Results of Estimates of Fitted Regression Models for Tea Yield

Variables	Estimated Coefficient			
	Model I	Model II	Model III	Model IV
CONSTANT	-880.78	2.021	6.373	-5560.301
LAND	114.882***	0.401***	0.044***	946.313***
LBOR	165.586*	0.327*	0.114**	582.175
AGET	-21.734***	-0.123	-0.009**	-307.336
TEXP	0.001***	0.327***	4.168***	498.150***
LOAN	540.184*	0.150	0.232	382.157
UFER	-716.451*	-0.317	-0.193	-759.871**
UHAT	1682.189*	0.322	0.712	606.364
Std. Error of Estimate	1967.417	0.963	1.062	1813.596
Adjusted R^2	0.206	0.278	0.160	0.253
F statistic	9.149***	25.528***	11.459***	22.591***

Source: Appendix (B)

* = Significant at 10% level, ** = Significant at 5% level, *** = Significant at 1% level

3.6.1 Multiple Regression Model (Model I) for Tea Yield

The estimated of regression model I can be described as follows;

$$TYLD = -880.78 + 114.882LAND + 165.586LBOR - 21.743AGET + 0.001TEXP \\ + 540.184LOAN - 716.451UFER + 1682.189UHAT$$

$$\text{Adj } R^2=0.206 \quad F= 9.149***$$

By the estimated results of the tea yield, it is found that the total land of tea cultivation, the age of tea plants and tea expenditure are significant at (1%) level. Total number of labor, loan, use of fertilizer and current use of hat in tea farming are significant at (10%) level which is indicated by the significance of F-statistic.

3.6.2 Double Log Model (Model II) for Tea Yield

The estimated of regression model II can be described as follows;

$$\ln TYLD = 2.021 + 0.401 \ln LAND + 0.327 \ln LBOR - 0.123 \ln AGET + 0.327 \ln TEXP \\ + 0.150LOAN - 0.317UFER + 0.322UHAT$$

$$\text{Adj } R^2 = 0.278 \quad F = 25.528***$$

By estimated results of the tea yield, it is found that the variables (lns) of the total land of tea cultivation and tea expenditure are significant at (1%) level. Total number of labor is significant at (10%) level which is indicated by the significance of F-statistic. But the age of tea plants, loan, use of fertilizer and current use of hat in tea farming are not significant.

3.6.3 Log-Lin Model (Model III) for Tea Yield

The estimated of regression model III can be described as follows;

$$\ln TYLD = 6.373 + 0.044LAND + 0.114LBOR - 0.009AGET + 4.168TEXP \\ + 0.232LOAN - 0.193UFER + 0.712UHAT$$

$$\text{Adj } R^2 = 0.160 \quad F=11.459***$$

By the estimated results of the tea yield, it is found that the total lands of tea cultivation and tea expenditure are significant at (1%) level. The total number of labor and the age of tea plants are significant at (5%) level which is indicated by the significance of F-statistic. But loan, use of fertilizer and current use of hat in tea farming are not significant.

3.6.4 Lin-Log Model (Model IV) for Tea Yield

The estimated of regression model IV can be described as follows;

$$TYLD = -5560.301 + 946.313 \ln LAND + 582.175 \ln LBOR - 307.336 \ln AGET \\ + 498.150 \ln TEXP + 382.157LOAN - 759.871UFER + 606.364UHAT$$

$$\text{Adj } R^2=0.253 \quad F=22.591***$$

By the estimated results of the tea yield, it is found that the total land of tea cultivation and tea expenditure are significant at (1%) level. Use of fertilizer is significant at (5%) level which is indicated by the significance of F-statistic. But total number of labor, the age of tea plant, loan and current use of hat in tea farming are not significant.

Among the fitted regression models, Model I is chosen as the best fitted or most suitable estimated regression model of the yield of tea based on all exogenous variables are significant. In the model I, the yield of tea is explained by the total land of tea cultivation, the total number of labor, age of tea plants, tea expenditure, loan, use of fertilizers and current use of hat in tea

farming. So, it can be concluded that the estimated regression model I fits the data quite well from a statistical point of view.

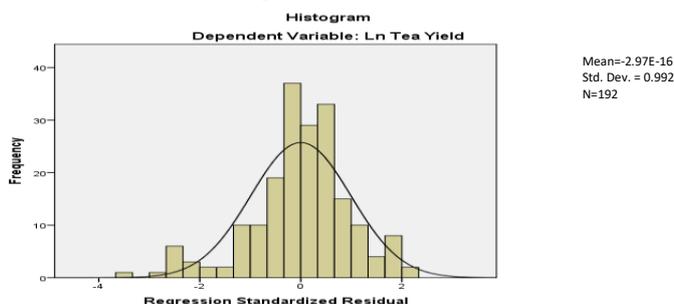
From the regression model I, it was found that if the total number of labor, age of tea plants, tea expenditure, loan, use of fertilizers and current use of hat remain unchanged, one unit increases in the total land of tea cultivation led on the average to about (114.882) units increases in tea yield. If the total land of tea cultivation, age of tea plants, tea expenditure, loan, use of fertilizers and current use of hat remain unchanged, one unit increases in the total number of labor led on the average to about (165.586) units increases in tea yield. If the total land of tea cultivation, total number of labor, age of tea plants, loan, use of fertilizers and current use of hat remain unchanged, one unit increases in tea expenditure led on the average to about (0.001) unit increases in tea yield. If the total land of tea cultivation, total number of labor, tea expenditure, loan, use of fertilizers and current use of hat remain unchanged, one unit increases in age of tea plants led on the average to about (21.734) units decreases in tea yield. If the total land of tea cultivation, total number of labor, age of tea plants, tea expenditure, use of fertilizers and current use of hat remain unchanged, one unit increases in loan led on the average to about (540.184) units increases in tea yield.

3.7 Testing for the Assumption about Multiple Linear Regression Model

To determine the violation of required assumption from multiple linear regression model for total tea production, the following procedures have been used.

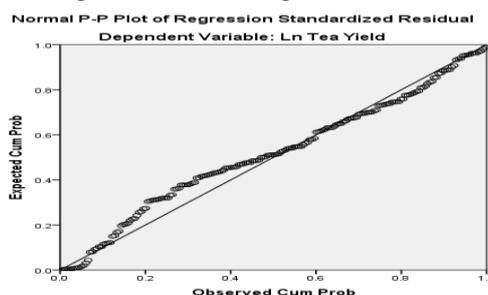
3.7.1 Testing for Normality of Disturbances

One of the basic assumptions is that disturbances are normally distributed with zero mean and constant variance. To check whether the disturbances are normally distributed, histogram of disturbances and the Normal P-P Plot of disturbances for tea production can be constructed. These plots are shown the following;



Source: Appendix (B)

Figure (3.1) Histogram of Tea Yield



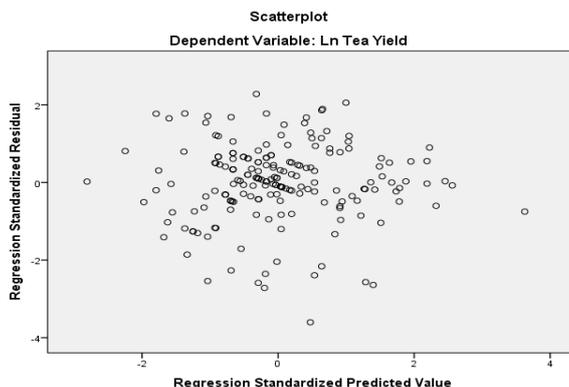
Source: Appendix (B)

Figure (3.2) Normal P-P Plot of Tea Yield

According to figure (3.1) histogram and figure (3.2) normal plot, it can be concluded that the normality assumption appears to be generally reasonable.

3.7.2 Testing for Homoscedasticity of Disturbances

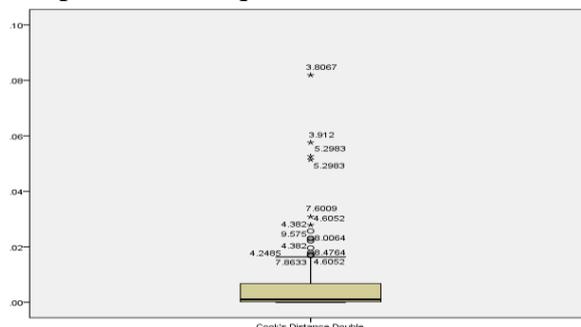
Another basic assumption of the multiple regression model is homoscedasticity. In the presence of heteroscedasticity, the regression coefficients become less efficient. Heteroscedasticity can often be detected by plotting the estimated Y values against the disturbances. If any pattern is displayed, heteroscedasticity is likely present.



Source: Appendix (B)

Figure (3.3) Scatterplot of Tea Yield

The figure can be seen that there is no residual pattern. Therefore, it can be concluded that residuals in total tea output have no equal variance or homoscedasticity.



Source: Appendix (B)

Figure (3.4) Box Plot of Tea Yield

3.7.3 Detecting Multicollinearity

Alternative method of detecting the multicollinearity is to use the variance inflation factor (VIF). It measures the degree of multicollinearity contributed by independent variable. In multiple regression model, the VIF for LAND, LBOR, AGET, TEXP, LOAN, UFER and UHAT are (1.927), (1.061), (1.733), (1.313), (1.071), (1.010) and (1.053) respectively. Since the values of the VIF are less than (10), then it is concluded that there is no seriously multicollinearity problem in multiple regression model for the tea yield.

4. Conclusion

4.1 Findings

The majority of household heads are (213) for male and (8) for female, (94.7%) of the household heads are below (65) years in Yatsauk township. Most of the household heads have

primary education level. Almost all households own land in these villages. Tea is planted in an area of (486) acres with production of (186,130) visses in Htin Shu Pyar village. Tea is planted in an area of (499) acres with production of (1,165,015) visses in Nga Pyaw Kyin village. Tea is planted in an area of (259) acres with production of (51,105) visses in Yote Gyi village. Most of households do not use fertilizers in tea farming. Almost all tea farmers use currently hat in tea farming in Yatsauk township. Almost all tea farmers focus on pickled tea production in these villages. Tea yields lost caused by pests and scarcity of labor during a few years. It was observed more productivity occurs in the tea farmers who own more tea land. Then, it was found that there are important factors such as new technology, improving transportation, good price, electricity, need of machines, labor, extension market, investment, loan, education, and packaging technique for improvement of tea farmers. As a result of multiple regression model, tea yield is determined by total land of tea cultivation, the total number of labor, age of tea plants, tea expenditure, loan, use of fertilizers and current use of hat in tea farming.

Multiple regression models I to IV of tea yield are compared. According to the comparison of the four different regression models, Multiple linear regression model (model I) is the most suitable model of tea yield based on the all of independent variables are significant and tea yield is explained by the total land of tea cultivation, the total number of labor, age of tea plants, tea expenditure, loan, use of fertilizers and current use of hat in tea farming. So, the estimated regression model I fits the data quite well from a statistical point of view. The result indicates that the total land of tea cultivation, the total number of labor, tea expenditure, loan and current use of hat in tea farming have positive influence for the tea yield. But the age of tea plants and use of fertilizers have negative influence for the tea yield. There is negative result of tea yield because the longer the plant lives, the lesser it produces. There is negative result of yield because of lack of using natural fertilizer.

This study attempted to carry out the best fitted multiple regression model of tea yield in Yatsauk township. Finally, it was examined whether the required assumptions for multiple regression model meet for the selected fitted regression models of tea yield to satisfy the assumptions.

The tea farmers who own more tea land are able to achieve more tea productivity. The total number of labour affects tea productivity. More labor involved on tea farming tends to achieve more tea productivity. Productivity depends on expenditure on tea farming. Tea expenditure positively affects tea productivity. So, productivity increases when tea expenditure is more increased. Therefore, the most influential factors affecting tea production in Yatsauk township are land of tea cultivation, total number of labour, age of tea plants, tea expenditure and loan.

4.2 Suggestion and Recommendation

Local and international experts who can consult on tea farming practices, processing techniques, packaging methods and recipes to scale-up tea farming and improve efficiency tea production should be hired by Myanmar Tea Association. Tea whole sale market centers should be built near the smallholding tea farms and the conditions of the roads to go these centers should be improved. Tea farmers should borrow loans with lower interest rate to get access about the capital. In addition, Loan should be utilized more effectively on tea farming which

increases the expenditure of the tea production and then it would increase the income of tea farmers. Labor should be also utilized more effectively on the tea farms.

Furthermore, Government, Myanmar Tea Association and Non-Government Organization should redouble the efforts to expand access to credits and educate smallholder farmers on the proper way of using these credits to improve the tea production such as difficulty of packaging technique, difficulty of water system and technical support. Policies should be also designed by the government and non-government organizations to educate farmers toward tea extension. Most of the farmers should collaborate with government and non-government organizations for tea extension. Government and Myanmar Tea Association should highly support for the development of tea sector by focusing remote areas where grow tea plants.

According to the result, tea farmers do not use any fertilizer but still use pesticide in tea farms. Therefore, pesticide should not use in tea farming for creating truly organic land to get more attention from investors. When creating organic land, organic fertilizer should be used in tea farms. Moreover, if catch-crop is grown in tea farms, organic technique should be used. Hence, organic certification will be passed and investors will invest more funds on organic tea farms. Moreover, tea prices are one of the biggest challenges for tea farmers to face. Therefore, it is necessary to implement price stabilization policies, reinforce the quality of tea products and increase tea prices.

Therefore, most farmers should have plan for extension tea acres. Tea farmers should access to modern technology for pickled tea. As the transportation is very important for trading, villages should be efforted to improve transportation. The training and seminars delivered by MTA, INGO and NGO should focus on the tea farmers in the mountainous area. Tea clusters should undertake labor recruitment for scarcity of labor in tea production. Tea production of smallholders should also be improved to keep abreast of the world like other crops.

5. Needs for Further Study

This study used cross-sectional; a further area of study should be to collect panel data on tea productivity and assess productivity over time. Further study should be based on other potential variables that may have the effect on tea production. In addition, further study should analyze more problems of relating inputs and outputs in tea farming by using Cobb-Douglas production model. The model should be tested in a wider scope than in the current; for example: in Shan state and eventually regions where grow tea plants to ascertain tea production in Myanmar. The further study on tea farming should be also encouraged especially in the areas of insects and viruses control. This will solve the problem of infestation during growing period.

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The Role of Effective Teaching Skills and Methods of Teachers in University of Co-operative and Management, Sagaing

Khin Mar Tin¹

Abstract

The aim of this study is to analyze the teaching skills and methods of teachers in University of Co-operative and Management, Sagaing. The paper is based on a sample of 63 teachers in University of Co-operative and Management, Sagaing. The data were collected by sending email and analyzed by descriptive statistics and regression analysis. The findings indicate that the teachers have good time management for lessons and are easy to make year plan. The teachers are weak to identify the level of difficulty in teaching the curriculum. The results show that the teachers present their lesson with a loud clear voice and well analyzed exam marks for students and good assess the students' learning continuously. Moreover, the teachers characterized by being well-mannered and greeting the students at the beginning of the period. Findings indicate that the teachers have self-control among students and encourage students' participation during the lesson. There are few obstacles that limit the role of effective teaching skills and methods of teachers are lack of financing doesn't facilitate the educational process and classrooms full of students that prevent active learning. Implementation lesson skills and personality traits are strongest relationship in effective teaching methods and assessment skills is also significance and direct relationship with effective teaching methods. According to results, the teachers need to practice well-spoken language and pay tribute to some students who active learning and participating in classroom activities, the teachers need to plan each lesson in curriculum and syllabus before implementing lesson to classroom.

Keywords: Effective teaching skills, Methods, Obstacles, Role of teachers, Education

1. Introduction

The challenges are facing education systems and teachers continue to intensify for effective teaching in education. In modern knowledge-based economies, where the demand for high-level skills will continue to grow substantially, the task in many countries is to transform traditional models of schooling, which have been effective at distinguishing those who are more academically talented from those who are less so, into customized learning systems that identify and develop the talents of all students. This will require the creation of “knowledge-rich”, evidence-based education systems, in which school leaders and teachers act as a professional community with the authority to act, the necessary information to do so wisely, and the access to effective support systems to assist them in implementing change.²

Considering the role of the teacher and their relation to pupils during the instructional process as well as the organization of activities by the teacher. The teacher is the basic instigator of interaction with his/her pupils and he/ she can be such an instigator only with well organized teaching. Interactive teaching, a promising approach, represents a challenge not only for the teachers but for the professional service as well. The traditional teaching, dominated by a verbal approach and memorizing of the teaching material, is entirely replaced with other activities, both in the process of following the teaching and in the process of learning the material.³

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² Creating Effective Teaching and Learning Environments First Results from TALIS. ISBN 978-92-64-05605-3, OECD, 2009

³ Xhemajli, A. (2016). The role of the teacher in interactive teaching. International Journal of Cognitive Research in Science, Engineering and Education, 4(1), 31–38.

Educational effectiveness is a term that was developed to provide a more contained definition than notions of 'good' or 'quality' education. It relates to the idea of examining effectiveness at different levels of an education system, such as nationally, at a Local Authority/School district level, for individual schools, for departments within a school or for individual teachers in terms of their success in achieving particular goals or educational outcomes. Teacher effectiveness is generally referred to in terms of a focus on student outcomes and the teacher behaviors and classroom processes that promote better student outcomes.⁴

These days, many people can be a teacher, but the question is, if many people can be an effective teacher. Clearly, to be an effective teacher is more complicated and difficult than many people think. To be an effective teacher does not only involve having a deep content knowledge, but also organizational management and communication skills, being able to organize instructions, and providing relevant assessment and fair evaluations. In addition, an effective teacher is responsible to create a warm classroom climate, to promote enthusiasm, motivation and an interactive teacher-student relationship. Also, it implies to be caring and understandable, and above all, to enhance learning.⁵

1.1 Rationale of the Study

The current era is marked by development in all the different areas, and the role of education is to develop the cognitive and skilled fields to ensure coping with knowledge expansion, scientific development, and technical employment through multiple methods of teaching that instill everyday technology in students.⁶

Myanmar became a democracy; the government has been implementing pragmatic reforms to create a better education system that can match those of other countries in the region. In Myanmar, teachers are used to textbook-based teaching, and examinations and assessments of students are also textbook-based. For the improvement of the acumen, creativity and critical thinking of the students, the teachers are planning to apply the student-centered approach to teaching nationwide. However, lack of teaching and learning materials, insufficient teachers, overcrowded classrooms, high teacher-student ratios and overloaded curriculums are the reasons for the failure of the student-centered approach. Teachers perform a crucial role in education and that is why the teachers are planning to enhance their skills. Teachers are trained in different subjects depending on the level at which they will be teaching.⁷

The teacher plays an important and prominent role in the educational process. Thus, this study aims to identify the role of effective teaching skills and methods of teachers in University of Co-operative and Management, Sagaing from the teachers' perspective.

⁴ Ko, J., Sammons, P., & Bakkum, L. (2013). Effective teaching : a review of research and evidence Literature review Welcome to CfBT Education Trust. 56.

⁵ Moreno Rubio, C. (2009). Efective teachers-profesional and personal skills. Ensayos: Revista de La Facultad de Educación de Albacete, 24, 35–46.

⁶ Shaheen, A. (2011). Advanced teaching strategies, learning strategies and learning styles. Special diploma in Education, Curriculum and Instruction, College of Education, Damanhour, Alexandria University, Egypt.

⁷ Soe, et al., (2017). Reform of the Education System; Case Study in Myanmar, Parliamentary Institute of Cambodia

1.2 Objective of the Study

The objective of the study is to analyze the effective teaching skills and methods of teachers in University of Co-operative and Management, Sagaing.

1.3 Methods of the Study

The primary data were collected with simple random sampling method by sending email. Questionnaire employed five-point Likert scale questions ranging from strongly disagree to strongly agree. Secondary data that used in this study are obtained from international journals, research papers and articles concerned with the effective teaching skills and methods of teachers. Descriptive method and multiple regression analysis were used in this study.

1.4 Scope and Limitation of the Study

This study analyzes effective teaching skills and methods of teachers in University of Co-operative and Management, Sagaing. There are (94) teachers in University of Co-operative and Management, Sagaing. Questionnaires were sent to (73) teachers, (63) teachers (67%) responded to the distributed questionnaires. Data are collected in November, 2021.

2. Literature Review

Wahsheh & Alhawamdeh (2015) explored “the role of female teachers in promoting effective teaching skills and methods among high school students from a teacher's perspective - Najran, Saudi Arabia”. The researcher used a descriptive-analytical approach. The research findings consisted of three areas: first, effective teaching skills, second, teaching methods, and third, barriers that limit the role of female teachers in developing effective teaching skills and methods. The results showed that the female teachers are very concerned about the participation and collaboration of all students in the different class activities and female teachers can motivate students to complete day-to-day school work; the teachers were able to identify the levels of difficult teaching courses and teachers always smiling. From this discovery studies suggested developing a daily plan for each lesson to pose various class questions to students, and to include teachers in training to the content of the lesson.

Koc, M., Koc, H., & Acar, G. (2013) studied “The use of teaching methods by the teachers who work at high schools and the reasons of their preference”. The study aimed to determine teaching methods that physical education teachers at elementary schools in Ankara use and to define why they prefer those methods. The research group contains (88) physical education teachers. After the analysis conducted, the factor number was observed to be (2) and the total variance of the test was calculated as (21.083). Reliability study was conducted using Cronbach Alfa. Internal Consistency Method and “0.88” figure was found. As a result, property and size of the learning group, teacher’s tendency to the method, duration, physical opportunities, financial sources and prospective behaviors should be taken into account while choosing the teaching method. Also, there is a need of organizing in-service training courses in the field of teaching techniques to the teachers and of a cooperation between universities and Ministry of National Education in order to lead teachers to the use of teaching methods and techniques.

Papa-Gusho & Biçaku-Çekrezi (2015) explored “Factors that Affect Effective Planning Skills of the Teacher in the Classrooms”. The main aim of this article is to examine the factors that affect planning skills of the teacher in the classrooms. These factors are: organizing the classroom and the teaching materials; effective implementation of lesson plans; and time

management. This phenomenon is handled starting from the students' perceptions of the high schools in Tirana, Durrës and Elbasan. The approach of this study was quantitative and sample extraction is carried out through the stages sampling technique. For the data collection a Likert scale was used, with a Cronbach alpha coefficient report. Through the use of advanced statistical analysis there was identified a model which predicts that intervention in some variables such as, the organizing of the classroom and the teaching materials, effective implementation of lesson plans and time management improves the effective planning skills of the teacher. Results showed that there exists a positive relationship between teacher's effective planning skills and other variables, which are organizing the classrooms and the teaching material, effective implementation of lesson plans and time managements.

2.1 Importance of the Role of Teachers

The role of the teacher is the use of various teaching aids and effective methods of teaching in planning, implementation, and assessment levels in order to motivate the learning and educational process among students, and acquire them with different thinking skills and activate the student role in teaching and learning; it is a must to provide all necessary needs for the teacher in order to achieve the targeted educational learning objectives. The teacher activates the students' role in the classroom activities so as to transform them from passive listeners to well-motivated self-starters in various activities. The role of the teacher isn't to teach in a traditional way but to direct students to discover the educational subject matter that leads more to understand the curriculum, where an effective and active learning includes activities such as: small groups, role-playing, and doing various projects, etc.⁸

2.2 Effective Teaching Skills

Effective teaching can be defined as "a pattern of teaching that depends on the self-activity and positive participation of the learners, through which they may search using a range of activities and scientific processes such as observation, assumptions, measurement, data reading and deduction, which help them to reach the required information by themselves and under the supervision, guidance and assessment of the teacher".⁹The following planning skills, the skills of giving lessons, assessment skills and personality traits include the role of the teacher's effective teaching skills.

2.2.1 Planning Skills

Planning in the context of education entails the process of setting objectives and determining the means to achieving the objectives. It entails deciding on advice what to be taught, how to teach, when to teach, who is be taught, and the evaluation of recipients. Planning is the beginning of teaching and learning process, before a teacher goes to the class to deliver any lesson, he/she plans such lessons while education administrators make policy and plan the curriculum for the school to important them. Through planning for a lesson makes the teaching-learning encounter valuable and productive impact. Conversely, no planning leads to a wasteful and unproductive lesson. The motion pervades education at all levels and in all subject areas.¹⁰

⁸ Wahsheh, R., & Alhawamdeh, H. (2015). The Role of Female Teachers in Activating Effective Teaching Skills and Methods among High School Students from the Teachers' Perspective--Najran, KSA. *Journal of Education and Practice*, 6(36), 162–174.

⁹ Al-Ali, I. (2009). Effective teaching in educational administration. Accessed on 03/15/2014

¹⁰ Oden, C. (2021). The Impact of Effective Teaching and Learning Process.

2.2.2 Implementation-lesson Skills

For an effective implementation-lesson, teachers should ask students questions about their previous knowledge and experience, match the activities with the set objectives, lead the students to practice the acquired knowledge, and give students the opportunity to work individually, in groups or as a whole class, according to the task being performed.

In order to effectively implement lesson plans, teachers should have knowledge about activities, and their types. Emmer and Evertson (2009) explain that the term activity describes organized behavior that the teacher and students engage in for a common purpose. Typical activities include discussions, recitations, group work, presentations, seatwork, and checking, although this is by no means a complete list.¹¹

2.2.3 Assessment Skills

Teaching is a multifaceted process that requires teacher competencies in measurement and assessment skills. Assessment skills may include test planning and construction, grading, interpretation of test results, use of assessment results to inform teaching and learning, interpretation of standardized tests and communicating results to relevant stakeholders. Teachers are key catalyst of the education process. Teachers adopt a variety of classroom assessment practices to evaluate student learning outcomes, and spend much classroom time engaged in assessment-related activities. Teachers typically control classroom assessment environments by choosing how they assess their students, the frequency of these assessments, and how they provide assessment feedback. For these reasons, it is imperative for them to be competent in classroom assessment practices.¹²

2.2.4 Personality Traits

Motivating students, presentation skills, using of teaching aids, the skill of formulating classroom questions, skills of class management and raising the motivation of learners, the use of teaching strategies such as cooperative learning, dialogue, thinking, contemplative teaching and the development of teaching methods, problem solving, discussion, and the teacher's evaluation and assessment of students in order to ensure access to the desired educational and learning objectives are the important personal traits of teachers.¹³

2.3 Effective Teaching Methods

The good teacher is the one who can use the appropriate teaching method at the appropriate time, so that they face some problem. The ways of teaching are the liaison between the teacher and educational curriculum, where the teacher presents the curriculum effectively and in an active manner that acquires students the skills and information, and using multiple method without a specific way used for teaching.¹⁴

¹¹ Gusho, L. (2015). Factors that Affect Effective Planning Skills of the Teacher in the Classrooms, *Academic Journal of Interdisciplinary Studies*, MCSER Publishing, Rome-Italy Vol 4 No 3 S1, 560-564

¹² Koloi-Keaikitse (2017) Assessment of teacher perceived skill in classroom assessment practices using IRT Models, *Cogent Education*, Vol 4 No1, 1-15

¹³ Wahsheh, R., & Alhawamdeh, H. (2015). *Effective Teaching Skills and Methods*.

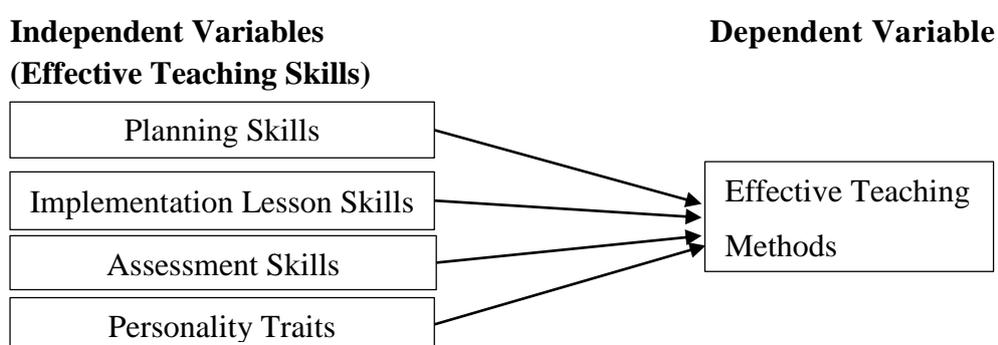
¹⁴ Al-Shamri, Kh. (2007). The effect of using a computer program in teaching course of Education techniques upon students' achievement, Mualimeen College, the city of Hail, (quasi-experimental study). Unpublished Master Thesis, Curriculum and Instruction Department, College of Education, Umm Al Qura University, Saudi Arabia.

2.4 Obstacles

There are many obstacles that hinder effective teaching into the educational learning process. Harris (2000) highlighted the obstacles that are ill-preparation of teacher, and the lack of teaching aids, the lack of software, and routine culture among some teachers. Mutawe (2002) identified inner obstacles for the teachers: willingness, motivation and skill; and outer obstacles such as methods of acquaintance and assessment. White (1999) indicated that the lack of teacher training in the field of educational technology and only using traditional technology led to obstacles of effective teaching.¹⁵

2.5 Conceptual Framework

Conceptual framework includes planning skills, implementation lesson skills, assessment skills and personality traits as independent variables and effective teaching method as dependent variable.



Source: Own compilation

Figure 1.1 Conceptual Framework

3. Analysis of Effective Teaching Skills and Methods of Teachers in University of Co-operative and Management, Sagaing

For this study, questionnaires are prepared to analyze the role of effective teaching skills and methods of teachers in University of Co-operative and Management, Sagaing. In this study, the questionnaire has sixteen nine items included to (3) domains. There are effective teaching skills consists of planning skills, implementation-lesson skills, assessment skills and personality traits, the other domain contains effective teaching methods and the third domain is obstacles. In this study, Data were collected from the sample of (73) teachers, but (63) teachers responded to the questionnaires.

3.1 Profile of the Respondents

The following table shows gender, age, position and experience of the respondents in University of Co-operative and Management, Sagaing.

Table 3.1 Gender, Age, Position and Experience of the Respondents

		Frequency	Percentage (%)
Gender	Male	5	8
	Female	58	92
	Total	63	100

¹⁵ Wahsheh, R., & Alhawamdeh, H. (2015). Effective Teaching Skills and Methods.

Age	30 and under	13	21
	31-45 years	45	71
	46 and above	5	8
	Total	63	100
Position	Tutor	6	10
	Assistant Lecturer	26	41
	Lecturer	13	21
	Associate Professor	11	17
	Professor	7	11
	Total	63	100
Years of Experience	10 years and under	36	57
	11-20 years	22	35
	Above 20 years	5	8
	Total	63	100

Source: Survey Data, 2021

The results in Table (3.1) show that (92%) of respondents are female against (8%) for male. Moreover, (21%) of respondents are under 30 years old, (71%) of respondents are 31-45 years old and (8%) of respondents are 46 and above. According to results, most of the respondents are 31-45 years old. According to their position, (10%) of respondents are tutor, (41%) of respondents are assistant lecturer, (21%) of respondents are lecturer, (17%) of respondents are Associate professor and (11%) of respondents are professor. With regard to their years of experience, it can be found that (57%) of respondents are 10 years and under, (35%) of respondents are 11-20 years and (8%) of respondents are above 20 years.

3.2 Reliability Test

This study used Cronbach's Alpha, a method of measuring internal consistency, to evaluate whether the scale was reliable. When Cronbach's Alpha is higher, it means that internal consistency of items from the scale is higher.

Table 3.2 Cronbach's Alpha

Domains	Levels of Study	No. of Item	Cronbach's Alpha
Effective Teaching Skills	Planning Skills	12	0.87
	Implementation-Lesson Skills	12	0.90
	Assessment Skills	8	0.92
	Personality Traits	10	0.94
Effective Teaching Methods		13	0.95
Obstacles		14	0.87
Total		69	0.97

Source: Survey Data, 2021

Table (3.2) shows that reliability coefficient of the questionnaires is (0.97). The highest reliability coefficient is effective teaching methods (0.95). Personality Traits is the second highest Cronbach's Alpha at the value of (0.94) whereas for assessment skills, implementation-lesson skills, planning skills and obstacles of the Cronbach's Alpha value are (0.92), (0.90), (0.87) and (0.87) respectively.

3.3 Descriptive Statistics

In this study, the mean values and standard deviations of effective teaching skills, effective teaching methods and obstacles have been measured. Results are showing in the follow.

3.4 Effective Teaching Skills

In this study, the first domain, effective teaching skills include planning skills, implementation-lesson skills, assessment skills and personality traits.

3.4.1 Planning Skills

The following table shows means and standard deviations of planning skills as conducted with twelve items.

Table 3.3 Planning Skills

No.	Items	Mean	SD	Rank
1.	Planning of each lesson in the curriculum and syllabus.	4.17	0.77	6
2.	Preparation of an annual plan	4.40	0.58	2
3.	Articulation of the objectives of the lesson	4.13	0.71	7
4.	Thoroughly analyze educational goals for cognitive, emotional, and skillful ones.	4.21	0.65	4
5.	Rank goals well based on their cognitive levels.	4.19	0.62	5
6.	Varieties of teaching aids.	3.98	0.96	9
7.	Time management for the lesson.	4.41	0.59	1
8.	Identify hard levels in teaching the curriculum and syllabus.	3.90	0.98	10
9.	Consider individual differences when planning your lesson.	4.24	0.82	3
10.	Get equipment from the local environment.	3.90	0.98	10
11.	Reveal the basic concepts within the lesson.	4.40	0.58	2
12.	Identify successful strategies for asking the class.	4.08	0.68	8
Total		4.17	0.48	

Source: Survey Data, 2021

Table (3.3) shows the level of planning skills, where the means are ranging from (3.90) to (4.41) compared to the overall mean of the level (4.17). The item, "Time management for the lesson" is the highest level. The second highest level are "Preparation of an annual plan" and "Reveal the basic concepts within the lesson". Thus, time management, preparation of annual plan and reveal the basic concepts of the teachers are strongest planning skills. "Identify hard levels in teaching the curriculum" and "Get equipment from the local environment" are the lowest level.

3.4.2 Implementation-lesson Skills

The following table shows means and standard deviations of implementation-lesson skills that conducted with twelve items.

Table 3.4 Implementation-lesson Skills

No.	Items	Mean	SD	Rank
1.	Use foreplay to grab students' attention.	4.16	0.68	9
2.	Use of multiple motivations for students.	4.29	0.58	4
3.	Using effective methods to help students.	4.22	0.66	6
4.	Using good teaching aids and education methods.	4.17	0.85	8
5.	Providing the students in preparing the lessons.	4.33	0.74	3
6.	Providing the students to participate in classroom activities	4.25	0.74	5
7.	Applying different teaching methods according to lesson's objectives.	4.21	0.81	7
8.	Applying examples and evidence associated to lesson content to achieve your goals.	4.41	0.69	2
9.	Good represent of the lesson.	4.41	0.64	2
10.	Present the lesson with loud clear voice.	4.46	0.69	1
11.	Indicating to integration and correlation to the content of the curriculum and syllabus.	4.10	0.76	11
12.	Pose class questions with various goals and levels.	4.14	0.78	10
Total		4.26	0.50	

Source: Survey Data, 2021

Table (3.4) indicates that comparison of the overall mean of the level (4.26), the level of implementation-lesson skills of the means is ranging from (4.10) to (4.46). "Present the lesson with a loud clear voice" is the highest level and then, "Applying examples and evidence associated to lesson content to achieve your goals" and "Good represent of the lesson" are the second highest level of implementation-lesson skill. "Indicating to integration and correlation to the content of the curriculum" is the lowest level of implementation-lesson skills of teachers.

3.4.3 Assessment Skills

The following table shows means and standard deviations of assessment skills with eight items.

Table 3.5 Assessment Skills

No.	Items	Mean	SD	Rank
1.	Using different assessment skills related to lesson.	4.05	0.73	4
2.	Connect the assessing questions with the target of lesson.	4.13	0.77	3
3.	Evaluate the students' learning continuously.	4.30	0.66	2
4.	Assessment questions directed to the most of students.	4.00	0.80	5
5.	Examining shortcomings of teaching methods.	3.95	0.73	6
6.	Develop teaching methods due to assessment method.	4.05	0.71	4
7.	Keeping daily record for individual discussion.	3.86	0.84	7
8.	Well analyze exams marks for students.	4.33	0.65	1
Total		4.08	0.59	

Source: Survey Data, 2021

The table (3.5) reveals to the level of assessment skills, where the average values ranged from (3.86) to (4.33) with respect to the overall average of the level (4.08). The item "Well analyze exams marks for students", is the highest level of assessment skill and "Evaluate the

students' learning continuously" is the second highest level. "Keeping daily record for individual discussion" is the lowest level of assessment skills of teachers.

3.4.4 Personality Traits

The results of means and standard deviations of personality traits show in table (3.6) as the following ten items.

Table 3.6 Personality Traits

No.	Items	Mean	SD	Rank
1.	Introducing the students at the beginning of the period.	4.30	0.69	2
2.	Ever smile and energetic.	4.03	0.93	8
3.	Enthusiastic and justice	4.25	0.74	4
4.	Well-behaved.	4.32	0.64	1
5.	Patient.	4.27	0.65	3
6.	Well-dressed.	4.24	0.64	5
7.	Flexible.	4.21	0.65	6
8.	Follow to job ethics.	4.16	0.68	7
9.	Cooperative and good leader.	4.24	0.69	5
10.	Well-spoken language	3.95	0.81	9
Total		4.20	0.65	

Source: Survey Data, 2021

Table (3.6) indicates that the comparison of the overall mean of the level (4.20), the level of personality traits of the means is ranging from (3.95) to (4.32) The item "Well-behaved" is the highest level and "Introducing the students at the beginning of the period" is the second highest level of personality traits of the teachers. "Well-spoken language" is the lowest level of personality traits of teachers.

3.5 Effective Teaching Methods

Table (3.7) reveals the means and standard deviations for the second domain, effective teaching methods as the following thirteen items.

Table 3.7 Effective Teaching Methods

No.	Items	Mean	SD	Rank
1.	Active teaching (cooperative learning, roleplaying, problem solving, critical thinking, and brainstorming, etc.)	4.19	0.74	5
2.	Provide students with knowledge for using technology.	4.17	0.73	6
3.	Good communication and interaction.	4.21	0.70	4
4.	Encourage to participate Students' during the lesson.	4.24	0.71	2
5.	Participate in various school activities.	4.14	0.72	7
6.	Sometimes pay tribute to some students who active learning and participating in classroom activities.	4.02	0.77	10
7.	Apply teaching rules and educational regulations.	4.13	0.77	8
8.	Systematic inside the classroom.	4.21	0.70	4
9.	Unbiased and deal objectively with students.	4.21	0.77	4

10.	Identify types of behaviors resulted from inattentiveness and bore, and treated in necessary.	3.90	0.84	11
11.	Make students cooperate in the various class activities.	4.11	0.74	9
12.	Establish a democratic relationship with students.	4.22	0.71	3
13.	Develop self-control among students.	4.29	0.73	1
Total		4.18	0.65	

Source: Survey Data, 2021

Table (3.7) indicates the level of effective teaching methods, where the average values ranged from (3.90) to (4.29) with respect to the overall average of the level (4.18). The item “Develop self-control among students” is the highest level and “Encourage to participate students’ during the lesson is the second highest level of effective teaching methods of the teachers. “Identify types of behaviors resulted from inattentiveness and bore, and treated in necessary” is the lowest level of effective teaching methods of teachers is.

3.6 Obstacles for Teachers

Table (3.8) explains the means and standard deviations for the third domain of obstacles that limit the effective teaching skills and methods of teachers as the following fourteen items.

Table 3.8 Obstacles for Teachers

No.	Items	Mean	SD	Rank
1.	Classrooms full of students.	3.86	1.00	2
2.	Lack of financing doesn't facilitate teaching process.	3.94	0.80	1
3.	Moral and financial incentives are less.	3.75	0.84	4
4.	Low equipment prevents effective learning	3.81	1.06	3
5.	Teaching excess workload.	3.68	0.95	5
6.	Worry of loss of control over students.	3.29	1.01	9
7.	Time period is needed.	3.56	0.86	6
8.	Worry the trying anything new.	3.25	1.00	10
9.	Curricula like focusing on cognitive sides over other sides.	3.52	0.82	7
10.	The teacher is not planning and lack of the assessment tools.	3.24	1.03	11
11.	The teacher appears not match in using teaching aids	3.24	0.95	11
12.	Remarkable dissimilar of social level.	3.25	0.78	10
13.	Lack of training period to support the role of teachers.	3.30	1.06	8
14.	The institution does not provide educational materials.	3.14	1.00	12
Total		3.49	0.57	

Source: Survey Data, 2021

Table (3.8) shows the level of obstacles that limit the effective teaching skills and modalities of teachers, where the average values ranged from (3.14) to (3.94) with respect to the overall average of the level (3.49). The item “Lack of financing doesn't facilitate the educational process” is the highest level and “Classrooms full of students” is the second highest obstacles of teachers. “The institution does not provide educational material for teachers” is the lowest obstacles for teachers in the University of Co-operative and Management, Sagaing.

3.7 Multiple Regression Analysis

Multiple regression analysis is applied to investigate the factors of effective teaching methods of sample teachers in University of Co-operative and Management, Sagaing. To develop the multiple regression model, effective teaching methods was used as dependent variable, and planning skills, implementation lesson skills, assessment skills and personality traits were used as independent variables.

Table 3.9 Regression Analysis between Independent Variables (Effective Teaching Skills) and Dependent Variable (Effective Teaching Methods)

Independent Variables	B	S. E	t	Sig	VIF	
(Constant)	0.361	0.466	0.774	0.442		
Planning Skills	-0.063	0.128	-0.489	0.627	1.977	
Implementation Lesson Skills	0.414**	0.160	2.584	0.012	2.484	
Assessment Skills	0.287*	0.161	1.781	0.080	2.825	
Personality Traits	0.294**	0.138	2.135	0.037	2.462	
R ²						0.569
Adjusted R ²						0.540
F						19.165

Source: Survey Data, 2021

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

Regression analysis was conducted with effective teaching methods and four dimensions of effective teaching skills as the independent variables. The adjusted R square is 0.540 that reveals (54.0%) of total variance. Result show that F value is 19.165 that is significant at $p=0.000(<0.01)$. The regression coefficient between implementation lesson skills and effective teaching methods is 0.414 ($t=2.584$, $p=0.012$). This show that there is direct relationship between implementation lesson skills and effective teaching methods. Its impact is statistically significant at (5%) level. The regression coefficient between assessment skills and effective teaching methods is 0.287 ($t=1.781$, $p=0.080$). This show that there is direct relationship between assessment skills and effective teaching methods and its impact on effective teaching methods is statistically significant at (10%) level. The regression coefficient between personality traits and effective teaching methods is 0.294 ($t=2.135$, $p=0.037$) statically significant at (5%) level. Therefore, there is direct relationship between implementation lesson skills and effective teaching methods. The regression coefficient between planning skills and effective teaching methods is not relationship and its impact is not statically significant.

4. Findings and Discussion

In this study, (92%) of teachers are female and (8%) of teachers are male. The majority of teachers are 31-45 years old. The years of experience are ten years and under are (57%), 11-20 years are (35%) and above 20 years are (8%).

Findings indicate that the teachers have good time management for lessons and are easy to make year plan during the academic year. The teachers are weak to identify the level of difficulty in teaching the curriculum and to keep daily record for individual discussions. The results show that the teachers present their lesson with a loud clear voice and well analyzed

exam marks for students and good assess the students' learning continuously. Moreover, the teachers characterized by being well-behaved and greeting the students at the beginning of the period. Findings indicate that the teachers have self-control among students and encourage students' participation during the lesson. There are few obstacles that limit the role of effective teaching skills and methods of teachers are lack of financing doesn't facilitate the educational process and classrooms full of students that prevent active learning.

The regression analysis result shows that implementation lesson skills and personality traits are significance at (5%) level. Therefore, implementation lesson skills and personality traits are strongest relationship in effective teaching methods. The teachers apply examples and evidence associated to lesson content to achieve the goals and continuously evaluate the students' learning to be the effective teaching methods. Assessment skills is significance at (10%) level. So, assessment skills and effective teaching methods are direct relationship. Planning skill is not significant on effective teaching methods.

5. Recommendations and Suggestions

Based on the above results, the teachers should identify hard levels in teaching the curriculum and indicate the level of integration and relate to the content of the modules. Moreover, the teachers should practice daily record for individual discussion and identify shortcomings of teaching methods due to assessment results. According to results, the teachers need to practice well-spoken language and pay tribute to some students who active learning and participating in the classroom activities although the teachers have self-control among students and encourage students' participation during the lesson. The teachers need to plan each lesson in curriculum and syllabus before implementing lesson to classroom.

To overcome the obstacles, decision makers and school administrators should provide teaching aids, equipment and optimal classroom size as a key assistant for effective teaching and also need to organize training courses in the field of teaching techniques to the teachers continuously. Moreover, the teachers need to have positively interpersonal traits.

6. Further Study

This study identifies the role of effective teaching skills and methods of teachers in University of Co-operative and Management, Sagaing from the teachers' perceptive. Therefore, it is recommended that further research can be observed the role of effective teaching skills and methods of teachers in other Universities of Sagaing from the teachers perceptive or students perceptive.

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**Impact of Promotion Activities on Customer Satisfaction:
The Case of Aung Thamardi Gold, Jewellery Shops and Refinery
May Kyi Thar Swe¹**

Abstract

Gold, Jewellery Shops need to know how to attract the customers and achieves their satisfaction. If the companies want to continue growing their competition; they need to understand that promotion activities and customers' satisfaction are essential concepts. The aim of this research is to analyze the impact of promotion activities on customers' satisfaction of Aung Thamardi Gold, Jewellery Shops and Refinery. The primary data were collected from interviews with responsible persons from "Aung Thamardi Gold, Jewellery Shops and Refinery" to know what they use the promotion types in their businesses and their customers using systematics random sampling method and structured questionnaire. A structured questionnaire was developed based on previous empirical research in the field of promotion activities and customer satisfaction. From this study, it was found that all promotion activities such as advertising, sales promotion, personal selling, and public relation are strong impact with customers' satisfaction. According to the multiple regression results, it has been found that promotion activities were strong and they have significant effect on customer satisfaction. Among these promotion activities, the highest mean score is public relation activities. Therefore, the majority of respondents in this shop seem to have fairly strongly positive attitude on the public relation activities. In this research, all promotion activities are satisfied by customers. However, sales promotions activities are need to promote to attract customers by using more given lucky draw, coupons and free gift and more given seasonal promotions. Aun Thamardi Gold, Jewellery Shops and Refinery need to construct effective communication and good relationship with customers and need to solve request of the customer, more need to use personal selling activities such as they are willing to accept the buyer's complaints and selfthem.

Keywords: Promotion activities, Advertising, Sales promotion, Personal selling, Public relation and Customer satisfaction.

1. Introduction

The goldsmith industry is a main part in economic sector because our country, Myanmar, can be recognized as a developing country in the world. Myanmar Citizens traditionally buy golden jewellery as a purpose for hedging against inflation. And Myanmar citizens use gold not only as ornaments but also as lovingly worship at image of Buddha statue and pagoda like its robe which is like that worn by Buddhist monk. Traditionally, Myanmar people usually have the practice of purchasing and collecting gold jewellery if they have extra money according to the saying from the elders, "Gold Jewellery mean food when one have no money and ornaments when one possesses a lot of money". Today Myanmar people save Golden Jewellery substitutes of money. Golden Jewellery is a good investment for people to do golden jewellery business because its value is increasing through the time and doesn't delay. Investing in golden jewellery is better than land and building investment because golden jewellery can be easy to be resold anytime. Investing in landing and building need much capital and, on the other side, it is easy for everyone to buy as much gold jewellery as they can.

Today, the more golden jewellery shops in the industry, the higher the intensity of competition. It has numerous gold and jewellery shops in Yangon and Mandalay. The shops also compete with each other in a variety of advertising, quality and jewellery decisions. The golden jewellery shops have introduced their gold ornament outlet, with the entire offer packages as well as collections of unique design. It needs to understand that the customer's

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satisfaction is important for competition and how effective the product has been positioned. After purchasing the specialty goods, the customer shows post-purchase behavior. However, the customers tend to purchase high-end expensive goods like gold and platinum accessories that are highly competitive and demanding in the market. And then, as customer surely has a wide variety of choices, the different shops are carefully evaluated individually before making purchasing decision. In such a situation, any purchase dissonance will lead to a high level of dissatisfaction, and so it may also cause the negative option to consider for the prospective buyer of jewellery outlet. In addition to study consumer usage, purchase and post purchase assessments of the product they purchased, customer researchers are also interested in how the customer's other new purchase can be eliminated. The goldsmith industry mixed with "Gold Jewellery Shop" is in comparison in their products and quality with competitors to attain the competitive advantages.

In a highly competitive industry, a gold jewellery shop needs to know how to attract the customers and achieves their satisfactions. The market for gold and jewellery shop is so competitive; the promotional efforts of the gold shops must be effective and efficient to be a successful brand and reliable maker. Therefore, this study is analyzed the promotion activity for customer satisfaction of "Aung Thamardi Gold, Jewellery Shops and Refinery". This shop is certainly recognized as one of the most famous jewellery shops in Myanmar. Thus, we want to know which promotion strategy will impact to attract customer satisfaction of Aung Thamardi Gold, Jewellery Shops and Refinery. Thus, this study will explore the impact of customers' satisfaction on Aung Thamardi Gold, Jewellery Shops and Refinery.

1.1 Problem Statement

There are so many jewellery shops businesses in current situations. They attempted to achieve to success among their competitors. They attract their customers to increase sales income. They use different promotion types to get customer satisfaction. These promotions types are advertising, sales promotions, personal selling and public relations. We want to know which promotion types are attracted to satisfy their customer satisfaction. This paper will explore how the impact of customer satisfaction on promotion activities of Aung Thamardi Gold, Jewellery Shops and Refinery.

1.2 Research Question

Do the practicing promotion activities impact customers' satisfaction? Do the promotion activities offered by Aung Thamardi Gold, Jewellery Shops and Refinery satisfy the customers? Which activities can provide more customer satisfaction?

1.3 Objectives of the Study

The objectives of the study are:

1. to study the promotion activities offered by Aung Thamardi Gold, Jewellery shops and refinery.
2. to explore the most impact of promotion activities on customer satisfaction.

1.4 Method, Scope and Limitations of the Study

This research examines the impact of promotion activities on customer satisfaction of “Aung Thamardi Gold, Jewellery Shops and Refinery”. The primary data were collected from interviews with responsible persons from “Aung Thamardi Gold, Jewellery Shops and Refinery” to know what they use the promotion types in their businesses and their customers using systematic random sampling method and structured questionnaire. Questionnaire employed multiple choices and five point Likert scale. The obtained data was processed and analyzed with the SPSS. In this research, descriptive and multiple regression analysis were employed. Dependent variable in this research is customer satisfaction and independent variables in this research are advertising, sales promotion, personal selling, and public relation.

There are five branches of “Aung Thamardi Gold, Jewellery Shops and Refinery” and the data obtained based on 200 respondents who buy Aung Thamardi Gold Jewellery Shops and Refinery during a week. In this research, theoretically studied only aspects of promotion activities: advertising, sales promotion, personal selling and public relations.

2. Theoretical Background

The literature review which consisted of the concept of promotion activities, related theories of promotion activities, customer satisfaction are presented. The second part presented the conceptual framework of the study.

2.1 Definition of Promotion Activities

(Bridges, Briesch, & Yim, 2006) describes the meaning of promotion as one of the most effective marketing tools for any organization to increase sales of products and services. According to (Belch & Belch, 2009) the term ‘promotion’ is stated as “the coordination of all seller initiated efforts to set up channels of information and persuasion in order to sell goods and services or promote an idea.” An acceptable idea related to promotion is that it makes increase short terms sale. Sigué (2008) claims that although stockpiling, increasing sensitivity to prices, and reducing post promotional sale can occur due to some promotional activities, others may help to attract new customers or increase consumption.(Belch & Belch, 2009) around the world, not only the large multinational corporations to medium but also the small firms accept that promotion is only the best way reaching out to customers and promoting them to buy their products and services. Advertising, public relations, personal selling and sales promotion are generally called promotional tools, also known as the elements of promotion mix. With the current development of communication tools, direct marketing has become an importance tool for promotion.

Advertising is recognized as one of the prominent and most discussed forms of promotional mix. Advertising is an essential tool for companies whose products and services are targeting at mass consumer markets. (Belch & Belch, 2009)stated that advertising is the most cost-effective way for the company to reach wide audiences. Advertising is a major component of promotion and advertising is usually an integral element of an integrated marketing communications program(Ferrell & Hartline, 2011). Types of advertising are radio, television, magazine, journal/newspaper and social media.

In the definition of “sale promotion” by (Vila & Ampuero, 2007) it consists of a collection of incentives and tools intended to motivate consumers or businesses to buy a product or service faster and enormously. Sales promotion can be defined as the pile of incentives and implements make up to encourage consumers or businesses purchasing a product or service faster and higher. Kotler, Pfoertsch, and Michi (2006); Shimp and Shimp (2007) stated that sales promotion also indicates as any extra incentive that manufacturers, retailers, and non-profit organizations use to make change temporarily the available price and value of a brand. Sales promotions activities are discounts promotions, tired promotions, private sales, flash sales, free gift with purchase and giveaways.

Personal selling can be classified in various ways like: retail selling, field selling, telemarketing and inside selling (Belch & Belch, 2009). According to Zeithaml, Bitner, and Gremler (2017) “personal selling is face to face presentation by a representative from the firm to make sales and build customer relationships.” Personal selling is very secure in selling to consumers and resellers. The face to face conversation facilitates instant feedback. In personal direct selling, representatives can present the product or service to the customer, they can convince the customer through showing the service value, and last if successful, they close the sales. Personal contact is vital for technical consumer products like; computer, internet etc. In these cases, personal selling is high value- because it gets the sales close (Arens, Schaefer, & Weigold, 2009).

Public relation is concerned with people’s attitudes towards the firm or specific issues and designed to sell a product or service and help marketing activities. (Belch & Belch, 2009) mention the public relation activities such as raising awareness, informing and educating, gaining understanding, building trust, giving consumers a reason to buy and motivation consumer acceptance. Jobber and Ellis-Chadwick (2016) defines the term ‘public relation’ as “the management of communications and relationships to establish goodwill and mutual understanding between an organization and its public.” Activities relating to public make good reputational company image by firms’ publication through public attention. Publicity is one of the hallmarks of public relation and so, it can attract from inside as well as outside the profession (Verčič, Verčič, & Laco, 2008). The prominent tools of publicity are publication, events, news, speeches, public-service activities and identity media. Annual report, brochures, articles, company newsletters and magazines are involved in publications. In events company can advertise through news conference and any sports and cultural sponsorships that will reach target audience. News can be useful for company to inform the potential customers about service and product through press release and press conference. Company can build goodwill by contributing money and time for social purposes through public-service activities (Kotler, 2000).

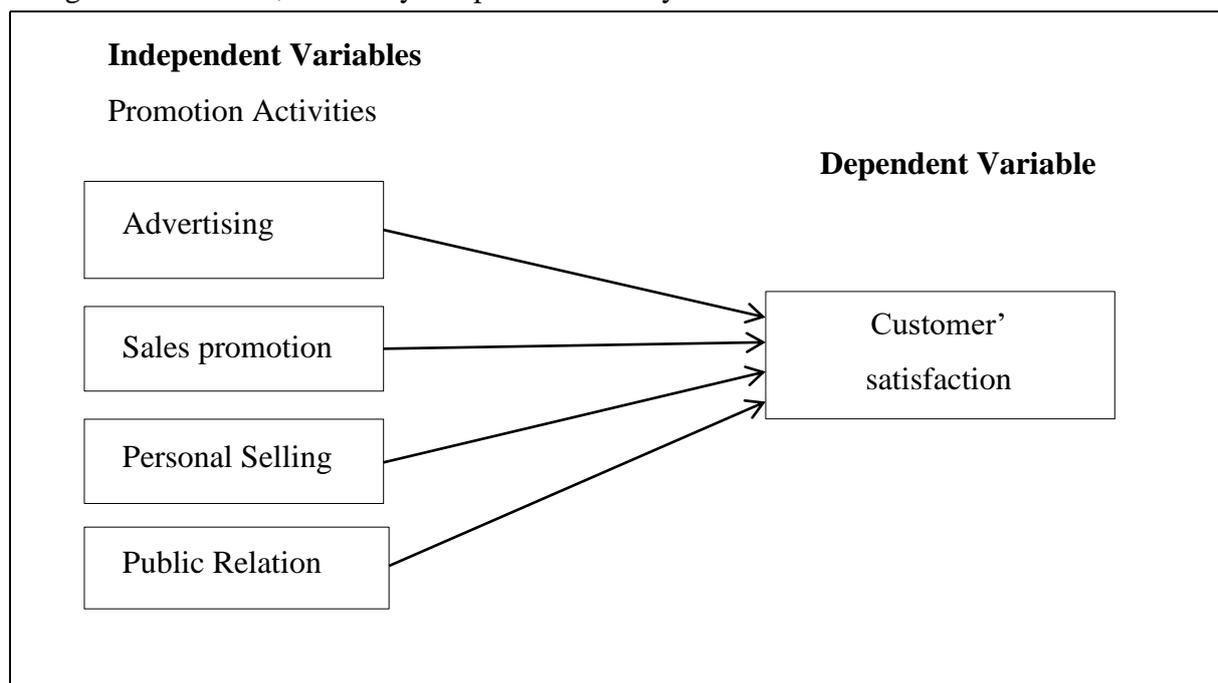
2.2 Customer Satisfaction

According to Darian Jean, Tucci Louis, and Wiman Alan (2001), customer satisfaction is a key factor in the marketing exchange process in which a product or service meets the quality and service expectations of customers. Previous research has illustrated that customer satisfaction has an overall expectation of consumption based on perceptions, evaluations and psychological reactions (Churchill & Surprenant, 1982). Many researchers have been studying

the relationship with nature between satisfaction and loyalty and then it can be concluded that customers' satisfaction is the mediating variable for them to be loyalty or not. It has also been presented in the previous studies that customer's satisfaction is one of the key points determining customer loyalty. Before they have loyalty, satisfaction has to come first in every business and market (Parasuraman, Zeithaml, & Berry, 1988; Zeithaml et al., 2017).

2.3 The Conceptual Framework of the Study

In this framework, the four promotion activities are used for this study; advertising, sales promotions, personal selling and public relations; for assessing customer satisfaction of Aung Thamadi Gold, Jewellery Shops and Refinery.



Source: Own compilation (2020)

Figure 1.1 Conceptual Framework of the Study

3. Analysis of the Impact of Promotion Activities on Customers' Satisfaction

This study mainly focuses on the descriptive and empirical analysis of results achieved from the customer satisfaction survey on promotion activities of Aung Thamardi Gold, Jewellery Shops and Refinery. There were five branches in Aung Thamardi Gold, Jewellery Shops and Refinery. So, the data obtained 200 respondents who buy Aung Thamardi Gold Jewellery Shops and Refinery and were selected by systematic random sampling method and interviewed with structured questionnaires. In this study, profile of the respondents and the statistical analyzes of customer satisfaction upon promotion mix variables were presented.

Respondents are asked about their satisfactions level upon promotion mix activities of Aung Thamardi Gold, Jewellery Shop and Refinery. Measurement the customer satisfactions covers a five points Likert scale (1= Strong disagree, 2 = moderately disagree, 3 = neither disagree nor agree, 4 = moderately agree and 5 = strongly agree) in term of level. In addition, the translation of level ranking was analyzed follow exterior of customers' satisfaction designed by Best (1977:174): The score among (1.00-1.80) means Strong disagree, the score among

(1.81-2.61) means Moderately disagree, the score among (2.62-3.41) means neither disagree nor agree, the score among (3.42-4.21) means Moderately agree, the score among (4.21- 5.00) means Strongly agree.

3.1 Profile of Respondents

The respondents profile was presented Table and Figures by gender, age, marital status, occupation, and income level.

Table 1.1 Respondents' Selected Demographic Characteristics

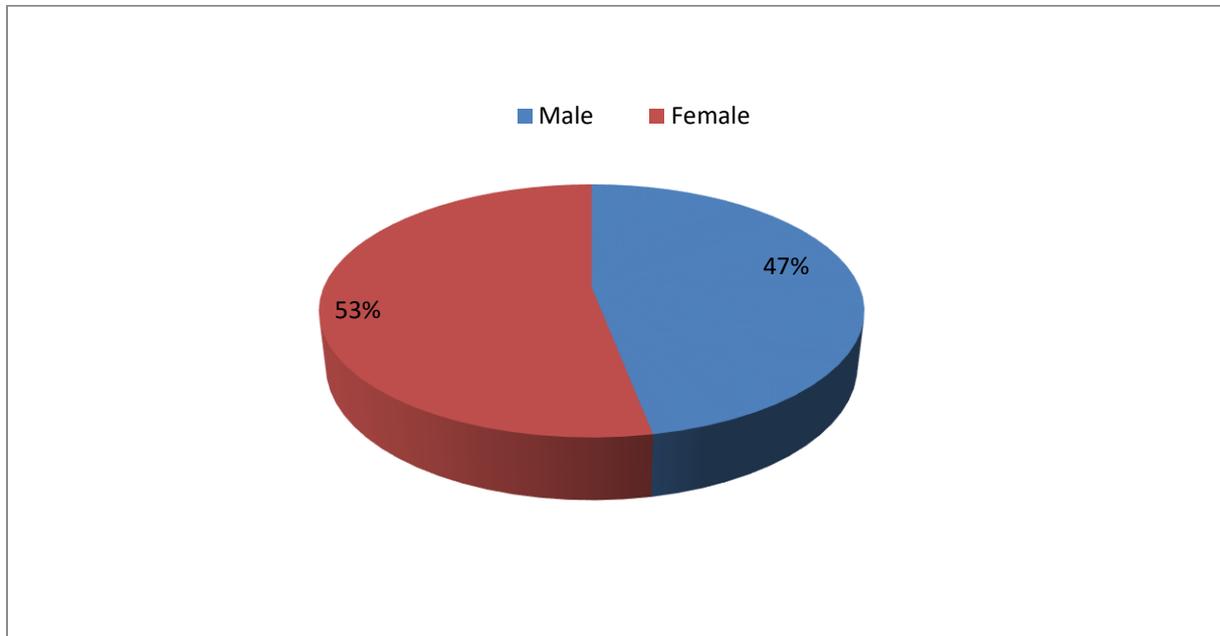
Descriptions		No. of Respondents	Percentage (%)
Gender	Male	94	47
	Female	106	53
	Total	200	100
Age Group	Under 35	79	39
	36-50	61	31
	51 and above	60	30
	Total	200	100
Marital Status	Single	101	51
	Married	99	49
	Total	200	100
Dependent	Student	10	5
	Casual worker	16	8
	Private	32	16
	Government Staff	50	25
	Occupation	43	21
	Company Staff	49	25
	Total	200	100
Income Level	Below 100,000	9	5
	100,001-200,000	18	9
	200,001-300,000	29	14
	300,001-400,000	32	16
	400,001-500,000	50	25
	500,001 and above	62	31
	Total	200	100

Source: Survey Data, 2020

Gender

The respondents are not only males, but also females. Table (1.1) and figure (1.2) show distribution of the gender of respondents.

Figure 1.2 Gender Distribution

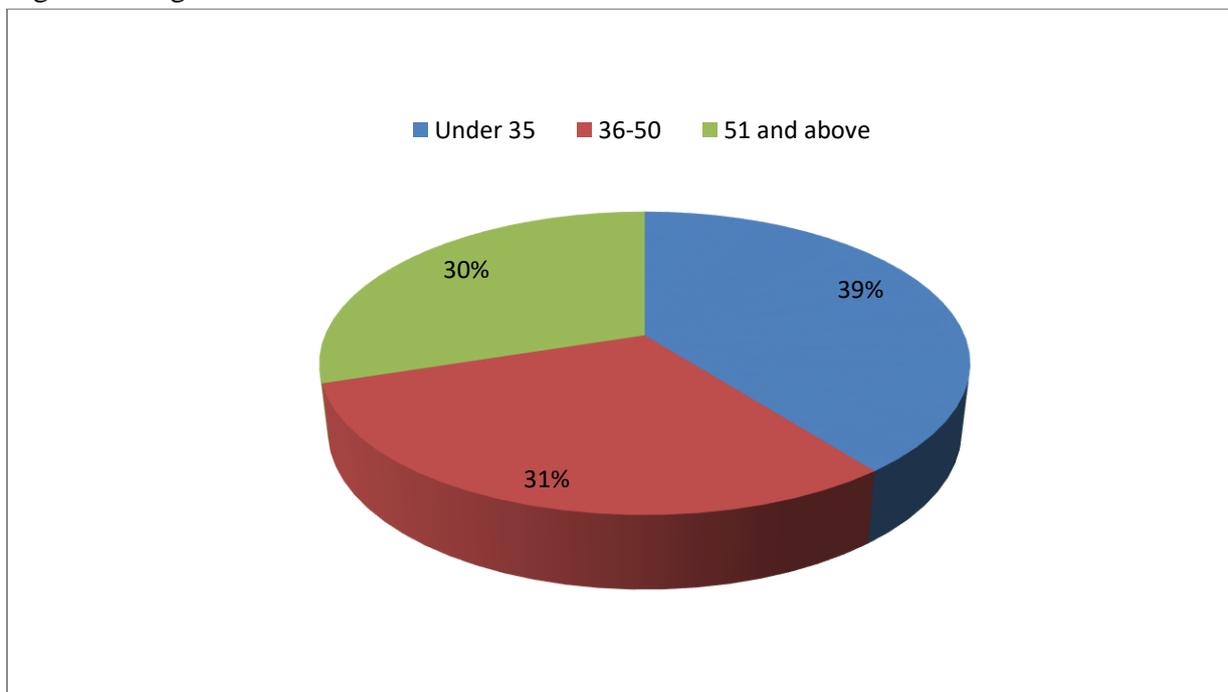


Source: Table 1.1

Age

Ages of respondents are classified into three groups. Table (1.1) and figure (1.3) present the distribution of the age of respondents.

Figure 1.3 Age Distribution

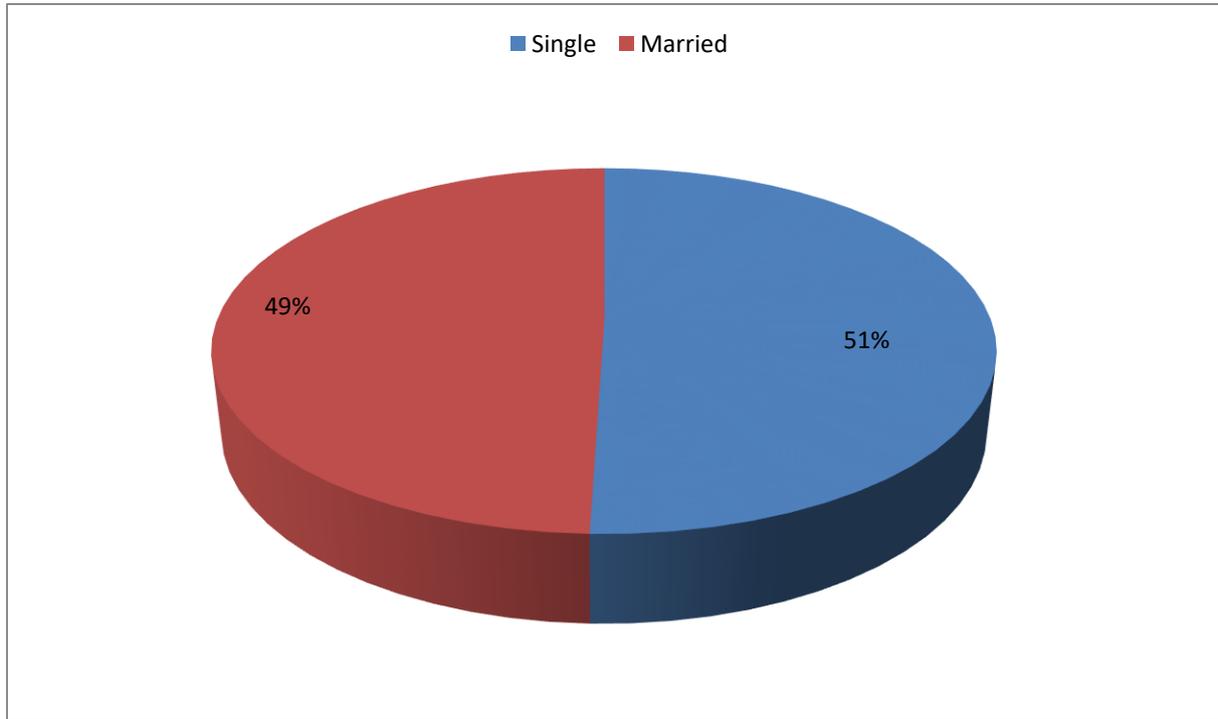


Source: Table 1.1

Marital Status

Table (1.1) and figure (1.4), present the distribution of marital status respondents.

Figure 1.4 Distribution of Marital Status

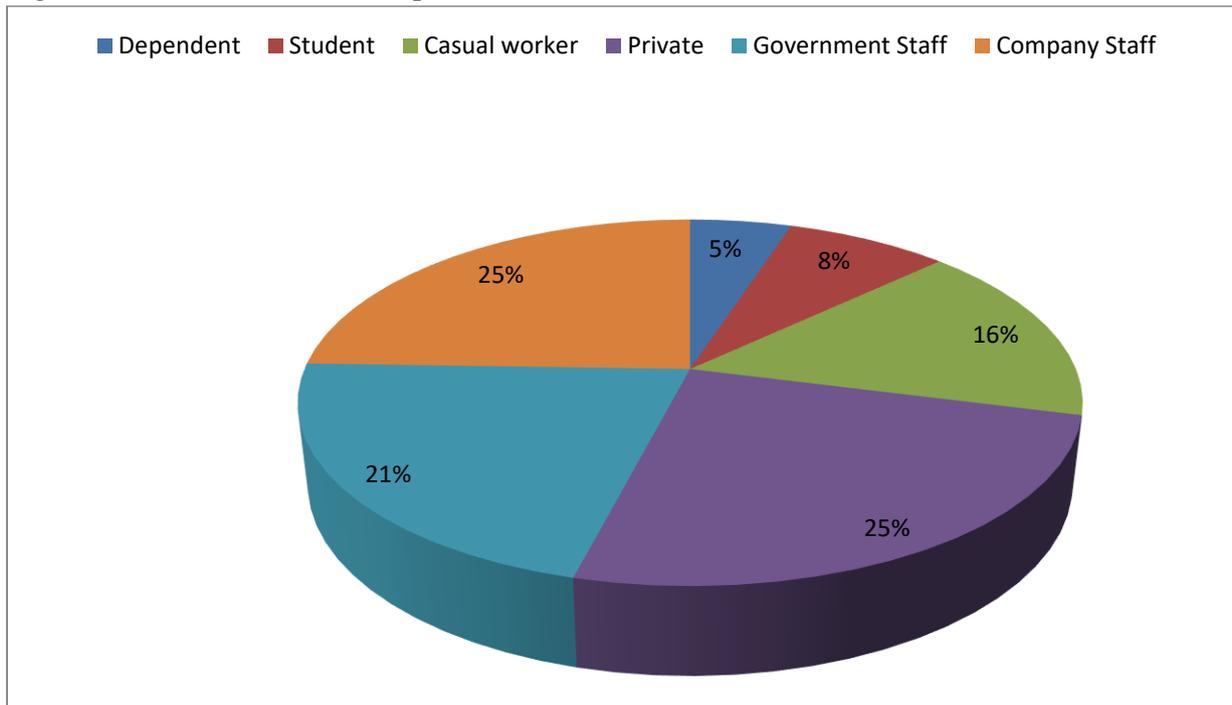


Source: Table 1.1

Occupation

Occupations of respondents are classified into six groups. Table (1.1) and figure (1.5) present the distribution of the occupation of respondents.

Figure 1.5 Distribution of Occupation

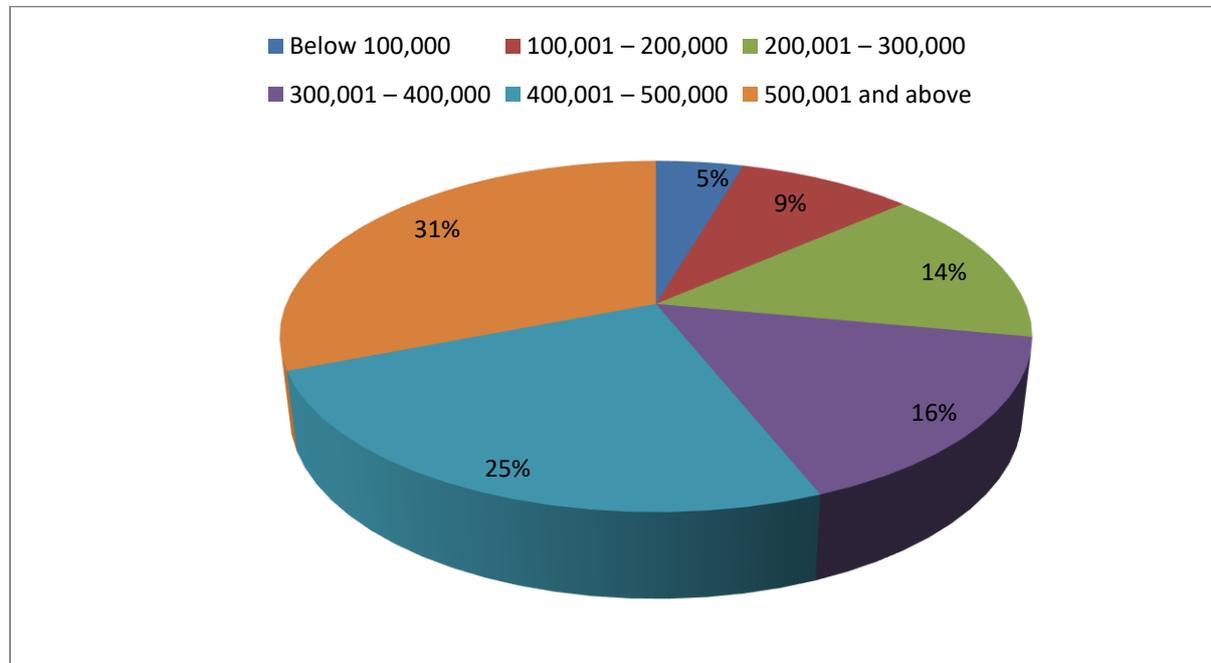


Source: Table 1.1

Income

In this study, approximate annual income is broadly divided into six groups. Table (1.1) and figure (1.6) show the distribution of income level of respondents.

Figure 1.6 Income Distribution



Source: Table 1.1

According to the results in Table (1.1), most of the respondents are female which account for (53%) and the remaining (47%) are male respondents. Age is classified into three groups: Under 35, between 36 and 50, 51 and above. Table (1.1) showed that majority of the customers (39%) were aged less than 35 years. The least respondents are 51 and above. Marital status is classified into two groups: (50%) of respondents were single and (50%) were married. Occupation is classified into six groups: dependent, student, casual worker, private, government staff and company staff. Table showed that the majority of respondents were Private and company staff who were 50 (25%). The least respondents were dependent who 10 (5%) was. Most of the respondents were own business and company staff. The second proportion of respondents was government staff. Among these respondents, the majority was found as own business and company staff who might have sufficient disposable income for saving. According to Table (1.1), the highest proportion of the income level for respondents was five lakhs and above level.

3.2 Descriptive Statistics of the Variables

Descriptive statistics in the form of means and standard deviations for respondents were computed for promotion activities and customer satisfaction.

3.3 Descriptive Statistics of Advertising and Customer Satisfaction

In this study, advertising is assumed as influencing factor on customer satisfaction. The results of advertising activities are shown in table (1.2).

Table 1.2 Descriptive Statistics of Advertising Activities of Aung Thamardi Gold, Jewellery Shops and Refinery

Particulars	N	Mean	Std. Deviation
Buying in this shop due to the advertisement in website/ Facebook	200	4.30	0.69
Buying in this shop due to the advertisement in magazine, Journal/ newspaper	200	4.15	0.76
Buying in this shop due to the advertisement on radio ,Television	200	4.28	0.82
The overall mean value			4.24

Source: Survey Data, 2020

According to table (1.2), among these advertising activities, buying in this shop due to the advertisement in website/ Facebook is the highest score factor. The overall mean value is (4.24).

3.4 Descriptive Statistics of Sales Promotion and Customer Satisfaction

In this study, sales promotion is assumed as influencing factor on customer satisfaction. The results of sales promotion activities are shown in table (1.3).

Table 1.3 Descriptive Statistics of Sales Promotion Activities

Particulars	N	Mean	Std. Deviation
Seasonal promotions are available	200	4.09	0.75
Lucky draw, coupons and free gift are satisfied	200	3.98	0.41
Only the side-waste charges or service charges on a bought	200	4.19	0.71
The overall mean value			4.09

Source: Survey Data, 2020

According to table (1.3) among the sales promotion activities, the highest score factor is only the side-waste charges or services charges on a bought item. The overall mean value is (4.09).

3.5 Descriptive Statistics of Personal Selling and Customer Satisfaction

In this study, personal selling is assumed as influencing factor on customer satisfaction. The results of personal selling activities are shown in table (1.4).

Table 1.4 Descriptive Statistics of Personal Selling Activities

Particulars	N	Mean	Std. Deviation
Good servicing of sales staff	200	4.27	0.64
Effective communication and good relationship with customers	200	3.99	0.84
Explaining about the product	200	4.39	0.59
Flexibility of customer request	200	4.19	0.73
Handling buyers complaints	200	4.20	0.73
Surely on the target date	200	4.33	0.67
The overall mean value			4.23

Source: Survey data

According to table (1.4), among the personal selling activities, explaining about the product of the sale staff is the highest score factor. The overall mean value is (4.23).

3.6 Descriptive Statistics of Public Relation and Customer Satisfaction

In this study, public relation which is assumed as influencing factor on customer satisfaction. The results of public relation activities are shown in table (1.5).

Table 1.5 Descriptive Statistics of Public Relation Activities

Particulars	N	Mean	Std. Deviation
Have free gold and gold smith training are satisfied	200	4.44	0.64
Have contributing in charities for donation	200	4.53	0.50
Annual dinner with dealers and loyal customer	200	4.55	0.49
Opening course for doctrine of Buddha	200	4.31	0.81
Giving sponsorship programme	200	4.53	0.50
Take a deep care for social and religious welfare	200	4.55	0.49
The overall mean value			4.48

Source: Survey data

According to table (1.5), the highest score factors are annual dinner with dealers and loyal customer and take a deep care for social and religious welfare for public relation activities. The overall mean value is (4.48).

3.7 Analysis of the Customer Satisfaction on Promotion Activities

The descriptive analysis of promotion activities on customer satisfaction is shown in the table (1.6).

Table 1.6 Descriptive Analysis of Customer Satisfaction and Promotion Activities

Variable	Mean	Standard Deviation	Interpretation
Satisfaction	4.23	0.39	Strongly agree
Promotion Activities			
- Advertising	4.24	0.42	Strongly agree
- Sales Promotion	4.09	0.89	Moderately agree
- Personal Selling	4.23	0.28	Strongly agree
- Public Relation	4.48	0.29	Strongly agree

Source: Survey data

In analyzing the customer satisfactions upon promotion activity of Aung Thamardi gold and jewellery shop, it can be summarized that customers have the highest mean score on public relation(4.48) such as free gold and goldsmith training, contributing in charities, annual dinner with dealers and loyal customers, opening course for doctrine of Buddha, giving sponsorship programme, take a deep care for social and religious welfare, followed by Advertising(4.24) such as radio, television, website/Facebook, magazine journal/newspaper, billboard, all advertising of this shop are attractive, Personal Selling (4.23) such as good servicing of sale staff, effective communication and good relationship with customers, explaining about the product, flexibility of customer request, handling buyers complaints, surely on the target date, Sales Promotion(4.09) such as lucky draw, coupons, free gift and it is only the side-waste charges or services charges on a bought item.

3.8 Regression Analysis of Promotion Activities on Customer Satisfaction

Multiple regression analysis was chosen in order to know significant promotion activity on customer satisfactions. As mentioned previously, the independent variable is dimensions of promotion activity are advertising, sale promotion, personnel selling, and public relation. The dependent variable was customers' satisfactions. The results of regression analysis were shown in the Table (1.7).

Table 1.7 Multiple Regression Result for Customer Satisfaction

Independent Variables	Standardized Coefficients	t	p-value(2-tailed)
Advertising	0.243***	4.006	0.000
Sales Promotion	0.104***	3.275	0.001
Personal Selling	0.356***	4.098	0.000
Public Relation	0.296***	3.510	0.001
Adjusted R ²	0.991		

Source: Survey data, ***Significant at the 1% level (2-tailed)

As seen in table (1.7), the result indicated advertising (standardized coefficients =0.243, significant at 0.000), sales promotion (standardized coefficients =0.104, significant at 0.001), personal selling (standardized coefficients= 0.356, significant at 0.000), public relation (standardized coefficients = 0.296, significant at 0.001) are the strongest customer satisfaction, respectively. It means that customers are satisfied the promotion activities of "Aung Thamardi Gold, Jewellery Shops and Refinery" such as advertising, sales promotion, personal selling and public relation. So, the majority of respondents gave high satisfaction level on personal selling variable, followed by advertising, public relation, and agree with the satisfaction for sales promotion variable.

4. Findings and Conclusions

According to the descriptive result, it has been found that among the respondents, female group is larger than male group. Most of the respondents are from age under 35 years and it is highest rate in this survey. Most of the respondents are single in this survey. Most of the respondents are private/ own business in this survey. As the income level of respondents in this survey, the majority of respondents have the high income level for Aung Thamardi Gold, Jewellery Shops and Refinery in more than ks500,000. According to the descriptive results, advertising activities has been found that customers give the highest mean score on buying in this shop due to the advertisement on radio, in television, in website/ facebook (4.30), followed by all advertising of this shop are attractive (4.28), and buying in this shop due to the advertisement in magazine, Journal/ newspaper (4.15).Sales promotion activities has been found that customers' gave the highest mean score on only the side-waste charges or service charges on a bought (4.19), followed by seasonal promotions are available (4.09) and lucky draw, coupons and free gift are satisfied (3.98).Personal selling activities has been found that customers' gave the highest mean score on explaining about the product (4.38), followed by surely on the target date (4.34), good servicing of sales staff (4.27), handling buyers complaints (4.20), flexibility of customer request (4.19) and effective communication and good relationship with customers (3.99).Public relation activities found that customers gave the highest mean score on take a deep care for social and

religious welfare (4.55) and annual dinner with dealers and loyal customers (4.55), followed by giving sponsorship programme (4.53) and having contributing in charities for donation (4.53), having a free gold and gold smith training are satisfied (4.44) and opening course for doctrine of Buddha (4.31). The descriptive analysis of promotion activities on customer satisfaction, it has been found that customers gave the highest score on public relation (4.48), followed by advertising (4.24), personal selling (4.23) and sales promotion (4.09). Therefore, promotion activities of “Aung Thamardi Gold, Jewellery Shops and Refinery” has strong effect on customer satisfaction. According to the multiple regression results, it has been found that promotion activities were strong and significant effect on customers’ satisfaction. It means that customers were satisfied with advertising, sales promotions, personal selling and public relations.

So it can be summarized that the majority of respondents gave high satisfaction level on public relation variable, followed by Advertising, Personal Selling and agree with the satisfaction for Sales Promotion variable. Therefore, all of the respondents in “Aung Thamardi Gold, Jewellery Shops and Refinery” positive feeling on the promotion activities.

4.1 Suggestions and Recommendations

Nowadays “Gold and Jewellery Shops” are facing competition with other gold and jewellery businesses. So, “Aung Thamardi Gold, Jewellery Shops” should upgrade their advertising, sales promotions, personal selling and public relation to gain more customer satisfaction and build loyalty.

In this research, all promotion activities are satisfied by customers. However, sales promotions activities are need to promote to attract customers by using more given lucky draw, coupons and free gift and more given seasonal promotions. Aung Thamardi Gold, Jewellery Shops and Refinery need to construct effective communication and good relationship with customers and need to solve request of the customer, more need to use personal selling activities such as they are willing to accept the buyer’s complaints and selfthem.

4.2 Need for Further Study

This study is just focused on customer satisfaction upon the promotion activities of Aung Thamardi Gold and Jewellery Shops and Refinery. Future research needs to be studied supply sides of other gold and jewellery businesses and the demand side of gold bar, jewellery and accessories products. In addition, further studies should conduct other specific functional areas of “Gold, Jewellery Shops and Refinery” such as human resource management, sales and marketing that will be beneficial for strong customer satisfaction.

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**A Study on Health Care Expenditure of Households;
A Case Study on University of Co-operative and Management, Sagaing
Daw Su Su Aung¹, Daw Thin Thin Yu², U Nyunt Min³, Daw Aye Aye Phyoe⁴**

Abstract

This paper aims to investigate income and family size on households' health care expenditure. It analyzes that the consumption expenditure on different items, the frequency of catastrophic health expenditure, the self-reported health status and the household spending out-of-pocket payments healthcare expenditures by using questionnaires through randomly selected (102) staffs in University of Co-operative and Management, Sagaing. This research was conducted by structured questionnaires-based survey method and the collected data was analyzed by using the descriptive method. This paper shows that higher income level is more spend on health care expenditure and when household size increases, the average household health care expenditure also increases in both academic and administrative staff households. The academic staff of sample households paid for their health services out-of-pocket payments is 30(58.8%) and the administrative staff of sample households paid for their services out-of-pocket payments is 23(45.1%). The households spending on healthcare expenditures depend on their income and family size. This paper suggested that the households should have the knowledge of health insurance, healthy life style and saving for healthcare expenditures. The staff should have the membership of a saving and credit society at the University. When the staffs have a health problem, they can get a loan at low interest rate from the society.

Keywords: Out of Pocket Payments (OOPPs), Catastrophic Health Expenditure (CHE), Healthcare Expenses, Households Income.

1. Introduction

Health is a vital role of human being. Health is a condition of complete physical, mental and social well-being and not merely the absence of disease and infirmity. Life is of great importance for both health status and quality of life. So health care is important to more attention in our lives. Health care is the maintenance or improvement of health. Health expenditure includes all expenditures for the provision of health services, family planning activities, nutrition activities and emergency aid designated for health, but it excludes the provision of drinking water and sanitation.

Around the world, millions of people are impoverished due to health care spending or have to spend catastrophic amounts of money for health care. According to the (2014) Population and Housing Census of Myanmar, the total population of Myanmar is (51,486,253).⁵ The general state of healthcare in Myanmar is poor. Both public and private hospitals are understaffing due to a national shortage of doctors and nurses. Public hospitals lack many of the basic facilities and equipment. Government spending on health care in Myanmar was (3.4%) of general government expenditure in (2014-2015). In Myanmar, out-of-pocket payments are the main source of health care financing, representing (74%) of the total health expenditure in (2015). Thus a new democratic government were enacted a series of healthcare reforms. Patients continue to pay the majority of healthcare costs as out-of-pocket payments. Although, out of pocket costs were reduced from (85%) to (62%) in (2014-2015).

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⁵ 2014 Myanmar Population and Housing Census: Ministry of immigration and population, Union of Myanmar, August 2014

They continue to drop annually.⁶ In (2018), health expenditure in Myanmar amounted to approximately (4.79%) of the country's GDP.⁷ Public hospitals lack many of the basic facilities and equipment. A recent survey by the World Health Organization (WHO), which sees the Myanmar ranked last in a long list made up of (194) nations.⁸ Health care in Asian countries where a prepayment system is not established is mostly financed by out-of-pocket payments.

In those countries, households are exposed to the risk of unforeseen medical expenditures, having the highest incidence of catastrophic health payments, especially for emergency health care. Health care expenditure is catastrophic health payments catastrophic health payments when out-of-pocket payments for health care exceed a certain proportion of the household's income, leading to loss of employment and food insecurity.

Recognizing high out-of-pocket payments expenditure and financial burden on poor and vulnerable households, the government committed to strengthening efficient, fair and sustainable health financing systems, so that all people have access to health services and do not suffer from financial hardship.

This paper aims to investigate influence of income, family size and education on households' health care expenditure. It analyzes the consumption expenditure on different items, the frequency of catastrophic health expenditure, the self-reported health status and distribution of household of out-of-pocket payments health care expenditures in University of Co-operative and Management, Sagaing.

1.1 Empirical Study

Chaw Yin Myint (2019) studied health care expenditures have been linked to household's income, family size and education. Analysis by comparing the sociodemographic characteristics of the two samples, the general population sample and the Social Security Scheme sample. Significantly higher out-of-pocket payments in the general population sample highlight the need of financial protection among this group. Myanmar needs to extend social protection for all people.

Inn Kynn Khaing (2015) study aimed to investigate health care expenditure, the frequency of catastrophic health payments, and the factors influencing catastrophic health payments among households in Magway, Myanmar. Lack of financial protection against these risks drives the households into poverty as they struggle to pay for health care and vulnerable groups and on developing effective safety-net mechanisms.

Thant Zin Htoo (2018) observed in the paper combined with the country's historic political and economic isolation, poor economic management and multiple internal armed conflicts, these limited resources have translated into low coverage of even the most basic services and into poor health outcomes with wide disparities. They have also resulted in out of pocket payments for health as a proportion of total health spending being among the highest in the world. The Government of Myanmar has now affirmed its commitment to moving toward

⁶ Inn Kynn Khaing^{1,2}, Amonov Malik¹, Myo Oo³ and Nobuyuki Hamajima⁴. (2015). *Health Care Expenditure of Households in Magway, Myanmar*. Nagoya J. Med. Sci. **77**. 203 ~ 212

⁷ WHO, Global Health Expenditure database, retrieved on January 30, 2020

⁸ The Republic of the Union of Myanmar Health System Review, Health System in Transition Vol.4 No 3 2014

Universal Health Coverage. With current political will to reform the health system, a conducive macro-economic environment, and the relatively limited vested interests, Myanmar has a window of opportunity to achieve significant progress towards UHC. Continued high-level political support and strong leadership will be needed to keep reforms on track.

1.2 Objectives of the Study

The objectives of the study are:

1. to study the proportion of health care expenditure and total expenditure of households in University of Co-operative and Management, Sagaing.
2. to examine the influence of income, family size and education on households' health care expenditure.

1.3 Study Area and Survey Method

This study is based on primary data, which is income, expenditure, family size, property, health care expenditure and health care saving collected by using questionnaires through randomly selected (102) staff in the University of Co-operative and Management, Sagaing. This research is conducted by structured questionnaires-based on simple random survey method and the collected data was analyzed by using the descriptive method.

The population of the study is the households of staff in University and it has (186) staff in October, (2021). By using simple random sampling technique, necessary data was collected from a sample of (102) permanent staff. Among these (51) households from academic staffs and (51) households from administrative staffs were selected with a simple random sampling method.

2. Literature Review

Health care is the maintenance or improvement of health via the prevention, diagnosis, treatment, or cure of disease, illness, injury and other physical and mental impairments in people.

The connection between health and economic growth has long been established in the literature Bloom et al. (2005) stated that health is an important form of human capital and it can enhance workers' productivity by increasing their physical capacities, such as strength and endurance. The importance of health and investment in healthcare are major components of the development goals pursued by developing and developed countries around the globe. The increasing attention health care delivery is receiving worldwide has further emphasized the importance of health and health care expenditure on economic growth.

The work of Baldacci (2004) elucidates the importance of health expenditures. Higher expenditure on health alone cannot meet a given nation's development goals. However, in conjunction with other social investments, it can drive economic growth. A healthy person is full of life and energy and a healthy society tends to be energetic and actively involved in productive ventures.

Sachs (2001) and Bloom et al. (2005) find positive correlations between health and economic growth. Spending in health care services can lead to improvements in health. There are several studies showing that improvements in health can positively influence economic growth through its effects on fertility, labor productivity, and the quality of human capital.

Baldacci et al. (2003) and Gupta et al. (2002) find that social spending is an important determinant of education and health outcomes. However, there are some disagreements and divergent views concerning the effects of increased healthcare spending. This work, based on cross-sectional data for developing countries, reveals that expenditures on education have a greater effect on social indicators than health expenditures.

Barro (1996) argues that improved health can reduce the depreciation of education capital, and thus increase the favorable effect of education on growth. Health and education have also been found to be influential factors in human capital formation. Advanced levels of education attainment create an enabling environment for awareness among the public and the ability of families to solve their health problems.

The major contribution of health as an integral part of human capital was provided by Grossman (1972), who firstly constructed a model of the demand of health by applying human capital theory.

3. Historical Background of the University of Co-operative and Management, Sagaing

Under the (1970) Co-operative Scheme, Sagaing Division Co-operative Training School was built to conduct various kinds of co-operative training courses. In (1993), the Ministry of Cooperatives had aimed to train and produce well qualified persons who can fulfill the need of cooperatives and private enterprises; it was upgraded from Sagaing Division Co-operative Training School to Sagaing Co-operative Regional College. Then it was renamed Co-operative College, Sagaing. At that time, Co-operative College, Sagaing accepted the students and staffs who have matriculated. After completion of two-year Course, the students will be conferred a diploma such as-

1. Diploma in Business Accounting(DBA)
2. Diploma in Marketing Management(DMM)
3. Diploma in Business Management(DBM)

In (2012), Co-operative College, Sagaing was upgraded into Co-operative University, Sagaing according to the guidance of President of the Republic of the Union of Myanmar. At that time, University accepted the students who have matriculated. After a term of four-year, the students will obtain a Degree in B. BSc (Bachelor of Business Science). In (2014-2015) Academic Year, Co-operative University has expanded its majors and so it can be conducted the following kinds of courses: -

1. Bachelor of Business Science (Regional Development)
2. Bachelor of Business Science (Accounting and Finance)
3. Bachelor of Business Science (Applied Statistics)
4. Bachelor of Business Science (Marketing Management)
5. Bachelor of Business Science (Social Enterprise Management)

After a term of four-year, the students will obtain respectively a Degree with specialized major. The vision of University of Co-operative and Management, Sagaing is- to become a University that brings up qualified human resources for socio-economic development. In 19th November (2021), Co-operative University, Sagaing was renamed University of Co-operative and Management, Sagaing according to the guidance of Ministry of Education Myanmar. Currently, the population of the study is the staffs of University and it has (186) staffs as at October, (2021). University have the red cross society.

The objective of University of Co-operative and Management, Sagaing is to become a University that creates sustainable good environment for teaching, learning and research in accordance with quality assurance for socio-economics.

The mission of University of Co-operative and Management, Sagaing are-

1. to develop specific programs for regional development, social enterprise management, accounting and finance, marketing management and applied statistics.
2. to bring up human resources who are able to be attentive and cooperative in the respective field.
3. to conduct applied and practical research constantly.

3.1 Household's Expenditure of Staffs in University of Co-operative and Management, Sagaing

Household expenditure is the amount of final consumption expenditure made by resident households to meet their everyday needs, such as food, clothing, housing rent, energy, transport, durable goods, health costs, leisure and miscellaneous services. The relationship between income and expenditure is the consumption schedule or consumption function in economics. When disposable income rises, consumption increases. Consumption may exceed the larger part of the disposable income for low-income individuals.

The households of staff have (186) and was collected from a sample of (102) permanent staff in University. The household staff were spent on food, education, tea and coffee, electricity, transport cost, social cost, healthcare and phone bill. Generally, the household staff always spent on food, electricity, social cost and phone bill. Moreover, the household staffs spent on the healthcare expenditure.

4. Analysis of Health Care Expenditure of Households in University of Co-operative and Management, Sagaing

4.1 Socio Demographic Characteristics

This paper analyzes the data which was collected socio-demographic characteristics in the sample of academic and administrative staffs. These characteristics includes age, gender, family size, marital status, current health status, income and household expenditure. The socio-demographic characteristics of the two samples are summarized in Table (1).

Table.1 Socio Demographic Characteristics

Particular		Academic Staff Sample	Administrative Staff Sample	Significance of the difference between sample
Gender	Male	4 (7.8%)	6 (11.8%)	
	Female	47 (92.2%)	45 (88.2%)	
	Total	51 (100%)	51 (100%)	
Age (Year)	Under 25	1	-	0.001 ^a
	26-35	34	18	
	36-45	10	19	
	Above 46	6	14	
	Total	51 (100%)	51 (100%)	
Marital Status	Single	30 (58.8%)	17 (33.7%)	
	Married	21 (41.2%)	34 (66.7%)	
	Total	51 (100%)	51 (100%)	

Education	Graduate		51 (50%)	
	Mater	48(47.06%)	-	
	Ph. D	3 (2.94%)	-	
	Total	51 (100%)	51 (100%)	
Family Size	3	1 (2.0%)	-	
	Under 3	8 (15.7%)	9 (17.6%)	
	Over 3	42 (82.4%)	42 (82.4%)	
	Total	51 (100%)	51 (100%)	
Self-reported health status	Yes	36 (70.6%)	39 (76.5%)	0.001 ^a
	No	15 (29.4%)	12 (23.5%)	
	Total	51 (100%)	51 (100%)	

Source: Survey Data, 2021

Independent samples t-test ^a;

According to table (1), This study started the analysis by comparing the sociodemographic characteristics of the two samples: the academic staff households and the administrative staff households. Mann-Whitney U test is applied to compare ordinal variables and independent sample t-test is applied to compare continuous variables between two samples. The rest of the data from the two samples, were separately also analyzed by descriptive statistics for each variable.

The sample of academic staff households includes 47(92.2%) female and 4(7.8%) male while the administrative staff households includes 45(88.2%) female and 6(11.8%) male respectively. The difference in mean age between the two samples is significant at $p < 0.001$. In according to the collected data, the staffs are age of between (26) and (35) years. Because they are young and healthy, they may have little affected on health care expenditure. The staffs are educated person and then they have a wealth of health knowledge. About 30(58.8%) of the academic staff households are single while 17(66.7%) of the administrative staff households are married. The number of family or the household size is one of the important factors which influence the expenditures of the people. Around (75%) of the respondents in both samples rate their current health status as “good”.

4.2 The Condition of Household Income

In this table, the selected sample households' monthly income is the most important determinant of households' expenditure on food consumption and non-food consumption. Their income is spent for different items (social cost, bills, health expenditure and so on).

Table.2 Monthly Household Income

Income Group (Kyats)	Overall		Academic Staffs		Administrative Staffs	
	No. of Household	%	No. of Household	%	No. of Household	%
Under 300000	35	34.3	10	19.6	15	29.4
300001-400000	24	23.5	18	35.3	16	31.4
400001-500000	20	19.6	8	15.7	12	23.5
500001-600000	6	5.9	2	3.9	4	7.8
Above 600000	17	16.7	13	25.5	4	7.8
Total	102	100	51	100	51	100

Source: Survey Data, 2021

As shown in Table (2), the bottom income group (under 300000) Kyats is 35(34.3%) of total households and the highest income group (above 600000) Kyats are only 17(16.7%) of total households. Therefore, 67(65.7%) of the total number of households in study area increase the more than under (300000) Kyats per month.

This data shows that 10(19.6%) of the total number of academic staff households and 15(29.4%) of total number of administrative staff household are bottom income households (under 300000) Kyats per month. In addition, academic staff households include the highest income group (above 600000) Kyats, 13(25.5%) and 4(7.8%) for administrative staff households. This observation clearly indicates that the economic condition of academic staff households is significantly higher than administrative staff households. The relationship between income and expenditure is the consumption schedule or consumption function in economics. When disposable income rises, consumption increases.

4.3 The Condition of Monthly Household Expenditure

In this table, the selected sample households' monthly expenditure is spending the expenditure on consumption expenditure, education expenditure, entertainment expenditure, social expenditure, health expenditure, communication expenditure, electricity expenditure, water for using and drinking expenditure, and miscellaneous expenditure were collected as a monthly basis.

Table.3 Average Total Expenditure and Healthcare Expenditure

	Income Group	No. of Household	Average Total Expenditure (Ks.)	Average Healthcare Expenditure (Ks.)	%
Academic Household Staffs	Under 300000	18	220333	16666	7.56
	300001-400000	10	281600	19000	6.75
	400001-500000	8	302125	26250	8.69
	500001-600000	2	256000	15000	5.86
	Above 600000	13	341154	20769	6.08
Total		51			
Administrative Household Staffs	Under 300000	16	204375	16250	7.95
	300001-400000	15	266067	20000	7.60
	400001-500000	12	237667	20000	8.42
	500001-600000	4	355000	25000	7.04
	Above 600000	4	364500	20000	5.49
Total		51			

Source: Survey Data, 2021

This table (3) shows the average total expenditure and average healthcare expenditure of the different income groups. The income group (500001-600000) Kyats in academic household staff is little spent on total expenditure and then is small amount of healthcare expenditure. The academic households staff, the highest income group spending on average total expenditure is (341154) Kyats and average healthcare expenditure is 20769(6.08%) Kyats. The income group (500001-600000) Kyats in administrative household staff is spent on total expenditure and then is more amount of healthcare expenditure. The administrative staff households, the highest income group spending on average total expenditure is (364500) Kyats

and average healthcare expenditure is 20000(5.49%) Kyats. In this observed data, the highest income group is more spent on total healthcare expenditure. When disposable income rises, the healthcare expenditure no more than spent on the total average expenditure.

4.4 Household Property of Selected Households

According to the table (4), the most percentage of selected sample household's properties are hand phone (73.5%), refrigerator (53.9%), fan (50.0%) and laptop (50.0%). The percentage of car, cycle and bicycle in transportation are (11.8%), (21.6%) and (23.5%) respectively. Moreover, the percentage of fan, air cooler and sewing machine are (50.0%), (44.1%) and (17.6%) respectively. When asked about car ownership, there is no distinction between owning a car and a car providing of office.

Table.4 Household Property of Selected Sample

Household Property	Yes		No		Total	
	No. of Household	%	No. of Household	%	No. of Household	%
Car	12	11.8	90	88.2	102	100
Cycle	22	21.6	80	18.4	102	100
Television	59	42.2	43	57.8	102	100
Refrigerator	55	53.9	47	46.1	102	100
Fan	51	50.0	51	50.0	102	100
Air Cooler	45	44.1	57	55.9	102	100
Hand Phone	75	73.5	27	26.5	102	100
Sewing	18	17.6	84	82.4	102	100
Laptop	51	50.0	51	50.0	102	100
Bicycle	24	23.5	78	76.5	102	100

Source: Survey Data, 2021

4.5 Health Care Pattern During the Twelve Months

Health care utilization during in the last episode of illness healthcare use in the twelve months among the two samples are described in Table (5).

Table.5 Health Care Pattern During the Twelve Months

Variables	Particular	Academic Staff Sample	Admin Staff Sample	Significance of the differences between the samples
Any symptoms of illness during the past 12 months	Yes = 1	36 (70.6%)	39 (76.5%)	0.000 ^b
	No = 0	15 (29.4%)	12 (23.5%)	
	Total	51 (100%)	51 (100%)	
Types of services	Nearby	26 (51.0%)	17 (33.3%)	
	General Practitioner	4 (7.8%)	14 (27.5%)	
	Hospital	4 (7.8%)	10 (19.6%)	
	Traditional healer	1 (2.0%)	-	
	Go to Health Assistant	3 (5.9%)	2 (3.9%)	
	Pharmacy	5 (9.8%)	5 (9.8%)	
	Nil	8 (7.8%)	3 (5.9)	
Total	51 (100%)	51 (100%)		

Reason for choose	Best quality	21 (41.2%)	29 (56.9%)	0.080 ^b
	Recommended	2 (3.9%)	-	
	Brought by someone	2 (3.9%)	5 (9.8%)	
	Low Cost	7 (13.7)	7 (13.7%)	
	Short Time	11 (21.6)	7 (13.7%)	
	Nil	8 (15.7%)	3 (5.9%)	
	Total	51 (100%)	51 (100%)	
Payment method for health services used	Payment method for health services used	13 (25.5%)	14 (27.5%)	0.117 ^b
	Out-of-pocket payment	30 (58.8%)	23 (45.1%)	
	Other (eg. Helping by relatives or family doctor)	8 (15.7%)	14 (27.5%)	
	Total	51 (100%)	51 (100%)	
Types of Out-of-Pocket Payments for healthcare	Out-of-pocket expenditure for health care received	49 (96.1%)	45 (88.2%)	
	Borrowed money to cover the expenditure of healthcare used	-	1 (2.0%)	
	Sold properties to cover the expenditure of healthcare used	1 (2.0%)	2 (3.9%)	
	Nil	1 (2.0%)	3 (5.9%)	
	Total	51 (100%)	51 (100%)	

Source: Survey Data, 2021

Mann-Whitney U Test ^b.

According to table (5), there is a statistically significant difference between the two samples in terms of the share of respondents who reported illness during the past (12) months (70.6%) of the academic staff households and (76.5%) of the administrative staff households. Various types of health care facilities are used during the last episode of illness. However, the academic households choose the best perceived service quality at nearby the house than the administrative staff households.

Among those who paid out of pocket, the total out-of-pocket payment expenditure for health care used during the last episode of illness is higher in the administrative staff households. The sample of academic staff households who not needed to borrow money to cover the health care expenditure and (2.0%) of administrative staff households who needed to borrow money to cover the health care expenditure for the last health care use respectively. Similarly, the academic staff households who needed to sell assets to cover their health care expenditure for the last service use were (2.0%) and (3.9%) respectively.

4.6 Healthcare Expenditure of Income Group

Normally, a tendency for the higher income group spends more their income than lower income group. The higher households spend more of their income on expenditure to compare with lower households.

Table.6 Healthcare Expenditure by Income Group

Income Group (Kyats)	Health Expenditure (Kyats)	Overall		Academic Staff		Administrative Staff	
		No. of Households	%	No. of Households	%	No. of Households	%
Under 300000	0	4	11.77	3	16.67	1	6.25
	1-10000	12	35.29	5	27.78	7	43.75
	10001-20000	10	29.41	6	33.33	4	25
	20001-30000	6	17.65	3	16.67	3	18.75
	Above 30000	2	5.88	1	5.56	1	6.25
	Total	34	100	18	100	16	100
300001-400000	0	3	12.00	2	20	1	6.67
	1-10000	6	24.00	2	20	4	26.67
	10001-20000	8	32.00	3	30	5	33.33
	20001-30000	3	12.00	2	20	1	6.67
	Above 30000	5	20.00	1	10	4	26.67
	Total	25	100	10	100	15	100
400001-500000	0	4	20	0	0.00	4	33.33
	1-10000	2	10	0	0.00	2	16.67
	10001-20000	6	30	3	37.5	3	25
	20001-30000	2	10	1	12.5	1	8.33
	Above 30000	6	30	4	50	2	16.67
	Total	20	100	8	100	12	100
500001-600000	0	1	16.67	0	0.00	1	25
	1-10000	1	16.67	1	50	0	0.00
	10001-20000	2	33.33	1	50	1	25
	20001-30000	0	0.00	0	0.00	0	0.00
	Above 30000	2	33.33	0	0.00	2	50
	Total	6	100	2	100	4	100
Above 600000	0	2	11.76	1	7.69	1	25
	1-10000	1	5.88	1	7.69	0	0.00
	10001-20000	7	41.18	5	38.46	2	50
	20001-30000	1	5.88	1	7.69	0	0.00
	Above 30000	6	35.30	5	38.46	1	25
	Total	17	100	13	100	4	100

Source: Survey Data, 2021

This table (6) shows the income and healthcare expenditure of the different income groups, the lowest income groups (under 300000) Kyats for overall are (35.29%) spending on (1-10000) Kyats healthcare expenditure, academic staff households (27.78%) and the administrative staff households (43.75%). The lowest income group for overall are (5.88%) spending on above (30000) Kyats healthcare expenditure. This indicates that low income household is little spending on healthcare expenditure.

In the highest income groups above (600000) Kyats for overall are (41.18%) spending on (10001-20000) Kyats healthcare expenditure, academic staff households (38.46%) and the administrative staff households (50%). The highest income group for overall are (35.30%)

spending on above (30000) Kyats healthcare expenditure. It is indicated that the household income level is higher, the healthcare expenditure is more spending in the staffs from University of Co-operative and Management, Sagaing.

4.7 Healthcare Expenditure by Household Size

Most households are spending more their income on consumption of different items (eg. food, clothing, bill and luxury goods etc.) Thus, this paper analyzes about how to spend the healthcare expenditure of households in University as shown in table (7).

Table.7 Healthcare Expenditure by Household Size

	Households Size	No of Households	%	Healthcare Expenditure (Kyats)	No of Households	%
Overall	Under 3	17		Under 10000	9	52.94
				10001-20000	5	29.41
				20001-30000	1	5.88
				Above 30000	2	11.77
	3	1	1.0	Above 30000	1	100
	Over 3	84		Under 10000	23	27.38
				10001-20000	32	38.10
				20001-30000	11	13.10
				Above 30000	18	21.43
	Total	102	100	Total	102	100
Academic Staff	Under 3	8		Under 10000	4	50.00
				10001-20000	2	25.00
				20001-30000	1	12.50
				Above 30000	1	12.50
	3	1	2.0	Above 30000	1	100
	Over 3	42		Under 10000	11	26.19
				10001-20000	16	38.10
				20001-30000	6	14.29
				Above 30000	9	21.43
	Total	51	100	Total	51	100
Administrative Staff	Under 3	9		Under 10000	5	55.55
				10001-20000	3	33.33
				20001-30000	-	-
				Above 30000	1	11.11
	3	-	-	-	-	-
	Over 3	42		Under 10000	12	28.57
				10001-20000	16	38.10
				20001-30000	5	11.91
				Above 30000	9	21.43
	Total	51	100	Total	51	100

Source: Survey Data, 2021

According to table (7) shows that the household size and health care expenditure of the different household groups. There are (3) family members, under (3), or over (3) in households group. There are (17) households which have under (3) members. Among them, (9) households

spend on under (10000) Kyats healthcare expenditure. There are (84) households which have over (3) members. Among them, (32) households spend on (10001-20000) Kyats healthcare expenditure.

In the academic staff households, there are (8) households which have under (3) members. Among them, 4(50.00%) households spend on under (10000) Kyats healthcare expenditure. There are (42) households which have over (3) members. Among them, 16(38.10%) households spend on under (10000) Kyats health care expenditure.

In the administrative staff households, there are (9) households which have under (3) members. Among them, 5(55.55%) households spend on under (10000) Kyats health care expenditure. and There are (42) households which have over (3) members. Among them, 16(38.10%) households spend on under (10000) Kyats health care expenditure. As a result, the compare of this two sample households is found that the larger of family member can also be increased the health care expenditure.

4.8 Saving Condition of Households

Saving is the portion of income that do not spend on current expenditure. Saving money can avoid debt, and relieves stress of your life. Although you saved the money for future plans not to save for healthcare. The households spend the health care expenditure only out-of-pocket payments.

Table.8 Saving Condition of Households

Particular	Healthcare Saving (Kyats)	No of Households	%
Academic Staffs	No Saving	25	49.02
	0 -10000	6	11.77
	10001-20000	10	19.61
	20001-30000	3	5.88
	30000-40000	4	7.84
	Above 40000	3	5.88
	Total	51	100
Administrative Staffs	No Saving	17	33.33
	1 -10000	8	15.69
	10001-20000	9	17.65
	20001-30000	12	23.53
	30000-40000	3	5.88
	Above 40000	2	3.92
	Total	51	100

Source: Survey Data, 2021

According to the table (8), the 25(49.02%) academic staff households and the 17(33.33%) administrative staff households do not save for health care expenditure. In this case, the selected (42) households do not have saving for their health care expenditures. The 3(5.88%) academic staff households and the 2(3.92%) administrative staff households have saving (20001-30000) Kyats and above (40000) Kyats for their health care expenditure. When the people faced health problems, they use only the saving money for their cases.

5. Findings

This paper analyzes the impact of the households' income and households size on healthcare expenditure, the consumption expenditure on different items, the frequency of catastrophic health expenditure, the self-reported of health status the spending of household of out-of-pocket payments health care expenditures and the saving for health care in University of Co-operative and Management, Sagaing.

The observation area analysis, by comparing the sociodemographic characteristics of the two samples: the academic staff households and the administrative staff households. Mann-Whitney U test was applied to compare ordinal variables and independent sample t-test was applied to compare continuous variables between two samples. The rest of the data from the two samples, were also analyzed separately by descriptive statistics for each variable of each sample, and comparing these results between the two samples.

In according to the collected data, the staffs are age of between (26) and (35) years. Because they are young and healthy, they may have little affected on health care expenditure. The staffs are educated person and then they have a wealth of health knowledge. About 30(58.8%) of the academic staff households are single while 17(66.7%) of the administrative staff households are married. The number of family or the household size is one of the important factors which influence the expenditures of the people. Around (75%) of the respondents in both samples rate their current health status as "good".

The academic households staff include the highest income group (above 600000) Kyats, (25.5%) and (7.8%) for administrative staff households. This observation clearly indicates that the economic condition of academic staff households is significantly higher than administrative staff households. The relationship between income and expenditure is the consumption schedule or consumption function in economics. When disposable income rises, consumption increases.

The average total expenditure and average healthcare expenditure of the different income groups. The income group (500001-600000) Kyats in academic household staff is little spent on total expenditure and then is small amount of healthcare expenditure. The academic households staff, the highest income group spending on average total expenditure is (341154) Kyats and average healthcare expenditure is 20769(6.08%) Kyats. The income group (500001-600000) Kyats in academic household staff is spent on total expenditure and then is more amount of healthcare expenditure. The administrative staff households, the highest income group spending on average total expenditure is (364500) Kyats and average healthcare expenditure is 20000(5.49%) Kyats. In this observed data, the highest income group is more spent on total healthcare expenditure. When disposable income rises, consumption increases but not include in healthcare expenditure.

Various types of health care facilities are used during the episode of illness. However, the academic households choose the best perceived service quality at nearby the house than the administrative staff households.

The sample of academic staff households who not needed to borrow money to cover the health care expenditure and (2.0%) of administrative staff households who needed to borrow money to cover the health care expenditure for the last health care use respectively.

Similarly, the academic staff households who needed to sell assets to cover their health care expenditure for the last service use were (2.0%) and (3.9%) respectively.

In the highest income groups above (600000) Kyats for overall are (41.18%) spending on (10001-20000) Kyats health care expenditure, academic staff households (38.46%) and the administrative staff households (50%). The highest income group for overall are (35.30%) spending on above (30000) Kyats health care expenditure. It is indicated that the household income level is higher, the health care expenditure is more spending in the University of Co-operative and Management, Sagaing.

The 25(49.02%) academic staff households and the 17(33.33%) administrative staff households do not save for health care expenditure. In this case, the selected (42) households do not have saving for their health care expenditures. The 3(5.88%) academic staff households and the 2(3.92%) administrative staff households have saving (20001-30000) Kyats and above (40000) Kyats for their health care expenditure. When the people faced health problems, they use only the saving money for their cases.

In the administrative staff households, there are (9) households which have under (3) members. Among them, 5(55.55%) households spend on under (10000) Kyats healthcare expenditure. There are (42) households which have over (3) members. Among them, 16(38.10%) households spend on under (10000) Kyats healthcare expenditure. As a result, the compare of this two sample households is found that the larger of family member can also be increased the health care expenditure.

5.1 Conclusion and Recommendation

In this paper the health care expenditures of the households spend depend on their income and their family size. The half of the selected households do not save for their health care expenditures. When the people face health problems, they use up all savings for their future. And then, they borrow the required money and they need to sell their assets to cover their health care expenditure.

This study found that households should have the knowledge about health insurance. They should have the knowledge about the healthy life style. The staff should have the membership of a saving and credit society at the University. When the staffs have a health problem, they can get a loan at low interest rate from the society. A healthy lifestyle can help to prevent chronic and illnesses.

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Factors Affecting Employees Satisfaction and the Level of Satisfaction among Managerial Level and Non-Managerial Level of Private Banks in Kyaukse Township Su Myat Naing ¹

Abstract

Employee job satisfaction is an essential ingredient for organization success. The main objective of this study is to investigate the factors affecting employee's satisfaction of private banks in Kyaukse Township. In order to accomplish the main objective of this study, to explore the factor affecting employee's satisfaction and the level of satisfaction among managerial level and non-managerial level of private banks in Kyaukse Township. Descriptive and exploratory research methods were used to meet the objective of this study. To do so, a total of (128) employees from (3) largest private banks in Kyaukse Township were surveyed using structured questionnaires. The findings of this study also explored that there is positive relationship between job content, supervision, compensation, co-worker, recognition and personal growth of managerial level and non-managerial level. The comparisons of six organizational factors for managerial level and non-managerial level have highest satisfaction on job content and the lowest satisfaction on recognition. According to the results, the employees expect that their supervisors should support them to upgrade their performance and satisfaction in the workplace. The result of this study contributed to the recommendations for the enhancement of the literature on organizational factors and employee job satisfaction. Therefore, this study attempts to highlight a more comprehensive understanding of employee job satisfaction based on individual factors and organizational factors of private bank in Kyaukse Township.

Keywords: Employee Job satisfaction, Job Content, Supervision, Compensation, Co-worker, Recognition, Personal Growth

1. Introduction

The success of an organization not only depends on its advanced technology, management system, communication process, etc., but also depends on its human resources. For any organization, it is very important to manage human resource effectively and to find whether its employees are satisfied or not. If the employees are not satisfied their organization and their tasks, the employees will remain absent and sometimes employees may leave the organization also. High job satisfaction is the hallmark of well managed organization and is fundamentally the result of effective behavioral management (Sehgal, 2012).

In modern society, the needs and requirements of the people are ever increasing and ever changing. If the people need are not fulfilled, they will become dissatisfied. Dissatisfied people are likely to contribute very little for any purpose (Chahal, 2013). The organizations and researchers put more emphasis on the importance of job satisfaction. Locke (1976) defines job satisfaction as a pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences. Job satisfaction has been studied both as an antecedent to many outcomes. Job satisfaction of industrial workers is very important for the industry to function successfully.

The success or failure of the organizational largely depends on their satisfaction and dissatisfaction. One of the reasons for deteriorating conditions in an organization is low job satisfaction. Due to which, work slows down, employees remain absent and sometimes employees may leave the organization also. High job satisfaction; on the other hand, is desired by the management because it tends to be connected with the positive outcomes that

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managers want. High job satisfaction is the hallmark of well managed organization and is fundamentally the result of effective behavioral management. It is measure of the counting process of building a supportive human climate in an organization. Organizations realize that employee job satisfaction is the essential element to increase customer satisfaction and keep their business running, as competition is getting more intense.

1.2 Rationale of the Study

In today's competitive environment, banking system has grown in every country that performs to transfer money from one business to other business. "Banks are the backbone of the global economy, providing capital for innovation, infrastructure, job creation and overall prosperity. Banks also play an integral role in society, affecting not only spending by individual consumers, but also the growth of entire industries".

Today's, banking industry sector is one of the growing economic sectors in Myanmar. Banking industry give services loans, rent, insurance, foreign exchange and investment. The role of banking industry plays an important in our country. Therefore, banking industry sector needs to expand for the economic growth of the country. Banks is an essential for any business within the country. It is impossible to keep abreast with other nations in business and economic without private banks.

1.3 Problem Statement of the Study

At present, the banking sector has provided several advantages for the country. Government policy has been driving towards raising the financial resources and extension of private banking services. In reality, however, there are some problems in banking services because of high employee's turnover rate, mobilization of experience labors from one to another, retention of skillful labor requirements and shortage of experienced and skillful labors to operate banking services. Without employee job satisfaction, the desired objectives of the bank cannot be expected. Moreover, most of the banks cannot keep their skillful employees in their banks for the long term because of the job satisfaction of employees. Because of the higher turnover rate, the banks will face the unexpected cost to recruit the employees.

1.4 Objective of the Study

The objective of the study is to explore the factors affecting employee's satisfaction and the level of satisfaction among managerial level and non-managerial level of private bank in Kyaukse Township.

1.5 Methods of the Study

Data were collected both from primary and secondary sources. Primary data were collected by using structured questionnaire. Personal factors, organizational factors and employee job satisfactions are asked by using five-point Likert scale item. Primary data were collected from the respondents (employees) of the selected private banks. Secondary data were obtained from previous research papers, from libraries and officially issued data from the respective fields. Internet website was the source for collecting secondary data. As an analytical tool, this study used SPSS (Statistical Package for Social Sciences) to analyze data, to test the validity and reliability of the selected variables. Independent Sample T-test and Oneway ANOVA test was used to examine the effect of individual factors and employee job satisfaction and to test the relationship between organizational factors and employee's job satisfaction.

1.6 Scope and Limitation of the Study

The study focuses on private banks in Kyaukse Township. At present, there are (3) state-owned banks and (5) private banks in Kyaukse Township. Out of them, (3) private banks are chosen as samples for close investigation. The (3) private banks were easy selected for the study with the number of employees among (5) private banks. The population of this study is the total numbers of employees of these (3) banks which amount are (128). The total population size for this study is (128) respondents.

2. Theoretical Background of the Study

This study concerned with job design and job satisfaction. Job satisfaction can be defined as a person's emotional response to aspects of work (such as pay, supervision and benefits) or to the work itself. Job satisfaction is a complex notion that manifests itself in different ways in different people. Job satisfaction depends on the number of factors including themselves, the extent to which an individual defines himself or herself through work and individual personality traits.

2.1 Job Satisfaction

Job satisfaction can be defined as "a pleasurable or positive emotional state resulting from the appraisal of one's job or job experience" (Locke, 1976). According to studies, there are some certain variables that correlated with job satisfaction. These are organizational factors, work environment factors, factors related to work itself and personal factors. The organizational factors include salary, wages, promotions, company policies. Personal factors are age, sex, race, intelligence and social status. The work itself is also the source of job satisfaction and this study focused on this part.

This is consistent with (Sowmya, 2011) which has indicated that high satisfaction of bank employees in their jobs will lead to higher productivity, higher involvement and a less likelihood of resignation compared to employees who are less satisfied. Spector (1997) defined employee job satisfaction as an individual's total feeling about their job and attitudes they have toward various aspects of the job. Stated that the job satisfaction refers to the attitude and feelings people owned about their work. Positive and favorable attitudes towards the job indicate job satisfaction. Negative and unfavorable attitudes towards the job indicate job dissatisfaction.

2.2 Theories of Job Satisfaction

There are several complementary theories of job satisfaction have been proposed over the years. While motivation and satisfaction are closely linked, some researcher noted that Maslow's Hierarchy of needs theory laid the foundation of job satisfaction theories.

2.2.1 Herzberg's Two-Factor Theory

This theory is also known as Motivator-Hygiene theory. This theory explains satisfaction and dissatisfaction are driven by different factors-motivation and hygiene factors. Herzberg's Two Factors theory identifies motivation factors, which affect satisfaction and hygiene factors, which determine dissatisfaction (Moorhead and Risky, 1992). motivation factors are intrinsic to the work itself and include factors such as achievement and recognition (Ibid). Hygiene factors are extrinsic to the work itself and include factor like pay and job security (Ibid).

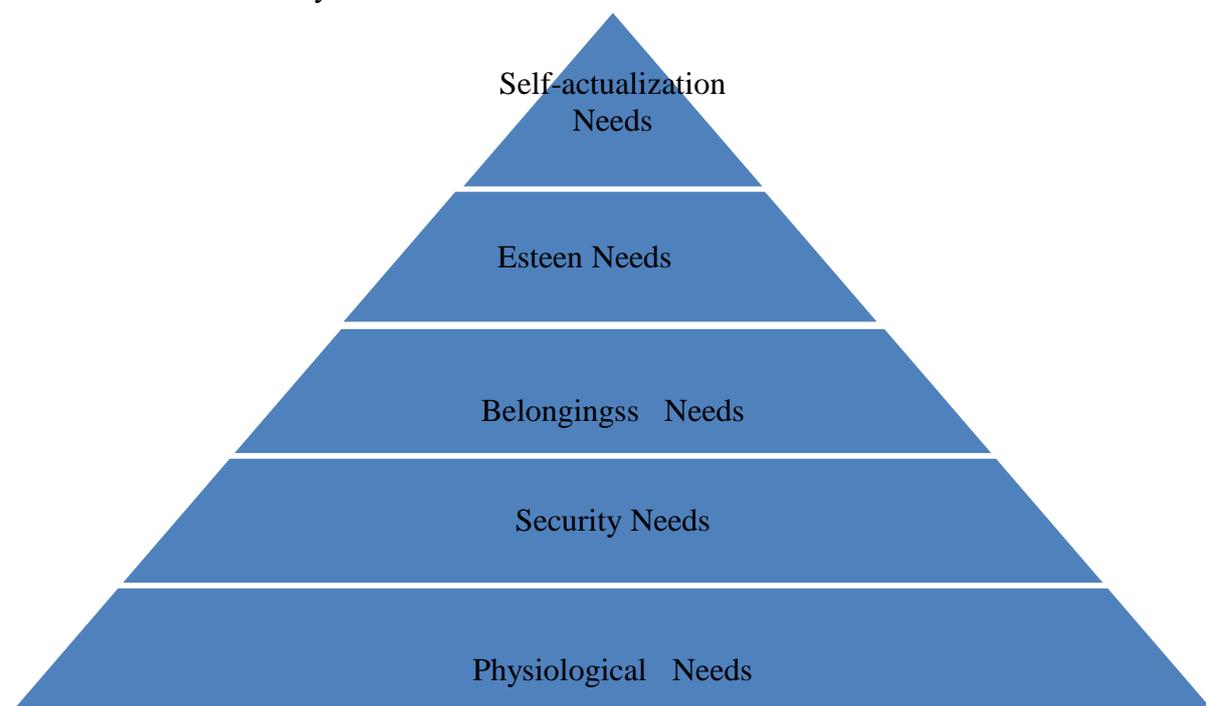
2.2.2 Alderfer's ERG Theory

A theory of human needs that is more advanced than Maslow's Alderfer's ERG Theory. Alderfer's ERG Theory postulates three sets of needs: relatedness, and growth. Existence needs are all material and physiological desires.

ERG theory proposes that several different can be operating at once. Maslow would say that self-actualization is important to people only after other sets of needs are satisfied, Alderfer maintains that people particularly working people in our postindustrial society can be motivated to satisfy existence, relatedness, and growth needs at the same time.

2.2.3 Maslow's Hierarchy of Needs Theory

Abraham Maslow organized five major types of human needs into a hierarchy. Maslow's need hierarchy are-



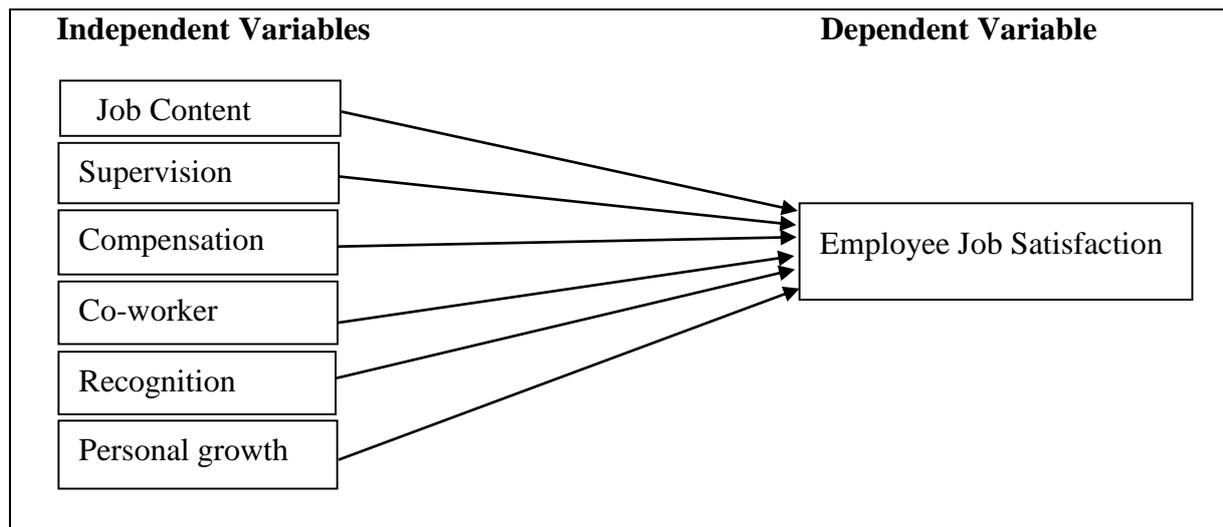
Source: Richard L. Daft, 2003

Figure.1 Maslow's Need Hierarchy

According to Maslow, people are motivated to satisfy the lower needs before they try to satisfy the higher needs. In today's workplace, physiological and safety needs generally are well satisfied, making social, ego, and self-actualization needs outstanding.

Maslow's hierarchy is a simplistic and not altogether accurate theory of human motivation. Self-actualization is the best-know concept arising from this theory. Organizations gain by making full use of their human resources. Employees also gain by capitalizing on opportunities to meet their higher-order needs on the job.

While previous studies have associated different variables with job satisfaction, the current study proposed six factors as leading job compensation drivers. They are supervisor, co-workers, compensation, job contents, recognition and personal growth (Figure, 2). The next section briefly discussed the rationale of each of these factors for employee job satisfaction.



Source: Own Compilation, 2017

Figure.2 Conceptual Framework of the Study

2.3 Job Contents

Job Content means a summary of all the detailed functions and responsibilities of a part. The characteristics of the job itself are the major variables in determining whether satisfaction is derived from the job (Gruneberg, 1997). Vroom (1982) stated that individuals gain satisfaction from jobs that require the use of their abilities as compared to jobs in which they feel like their abilities are not being used. Sutter discovered that ability utilization is a predictor of job satisfaction. Robbins (1993) suggested that employees prefer work that is mentally challenging in that it provides them with opportunities to use their skills and abilities and often a variety of tasks, freedom and feedback on how well they are doing.

2.4 Supervision

Supervision is a process that involves a manager meeting regularly and interacting with staff to review their work and provides support. The supervisor-worker relationship is crucial for job satisfaction. Vroom, Work and Motivation (1982) stated that there is considerable evidence demonstrating that job satisfaction is related to the consideration an employee feels is received from supervisors. Bruce (1992) ranked good managerial relations second among variables affecting job satisfaction. Robbins (1993) suggests that employee satisfaction increases when the immediate supervisor is understanding, friendly, offers praise for good performance, listen to employees' opinions and show personal interest in them.

2.5 Compensation (involving pay, fringe benefits and promotion)

Compensation is an important variable to be considered in the study of job satisfaction (Derlin and Schneider, 1994; Miller, 1985; Solly and Hohenshil, 1986). Vroom, Work and Motivation (1982) included high pay in his description of the key elements of most satisfying work roles. To (Spector, 1997), fringe benefits are divided into monetary and non-monetary benefits and examples of contingent rewards are appreciation, recognition and rewards for good work. Promotion provides opportunities for personal growth, a significant increase in the salary and increased social status as well as more authority and responsibilities (Robbins, 1993).

2.6 Co-worker

The relationship with co-workers contributes to job satisfaction. According to Robbins (1993) having friendly and supportive co-workers leads to increased job satisfaction. Morrison (2004) conducted empirical evidence that showed co-worker relations are an antecedent of job satisfaction. Mowday (1993) suggest that job satisfaction is related to employees' opportunities for interaction with others on the job.

2.7 Recognition

When an organization or a supervisor reward or recognizes an employee or team, they are connecting in a powerful way on activities and accomplishments the organization values. (SaiJooYee, 2012). Participants across all three countries are not only satisfied at work and motivated by monetary rewards such as pay and benefits packages, but are also motivated by non-monetary rewards such as recognition, is apart often overlooked by superiors. (Embaye, 2013). The study revealed that if rewards or recognition offered to employees were to be altered, then there would be a corresponding change in work motivation and satisfaction.

2.8 Personal Growth

The influence of this type of leadership lies in the ability of the leaders to promote those values related to goal achievement and emphasize on the impact of the employees' performance on the latter. Consistence planning for employee's career yields their development and assures their stay with work place in the long run (Johnson, 2009). Career Planning assures the organizational intent of securing the jobs of their employees and the secured employees are the more committed and active performers (Leung, 2008). Considering these relationships of supervision, co-workers, compensation and job contents, recognition and personal growth to job satisfaction aforementioned, the focus of the current study was based on these six attributes.

3. Analysis on Employees Satisfaction and The Level of Satisfaction Among Managerial Level and Non- Managerial Level of Private Banks in Kyaukse Township

This study presents the analysis of the job satisfaction of three private banks in Kyaukse Township based on the results of data collected from (128) employees. The statistical analyses used in this study include description of the survey participants, demographic characteristics, factor analysis and reliability test. Moreover, independent sample t-test and one-way ANOVA are performed to find out which factors are the most influencing factors on employee job satisfaction and the level of satisfaction among managerial level and non-managerial level of private banks in Kyaukse Township.

3.1 Descriptive Statistics and Reliability of the Variables

Whenever a scale consists of more than on item, it is important to measure how much they are internally consistent. Reliability and validity are important in quantitative research (Brown and Warren, 2009). Cronbach's alpha values near to zero indicated low reliability while the values close to one indicate high reliability. Although there is no cut-off value for how close to one is high reliability, it is commonly accepted and especially for academic purpose that Cronbach's alpha value above (0.6) is acceptable (Cronbach, 1951).

Table.1 Descriptive Statistics and Reliability of the Variables

No.	Variable	Means	S.D.	Items	Cronbach's Alpha
1.	Job Content	4.205	0.694	8	0.912
2.	Supervision	4.01	0.701	6	0.940
3.	Compensation	3.99	0.727	7	0.919
4.	Co-worker	4.03	0.713	5	0.930
5.	Recognition	3.82	0.749	6	0.929
6.	Personal growth	3.93	0.870	6	0.955
7.	Employee Job Satisfaction	4.26	0.709	8	0.948

Source: Survey Data, 2017

Table (1) shows the means values, standard deviation, and Cronbach's alpha values for organizational factors of selected private banks. According to the results, all scales for organizational factors are high reliability as their Cronbach's alpha values are the benchmark value of (0.60). According to table, alpha value for personal growth is (0.955) which is the largest alpha value and job content is (0.912) which is the lowest alpha value. These statistical results reveal that internal consistency of item is acceptable.

3.2 Profile of Respondents

As can be seen in the Table (2), the employees include (68) males and (60) females participated in this survey. It is found that (53%) of the total employees are males and (47%) are females in the survey firms. It indicates men workers are largest than women workers in banking sectors.

Table.2 Respondents by Gender, Age Group, Educational level, Position & Salary

Gender	No. of respondents	Percentage
Male	68	53
Female	60	47
Total	128	100
Age group year	No. of respondents	Percentage
Between 18-25 years	46	35.94
Between 26-33 years	62	48.44
Between 34-41 years	17	13.28
Between 42-49 years	3	2.34
Total	128	100
Educational level	No. of respondents	Percentage
High school	30	23.44
Graduate	88	68.75
Post Graduate	1	0.78
Others	9	7.03
Total	128	100

Position	No. of Respondents	Percentage
Manager	2	1.56
Assistant Manager	5	3.91
Supervisor	5	3.91
Assistant Supervisor	29	22.66
Senior Assistant	29	22.66
Junior Assistant	17	13.28
Driver	3	2.34
Peon	11	8.59
Security	18	14.06
Facility Crew	9	7.03
Total	128	100
Salary (MMK)	No. of respondents	Percentage
150000-200000	19	14.84
200001-250000	56	43.75
250001-300000	16	12.5
300001-350000	9	7.03
350001-400000	20	15.63
Above 400000	8	6.25
Total	128	100
Working Experience (in year)	No. of respondents	Percentage
1-2 years	16	12.5
2-3 years	7	5.47
3-4 years	33	25.78
4-5 years	33	25.78
Above 5 years	39	30.47
Total	128	100

Source: Survey Data, 2017

According to the Table (2), there are (128) employees which include (53.94%) of the employees belongs to the age group between (18) and (25) years, (48.44%) belongs to between (26) and (33) years age group, (13.28%) belongs to between (34) and (41) years age group, and the rest (2.34%) of the employees are of between (42) and (49) years age group. It can be found that most of the respondents are Age between (26) and (33) years and the lowest of the respondents are Age between (42) and (49) years. As far as educational background is concerned. In terms of percentage, graduate level of (68.75%) of employees are largest and post graduate level of employees (0.78%) of employees are smallest, respectively.

It is found that the sample includes two managers, five assistant manager and supervisors, (29) assistant supervisors and senior assistants, (17) junior assistants, three drivers, (11) Peons, (18) securities and nine facility crews. In terms of percentage, assistant supervisor and senior assistant of (22.66%) of employees are largest; manager and facility crew of (1.56%) and (7.03%) are smallest, respectively.

There are (128) employees which includes (14.84%) of the employees belong to the salary (150000-200000) MMK, (43.75%) belong to the salary (200001-250000) MMK, (12.5%) belong to the salary (25000-300000) MMK, (7.03%) belong to the salary (300001-350000) MMK, (15.63%) belong to the salary (350001-400000) MMK, (6.25%) belong to the salary (400000 and above 400000) MMK. In term of percentage, the salary groups (200001-250000) MMK are higher percentage and the lowest percentage is above (400000) MMK.

According to the Table (2), show the frequency distribution of working experience in banking industry. Working experience in banking industry of employees is grouped into five. The sample includes (16) employees with one-two years working experience, seven employees two-three years working experience, (33) employees with three - four years working experience, (33) employees with four - five years working experience and (39) employees with above five years working experience. In terms of percentage, employees with above five years working experience share the largest with (30.47%) while employees with two - three years working experience share the smallest with (5.47%).

3.3 Managerial Level and Non-managerial Level by Organizational Factors

Regarding the organizational factors, the respondents are asked to describe their job content, supervision, compensation, co-worker, recognition and personal growth, and employee job satisfaction.

3.3.1 Position and Job Content

Respondents' job content is explored in terms of their position. In this study, the position variable is assigned code (0) for managerial level and code (1) for non-managerial level. And compared means value of Job Content of managerial level and non-managerial level respondents are calculated by using the descriptive statistical method. The result in Table (3) shows that the mean value managerial level respondents is higher than their counterpart non-managerial level respondent at the selected bank. (managerial level' mean value= (3.9512) > non-managerial levels' mean value=3.5661).

Table.3 Job Content in terms of Respondents' Managerial and Non-managerial levels

	Position	N	Mean	Std. Deviation	Std. Error Mean
Job Content Average	Managerial Level	41	3.5912	0.42194	0.06590
	Non-managerial Level	87	3.5661	0.46764	0.05014

Source: Survey Data, 2017

Table.4 Independent Samples T test: Job Content

Variances	LEVENE'S Test for Equality of Variances		t-test for Equality of Means				
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	0.126	0.723	4.482	126	0.000	0.38513	0.08593
Equal variances not assumed			4.651	86.270	0.000	0.38513	0.08280

Source: Survey Data, 2017

In the above table p value is (0.000) in the study. Since the p-value in the analysis is less than (0.05), the difference in job content is significant. So, the study shows that respondent's satisfaction on job contents is significantly difference between managerial and non-managerial level. In the current study, managerial level employees have more satisfaction on job content than non-managerial level employees.

3.3.2 Position and Supervisor

Respondents' supervisor is explored in terms of their position. In this study, the position variable is assigned code (0) for managerial level and code (1) for non-managerial level. And compared means value of supervision on managerial level and non-managerial level respondents are calculated by using the descriptive statistical method. The result in Table (5) shows that the mean value managerial level respondent is higher than their counterpart non-managerial level respondent at the selected bank. (managerial levels' mean value=(4.3252) > non-managerial levels' mean value=3.8563).

Table.5 Supervision in terms of Respondents' Managerial and Non-managerial levels

	Position	N	Mean	Std. Deviation	Std. Error Mean
Supervision	Managerial Level	41	4.3252	0.50546	0.07894
Average	Non-managerial Level	87	3.8563	0.60743	0.06512

Source: Survey Data, 2017

Table.6 Independent Samples t test: Supervisor

Variances	LEVENE'S Test for Equality of Variances		t-test for Equality of Means				
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	0.736	0.393	4.290	126	0.000	0.46888	0.10931
Equal variances not assumed			4.582	92.950	0.000	0.46888	0.10234

Source: Survey Data, 2017

In the above table p value is (0.000) in the study. Since the p-value in the analysis is less than (0.05), the difference in supervision is significant. So, the study shows that respondent's satisfaction on supervision is significantly difference between managerial and non-managerial level. In the current study, managerial level employees have more satisfaction on supervision than non-managerial level employees.

3.3.3 Position and Compensation

Respondents' compensation is explored in terms of their position. In this study, the position variable is assigned code (0) for managerial level and code (1) for non-managerial level. And compared means value of compensation on managerial level and non-managerial level respondents are calculated by using the descriptive statistical method. The result in Table (7) shows that the mean value managerial level respondent is higher than their counterpart non-managerial level respondent at the selected bank. (managerial levels' mean value= (4.3136) > non-managerial levels' mean value=3.8358).

Table.7 Supervision in terms of Respondents' Managerial and Non-managerial levels

	Position	N	Mean	Std. Deviation	Std. Error Mean
Compensation Average	Managerial Level	41	4.3136	0.48151	0.07520
	Non-managerial Level	87	3.8358	0.58761	0.06300

Source: Survey Data, 2017

Table.8 Independent Samples t test: Compensation

Variances	LEVENE'S Test for Equality of Variances		t-test for Equality of Means				
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	1.409	0.237	4.535	126	0.000	0.47779	0.10535
Equal variances not assumed			4.870	94.255	0.000	0.47779	0.09810

Source: Survey Data, 2017

In the above table p value is (0.000) in the study. Since the p-value in the analysis is less than (0.05), the difference in compensation is significant. So, the study shows that respondent's satisfaction on compensation is significantly difference between managerial and non-managerial level. In the current study, managerial level employees have more satisfaction on compensation than non-managerial level employees.

3.3.4 Position and Co-worker

Respondents' co-worker is explored in terms of their position. In this study, the position variable is assigned code (0) for managerial level and code (1) for non-managerial level. And compared means value of co-worker on managerial level and non-managerial level respondents are calculated by using the descriptive statistical method. The result in Table (9) shows that the mean value managerial level respondent is higher than their counterpart non-managerial level respondent at the selected bank. (managerial levels' mean value= (4.2976) > non-managerial levels' mean value=3.8989).

Table.9 Co-worker in terms of Respondents' Managerial and Non-managerial levels

	Position	N	Mean	Std. Deviation	Std. Error Mean
Co-worker Average	Managerial Level	41	4.2976	0.51210	0.07998
	Non-managerial Level	87	3.8989	0.64402	0.06905

Source: Survey Data, 2017

Table.10 Independent Samples t test: Co-worker

Variances	LEVENE'S Test for Equality of Variances		t-test for Equality of Means				
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	2.039	0.156	3.477	126	0.001	0.39871	0.11466
Equal variances not assumed			3.774	96.830	0.000	0.39871	0.10566

Source: Survey Data, 2017

In the above table p value is (0.001) in the study. Since the p-value in the analysis is less than (0.05), the difference in co-worker is significant. So, the study shows that respondent's satisfaction on co-worker is significantly difference between managerial and non-managerial level. In the current study, managerial level employees have more satisfaction on co-worker than non-managerial level employees.

3.3.5 Position and Recognition

Respondents' recognition is explored in terms of their position. In this study, the position variable is assigned code (0) for managerial level and code (1) for non-managerial level. And compared means value of recognition on managerial level and non-managerial level respondents are calculated by using the descriptive statistical method. The result in Table (11) shows that the mean value managerial level respondent is higher than their counterpart non-managerial level respondent at the selected bank. (managerial levels' mean value=(4.0976) > non-managerial levels' mean value=3.6858).

Table.11 Recognition in terms of Respondents' Managerial and Non-managerial levels

	Position	N	Mean	Std. Deviation	Std. Error Mean
Recognition Average	Managerial Level	41	4.0976	0.48588	0.07588
	Non-managerial Level	87	3.6858	0.66881	0.07170

Source: Survey Data, 2017

Table.12 Independent Samples t test: Recognition

Variances	LEVENE'S Test for Equality of Variances		t-test for Equality of Means				
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	7.674	0.006	3.525	126	0.001	0.41174	0.11681
Equal variances not assumed			3.944	104.553	0.000	0.41174	0.10440

Source: Survey Data, 2017

In the above table p value is (0.001) in the study. Since the p-value in the analysis is less than (0.05), the difference in recognition is significant. So, the study shows that respondent's satisfaction on recognition is significantly difference between managerial and non-managerial level. In the current study, managerial level employees have more satisfaction on recognition than non-managerial level employees.

3.3.6 Position and Personal Growth

Respondents' personal growth is explored in terms of their position. In this study, the position variable is assigned code (0) for managerial level and code (1) for non-managerial level. And compared means value of personal growth on managerial level and non-managerial level respondents are calculated by using the descriptive statistical method. The result in Table (13) shows that the mean value managerial level respondent is higher than their counterpart non-managerial level respondent at the selected bank. (managerial levels' mean value=(4.3862) > non-managerial levels' mean value=3.7146).

Table.13 Personal Growth in terms of Respondents' Managerial level and Non-managerial level

	Position	N	Mean	Std. Deviation	Std. Error Mean
Personal growth Average	Managerial Level	41	4.3862	0.60946	0.09518
	Non-managerial Level	87	3.7146	0.77589	0.08318

Source: Survey Data, 2017

Table.14 Independent Samples t test: Personal Growth

Variances	LEVENE'S Test for Equality of Variances		t-test for Equality of Means				
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	6.080	0.015	4.875	126	0.000	0.67162	0.13775
Equal variances not assumed			5.313	97.880	0.000	0.67162	0.12641

Source: Survey Data, 2017

In the above table p value is (0.000) in the study. Since the p-value in the analysis is less than (0.05), the difference in personal growth is significant. So, the study shows that respondent's satisfaction on personal growth is significantly difference between managerial and non-managerial level. In the current study, managerial level employees have more satisfaction on personal growth than non-managerial level employees.

3.3.7 Position and Employee Job Satisfaction

Respondents' job satisfaction is explored in terms of their position. In this study, the position variable is assigned code (0) for managerial level and code (1) for non-managerial level. And compared means value of employee job satisfaction on managerial level and non-managerial level respondents are calculated by using the descriptive statistical method. The result in Table (15) shows that the mean value managerial level respondent is higher than their

counterpart non-managerial level respondent at the selected bank. (managerial levels' mean value = (4.4634) > non-managerial levels' mean value=4.1681).

Table.15 Employee Job Satisfaction in terms of Respondents' Managerial level and Non-managerial level

	Position	N	Mean	Std. Deviation	Std. Error Mean
Employee Job Satisfaction Average	Managerial Level	41	4.4634	0.48593	0.07589
	Non-managerial Level	87	4.1681	0.63733	0.06833

Source: Survey Data, 2017

Table.16 Independent Samples t test: Employee Job Satisfaction

Variances	LEVENE'S Test for Equality of Variances		t-test for Equality of Means				
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	3.690	0.057	2.627	126	0.010	0.29531	0.11242
Equal variances not assumed			2.892	100.440	0.005	0.29531	0.10212

Source: Survey Data, 2017

In the above table p value is (0.01) in the study. Since the p-value in the analysis is less than (0.05), the difference in employee job satisfaction is significant. So, the study shows that respondent's satisfaction on employee job satisfaction is significantly difference between managerial and non-managerial level. In the current study, managerial level employees have more satisfaction on employee job satisfaction than non-managerial level employees.

3.4 Comparison of Six factors for Managerial Level and Non-managerial Level

The six organizational factors include job content, supervision, compensation, co-worker, recognition and personal growth. Table (17), managerial levels are satisfaction in job content. According to Table (17), managerial levels are mostly satisfied in job content because most of managerial employees are enjoy in their job so their job nature is meaningful, interesting, challenging, and attractive of their work. Oppositely, managerial level employees are least dissatisfaction in recognition because the company need to provide the recognition for outstanding employees.

Table.17 Comparison of Six Factors for Managerial Level and Non-managerial Level

Organizational factors	Managerial Level		Non-managerial Level	
	Composite Mean Value	Rank	Composite Mean Value	Rank
Job Content	4.49	1	4.07	1
Supervision	4.33	3	3.86	3
Compensation	4.31	4	3.84	4
Co-worker	4.3	5	3.9	2
Recognition	4.1	6	3.69	6
Personal Growth	4.39	2	3.72	5

Source: Survey Data, 2017

According to Table (17), non-managerial levels are mostly satisfied in job content because most of non-managerial employees are enjoy in their job so their job nature is routing, meaningful and challenging. Oppositely, non-managerial level employees are least satisfied in recognition because the company provides the recognition for outstanding employees.

4. Conclusion

This section presents conclusion of research paper with findings and discussion, suggestions and recommendations.

4.1 Findings and Discussion

In this study, (128) employees of KBZ, CB and MAB Banks are selected as the sample in Kyaukse Township. These papers emphasize the six factors of Maslow's theory. In this study, all factors reach the satisfaction level of employee in KBZ, CB and MAB Banks in Kyaukse Township. The six factors include job content, supervision, compensation, co-worker, recognition and personal growth. By using SPSS (22.0), the collected data were checked for validity, reliability, mean value and independent sample t test. This study explored the satisfaction level of employees about the selected variables of this study based on their age, gender, educational level and working experience.

The sample of employees includes (41) employees from managerial level and (87) employees from non-managerial level. These satisfaction levels measure the five-points Likert scale. In this study, female employees are less than male employees because male employees are more useful in banking operation system. Most of them get the salary range between (200001-250000) MMK. Most of them are in Bachelor level and most of the respondents have higher than five-year experiences at all these banks. Regarding the future intention to work in KBZ, CB and MAB Banks, most of the sample employees have intention.

Similarly, different age groups, educational levels and working experiences have nearly the same opportunities in their work place. It can be concluded that the banks practice the same rules and regulations for all employees and give the same opportunity based on their performance and there is no discrimination among different groups of employees. Thus, the different gender, age, educational levels, working experiences and cannot influence their job satisfaction.

The findings of this study also explored that there is positive relationship between job content, supervision, compensation, co-worker, recognition and personal growth of managerial level and non-managerial level. The comparisons of six organizational factors for managerial level and non-managerial level have highest satisfaction on job content and the lowest satisfaction on recognition. Because, the managerial level and non-managerial level are enjoying their job have meaningful, interesting, challenging and attractive, but company cannot provide the recognition for outstanding employees.

4.2 Suggestions and Recommendations

In the analysis of the six organizational factors, the largest number of managerial, supervision and operational persons has large tenure in current position. It means that they have got regular promotion system. Therefore, the management of this bank should be sustainable the promotion system for employees. According to the study, the employees on organizational factors of managerial level and non-managerial level at KBZ, CB and MAB banks are satisfied.

Therefore, managerial levels should be maintaining in getting job content, supervision, compensation, co-worker and personal growth and motivated with recognition in these factors. Employee job satisfaction can improve service quality of their banks. The policy makers and managers have turned their attention to provide different kinds of facilities to their employees in order to satisfy their employees. All managerial level and non-managerial level need to appraisal from their banks. Organization needs to give appraisal, reward system and increasing salary. Additionally, the managerial level will get the knowledge about the importance of these factors that play a significant role for employee job satisfaction.

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Protection of Well-known Mark

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Abstract

Well-known marks are first of all trademarks. Some trademarks have obtained long recognized history and have become famous and widely known throughout the world. These marks were considerably better-known marks than regular trademarks of goods and service. Well-known mark can also be recognized and protected in other countries whereas the trademark owner has not registered or used that trademark in those countries. Thus, well-known mark protection is very completed issue on commercial transaction in international market. Aim of this paper is to contribute to the theoretical knowledge of well-known marks protection not only in a global perspective under international instruments but also in the consideration of old practices and enactments of new Trademark Law, 2019 in Myanmar. This paper firstly focuses on concept, definitions and the characteristics of well-known marks in theoretically. The second emphasis is through an analysis on protection for well-known marks under Paris Convention, the TRIPs Agreement and WIPO's Recommendations and Final approach is comparison on the legal regime in international context and Myanmar national Intellectual Property (IP) systems on prevention of well-known marks. Finally, findings of this paper will help relevant stakeholder to be able to distinguish well-known marks from any other marks and enhancing and improving in well-known mark awareness and protection in Myanmar. Finally, Myanmar will solve the issue of well-known marks and how to more effectively protect from infringement of the legitimate rights and benefits of well-known mark owners.

Key word: Trademark, Well-known mark, Reputation, Protection, Infringement, Remedy

Introduction

Legal prevention of well-known marks is sufficient safeguard international business. Regular marks have become famous and widely known the whole world and this mark also causes the difficulties in protecting their intellectual property rights due to infringement activities by third parties. It creates consumer confusion and impairs their ability to choose goods and services by relying on the marks as indications of origin and quality. Therefore, an important issue is how to prevent well-known marks from infringement and to develop more effectively protect the legitimate rights and benefits of well-known owners. Protection of well-known marks has three stages of protection such as unregistered well-known marks within the domain of the principle of speciality; second, registered well-known or reputed trademarks outside the principle of speciality; and third, unregistered well-known marks outside the principle of speciality. The current trend is the legal framework related to the prevention of well-known marks between international regulation and the national regulation of Myanmar.

1. Nature of Well-known Mark

Well-known trademark is widely known to public and enjoys a relatively high reputation. Trademarks are territorial but well-known mark is not depending on territorial. This means that a trademark will be protected separately in one country due to its registration under the applicable law of that country. A trademark might be well-known in other countries but not yet registered or recognized. Countries have made an international effort to create an important exception to the territoriality principle. Accordingly, well-known mark can also be recognized and protected in other countries even though the trademark owner has not registered or used that trademark in those countries.

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1.1 Definition of Well-known Mark

A well-known mark denotes to trademark which is highly distinctive from others trademark and prevention in the any territory. Well-known marks are important not only for the trademark's owners but also for the consumers and the community in general. It is needed to define more precisely well-known to distinguish them from other marks of the intellectual property such as ordinary trademarks, domain names, geographical indications, and trade names.

Well-known mark is mark has high reputation because the logo has a power to attract people so that any kinds of goods under the brand immediately cause familiar attachment and mythical context to each consumer spheres. This mark has high status due to representative power to attract devotion to consumer so that people have acknowledgement toward those mark.¹

In the other hands, mark is so widely known that it is categorized as famous mark which the level of famous mark is also higher than a normal mark.² Famous mark also includes as the mark with highest level. Such a famousness around the world in his reputation classified as the world aristocrat mark.³

According to Myanmar new trademark system, definition of Well-known Mark means a mark that is well-known, in line with the specified standard, in the Republic of the Union of Myanmar.⁴

The distinction is significant for legislation which creates legal regimes for effective protection specifically directed to well-known trademarks and their implementation within the trademark system for the protection of well-known trademarks. Such distinctions should be made based on following factors:

- The fame of the trademark
- High commercial value
- Long and uninterrupted time of use
- The popularity of use
- Easily infringed.⁵

There are no principally definitions of a well-known mark in either Paris Convention or Trade Related Aspects of Intellectual Property Rights (TRIPs) Agreement. The term applied in the TRIPs Agreement is "well-known marks", with a reputation. So the understanding of whether a trademark considered well-known mark interpreted on an independent, national scale. Therefore, well-known trademark should be understood as a trademark which is popularly known by many people within the relevant territory or is considered and recognized by the authorities of the countries regardless of where it is used or registered or not.

¹ . Renggi Ardy Putra, SH, Legal Possibility to Regulate Defensive mark as Well-known Mark Protection in Indonesia, Vol. 1 No. 1 Tahun 2018 , JIPRO (www.journal.uui.ac.id), P.3

² . Riswandi, Budi Agus., & Syamsudin, M. (2004). Hak Kekayaan Intelektual dan Budaya Hukum. Jakarta: PT. Raja Grafindo Persada, 2004, p.87

³ . Khairandy, Ridwan, erlindungan Hukum Merek Terkenal di Indonesia. Jurnal Hukum, 1999, P. 70.

⁴ . Section 2 (p) of the Myanmar Trademark Law, 2019

⁵ . Phan Ngoc, Tam, Well-known trademark protection. A comparative study between the laws of the European Union and Vietnam, 2011, P.61-63

1.2 Characteristics of Well-known Mark

The popularity of a trademark or service mark whether they are well-known or not are strictly dependent on the characteristics of that specific market are vary drastically among markets. *Joint Recommendation of WIPO for Provisions of the Protection of Well-Known Marks* approved by member States, 1999.

The criteria set out within “*Joint Recommendation of WIPO for Provisions of the Protection of Well-Known Marks*”, known as the “*WIPO Criteria as follows*;

a) “The Degree of Knowledge or Recognition of the Mark in the Relevant Sector of the Public”¹

The relevant sector of the public test has been applied in rational and comprehensive criterion in determining whether the trademark in examination is well-known or not and is supported and affirmed in the doctrine regarding this issue.

b) “The Duration, Extent and Geographical Area of any Use of the Mark”²

Duration of using mark should be the trademark or the service mark has reached the well-known status. The scope and geographic area of any use of the mark could infer that the large scope and the immense geographic area of using trademark makes it well-known, since the number of people in such an area is very high, which brings along with it popularity.

c) “The Duration, Extent and Geographical Area of any Promotion of the Mark”³

This criterion is in line with Article 16 (2) TRIPs, titled “*Rights Conferred*” in the sense that both recognize the importance of the promotion and advertising of the product pertaining to the trademark or the trademark itself. Here, the option of recognizing knowledge of the trademark in the public, which has been created via its promotion, as a criterion in investigating how well-known a trademark is, is held open to member states.

d) “The Duration and Geographical Area of any Registrations, and/or any Applications for Registration, of the Mark, to the Extent that they Reflect Use or Recognition of the Mark”⁴

Registration in many states is a good preliminary indicator that the trademark or service mark might be well-known. This is because, it can be inferred from such a situation that the trademark proprietor has sought such extensive protection because it was needed, as the mark has reached a certain degree of knowledge and reputation in the eyes of the consumers in countries in which registration applications have been made.

e) “The Record of Successful Enforcement of Rights in the Mark, in particular, the Extent to Which the Mark was Recognized as Well-Known by Competent Authorities”⁵

This criterion differs from the others listed above and below in the sense that it does not evaluate economic implications, extent of usage, geographical area or duration of the use of the trademark, or even legal validity.

¹ . WIPO Joint Recommendation. Article 2/1(b)-1.

² . Ibid. Article 2/1(b)-2.

³ . Ibid. Article 2/1(b)-3.

⁴ . Ibid. Article 2/1(b)-4.

⁵ . Ibid, Article 2/1(b)-5.

f) “The Value Associated with the Mark”¹

This work is narrowly allied to the quality of the goods or services that the trademark or service mark represents.

In addition, some other criteria by which it can be assessed whether a trademark is well-known or not that have been suggested in the doctrine.

- a) Originality of the Trademark
- b) The Degree of “Similarity between the Well-Known Mark and the Subsequently Used Identical or Similar Mark”
- c) Solitariness of the Mark in the Relevant Market
- d) The Date of the Creation of the Mark
- e) Number of Stores Opened under Licences or Franchising
- f) Number of Branches
- g) Daily Average Number of Website Visitors
- h) The Number and Frequency of Searches Through Search Engines

In order to determine criteria of well-known mark will depend on the following aspects or factors as follows:

1. Level of knowledge or recognition of the public toward the mark in the concerned business field as famous/well-known mark;
2. Marketing volume of goods and/or service and the acquired profit from the use of concerned mark by its owner;
3. Mark share that is controlled by the mark in the connection with distribution of goods and/or services in society;
4. Geographical coverage of mark’s use;
5. Duration of mark use;
6. Mark promotion and intensity, including investment values used for its promotion;
7. Mark registration or application in other countries;
8. Level of success of law enforcement in mark field, especially regard on mark recognition as well-known/famous mark by competent authority; or
9. Inherent value of the mark acquired due to its reputation and quality assurance of goods or services protected by mark. ²

However, it should be noted that provisions of the Joint Recommendations are merely guidelines and not binding obligations. Therefore, the Recommendations are only significant to the extent that member states import them into their own legislation.

2. Protection of Well-known Mark

The unauthorized using of a well-known mark is likely to affect negatively the distinctiveness of that mark. The uniqueness and distinctive strength of the well-known mark are lessened and uncontrolled use of the well-known mark.

Damage or prejudice to the holder of an earlier well-known trade mark may result from one or more of the next undesired effects that are likely to derive from an unauthorized using of that mark:

¹ . WIPO Joint Recommendation. Article 2/1(b)-6.

² . Renggi Ardy Putra, SH , Opcit., (www.journal.uji.ac.id), P.7-8

- detriment to the *distinctiveness* of the well-known trade mark, or dilution by *blurring*,
- a detriment to the *reputation* of the well-known trade mark, or dilution by *tarnishing*,
- taking *unfair advantage* from the unauthorized use of the well-known mark,
- referred to as *free-riding* or commercial *parasitism*.¹

In any case of unauthorized use of a well-known sign, one or more of those undesired effects may occur simultaneously. It is needed to protection of well-known mark in international and national level.

2.1 Protection of Well-known Mark under International Instruments

Every country has the obligations under international conventions and treaties more specifically, Paris Convention for the Protection of Industrial Property (Paris Convention), 1883 was the first legal instrument to recognize well-known trademarks as a legal concept and but did not include specific instructions as to how well-known marks were to be protected or registered and the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPs) Agreement, 1994. These international instruments confer special protection to well-known marks to national law with economical and sociological points of view compared to regular trademarks.

Well-Known Marks is as follows “*the countries of the Union undertake, ex officio if their legislation so permits, or at the request of an interested party, to refuse or to cancel the registration, and to prohibit the use, of a trademark which constitutes a reproduction, an imitation, or a translation, liable to create confusion, of a mark considered by the competent authority of the country of registration or use to be well known in that country as being already the mark of a person entitled to the benefits of this Convention and used for identical or similar goods. These provisions shall also apply when the essential part of the mark constitutes a reproduction of any such well-known mark or an imitation liable to create confusion therewith.*”²

Property Rights Conferred” is as follows: *Article 6bis of the Paris Convention (1967) shall apply, mutatis mutandis, to services. In determining whether a trademark is well-known, Members shall take account of the knowledge of the trademark in the relevant sector of the public, including knowledge in the Member concerned which has been obtained as a result of the promotion of the trademark.*³

Article 6bis of the Paris Convention (1967) shall apply, *mutatis mutandis*, to goods or services which are not similar to those in respect of which a trademark is registered, provided that use of that trademark in relation to those goods or services would indicate a connection between those goods or services and the owner of the registered trademark and provided that the interests of the owner of the registered trademark are likely to be damaged by such use.⁴

Acts of unfair competition and obliges members of the union to provide for effective protection against well-known marks that may not fall under Article 6bis. “The countries of

¹ . Common Guideline for the Substantive Examination of Trademark, 2nd Edition, 2020, p. 248-252

² . Article 6 bis (1) Paris Convention, 1883

³ . Article 16 (2) of the TRIPs Agreement, 1994

⁴ . Article 16 (3) of the TRIPs Agreement, 1994

the Union are bound to assure to nationals of such countries effective protection against unfair competition”.¹ “Any act of competition contrary to honest practices in industrial or commercial matters constitutes an act of unfair competition.”² Acts of unfair competition related to Article 16 Agreement on Trade-Related aspects of Intellectual.³

TRIPs Agreement that imposed the rules of the Paris Convention on all WTO member states, established a principle for the determination of when a trademark has become well-known and required members for well-known marks outside of goods for which the well-known mark is registered. In other hand, TRIPs agreement has also expanded the extent of protected trademark to include trademarks which are very well-known.⁴

The Convention emphasizes the principle of national treatment, which means the necessity of having the same protection in a State parties as the national person. This explains that a foreign trademark owner must entitle equal and no less than equal treatment as the owner of the trademark in the country.⁵ International legal framework of intellectual property has grown during the past century and the protection of the rights certainly had progressively acquired international characteristics. Therefore, the obligations deriving from the international treaties have also brought importance to the domestic legislations.⁶

TRIPs Agreement expands the protection of well-known marks in two ways: (i) the prevention of “well-known” marks apply not only to goods but also to services, and (ii) such protection may be extended to dissimilar goods and services. TRIPs Agreement is the addition of services to the scope of protection offered under Article 6bis PC, which meant that service marks. This extension is one of the most important provisions of TRIPs applicable to the Paris Convention because service marks have become increasingly more important to international trade and contribute to the development of the global trade system.

2.2 Protection of Well-known Mark in Myanmar

Regular marks have become famous and widely known throughout the world as well-known mark and this mark also causes the difficulties in protecting their intellectual property rights due to infringement activities by third parties. It creates consumer confusion and impairs their ability to choose goods and services by relying on the marks as indications of origin and quality.

Section 478 to 489 of the Myanmar Penal Code provided relating to trademark, property mark and other marks. An owner of a trademark may take criminal action against an infringement of his trademark. In addition to these sections, the penalties prescribed in Section 482 and 483 of the Code for fraudulent and imitation of the mark. Punishment is one year to two year terms imprisonment or fine or with both to the person who defraud or counterfeit.

A legitimate trademark owner, looking for legal choice against an alleged infringer who has acted in bad faith, may:

- (i) direct a stop and cease letter that orders a stop to the infringement;

¹ . Article 10bis (1) of the Paris Convention, 1883

² , Ibid. Article 10bis (2)

³ . Ibid. Article 10bis (3)

⁴ . Renggi Ardy Putra, SH, Op. cit., (www.journal.uji.ac.id), P.5

⁵ . Takouche, Well-known, or not well-known: The Paris Convention for the protection of industrial property's Article 6bis in the context of American trademark law. *UC Irvine Law Review*, 2019, 9(2), 505.

⁶ . Morris, From territorial to universal – the extraterritoriality of trademark law and the privatizing of international law. *Cardozo Arts & Entertainment Law Journal*, 2019, 37(1), 34-35.

- (ii) demand a termination action against the infringed registered trademark;
- (iii) demand a provisional injunction from the court and taking the suit to court.

Furthermore, foreigners and foreign companies are not permitted to operate in trading and retailing businesses in Myanmar. For this cause, trademark owners will face a limitation on their capacity to retail and distribute goods, because they are required to find a local distributor or a business partner for trading, retailing, or importing their goods in Myanmar. It may be difficult for IP owners to find a right local distributor or business partner, making it more difficult to apply their marks and IP rights in Myanmar for certain goods or in certain industries.¹

In **B.M.Kharwar Vs. A.M Motiwala Ltd**^{9,2} it was held that “A design that has ceased to be distinctive of the goods of any particular person may become a design common to the trade in such goods; but, if before it becomes *‘publici juris’* a trader appropriates it to his own goods after its relinquishment by the prior owner, and independently obtains a reputation of his owned mark and he has entitled to protection.”

In the case of **E.S.W.C Company (U Thet Naing Oo, Authorized Sole Agent in Myanmar) v. U Than Win**³, the plaintiff, E.S.W.C Company has been authorized sole agent in Myanmar of the Essence Watch Co, Ltd since 2002. The Essence Watch Co, Ltd is headquartered in Korea. On 14th January, 2003, the plaintiff registered as the sole agent of the trade name ‘Essence’ and the ‘horseshoe trademark’ at the registration of deeds office in Yangon. The respondent imported into Myanmar the China-made watches with the trade name ‘Essence’ also. Thus, the plaintiff, U Thet Naing Oo began a suit claiming perpetual injunction and 500 lakhs as damages against the respondent, U Than Win. The High Court of Yangon issued temporary injunction before deciding that the perpetual injunction should be issued or not. Thus, the respondent appeal to the Supreme Court, Special Bench to cancel the provisional injunction issued against him. The Supreme Court, Special Bench accepted the appeal and dismissed the temporary injunction in favor of the respondent, U Than Win. Therefore, the plaintiff discontented with the Supreme Court, Special Bench’s decision and filed the Special Civil Appeal at the Supreme Court, Special Appellate Bench.

The Supreme Court, Special Appellate Bench dismissed the special civil appeal and held that according to Section 7 of the Judiciary Act, 2000, Special Appellate Bench can hear and adjudicate a case which is finally and conclusively adjudicated by the Supreme Court, Special Bench. In this case, the Supreme Court, Special Bench still has to make decision concerning perpetual injunction and damages. However, the Supreme Court, Special Appellate Bench approved the Supreme Court, Special Bench’s decision dismissing the temporary injunction because according to the documents submitted by the plaintiff, the trademark of the Essence is “E” and was not ‘horseshoe trademark’ in registering to be the exclusive owner of the trademark of the ‘Essence’ in 1987 in Korea. Moreover, the ‘horseshoe trademark’ supposed to be registered in Korea in 2001 is different from the ‘horseshoe trademark’ registered in Myanmar in 2002. Thus the Court considered that the plaintiff’s suit does not have enough reasonable grounds for the issuance of temporary injunction.

¹ . Darani Vachanavuttivong and Yuwadee Thean-ngarm, Well-Known Trademarks in Myanmar, Thai-American Business, Volume 1/2015. P.1

² . 1939 Rangoon Law Reports.p.18

³ . 2005, Special Civil Appeal, p.64.

U Zayar Lwin (Mitsubishi Electric Corporation and PME Co, Ltd) vs. U Hla Myint¹ the perception of well-known marks is not stated in the Myanmar Registration Act or Penal Code. Thus, it rests unclear for well-known marks are protected. On 11.8.2015, the Court of Pabedan Township ruled in approval of Mitsubishi Electric Corporation in a trademark breach case against an importer and distributor of breakers bearing the mark MITSUBISHI.

The Defendant was sentenced to a fine and imprisonment under Section 486 of the Penal Code. The Court decided that *"The Plaintiff's goods have been legitimately disseminated by Mitsubishi Co., Ltd and vended global under the famous trademark Mitsubishi registered in over 140 States. The Defendant has been operating a shop selling electrical products for over 40 years and based on evidence provided by the Plaintiff. The eminent feature of Mitsubishi can be remembered or known to the Defendant."*

In decisive of the kind of factors that establish a mark is regarded as well-known and the court watched to the grade of acknowledgment by the applicable sector of the public in Myanmar, the length, range and geographic area of the usage or raise of the mark, the kind of registrations or presentations for registration and an evaluation of value related with the mark in Myanmar and abroad. This decision takes hopes to mark owners in preventing and enforcing their marks in Myanmar and should create a path to the long expected new trademark law to also protect well known marks.

The Myanmar Trademark Law ("TML") was provided on 30th January 2019 as a Pyidaungsu Htuttaw Law No. 3/2019 and it was signed by the President of Myanmar on the same day. Well-known marks and trade names will also be protected under the new law.

In new Trademark Law expresses the prevention of well-known mark but in which does not provide the well-known marks criteria. According to Article 2(m) of New Trademark Law, Well-known marks mean any marks in accordance with the specified criteria to be well-known in the country.

It ought to be alert of the element that a numeral of trademark laws simply implement responsibilities under Article 16.3 of the TRIPs Agreement and prevent registered well-known marks only under the following situations;

- that the goods and services mark is used or is seeking prevention are not same with or similar to the goods of well-known mark acquired its reputation.
- that the use of the other mark would designate a linking between these goods and the owner of the well-known mark, and
- that his interests are likely to be injured by such use.

Thus, in the new law, it is absolutely clear to well-known mark indication that are recognized and fully protected. In order to be more concise and comprehensive, if the trademark is more suitable under the protection of the well-known mark as one of the grounds for rejection should be considered. It should also specify the criteria necessary for determining that a trademark is a well-known mark. In violation cases, courts or administrative organizations power to grant larger payments to owners of well-known marks and subject of infringers to more decide punishment.

If any of the mark, it establishes relation reasons for rejection and the mark is unqualified for registration. If a mark registration submission is made for a mark that is same

¹ . 2014, Criminal Regular Case no. 380/2014

or similar to a registered well-known mark but there is a linking between the owner of the well-known mark and the goods or services that the mark in query is being used for and such use may be damaging to the interests of the owner of the well-known mark.¹

The right holder shall entitle a private right, a right to protect the use of a mark same or similar to a registered well-known mark for different goods or services, without the consensus of owner of the mark, in the way of trade:

(aa) if it indicates the connection with the proprietor of a registered well-known mark and such mark is applied;

(bb) if it is damaging to the interests of registered mark owner.²

The intellectual property court must deem that the use, without consent, of an same or similar to an unregistered well-known mark for same or similar goods or services as misleading the public.³

Therefore, the courts will consider and use factors which normally include:

- The similarity of the marks;
- The competitive proximity of the products;
- The strength of the plaintiff's mark;
- The sophistication of the typical consumer;
- Evidence of real confusion;
- The prospect of expansion in product lines (the factor of bridging the gap);
- The defendant's intention in using the mark;
- The relative quality of defendant's goods or services.⁴

In Myanmar, the concept that mark can be protected on the basis of use is based not on a statute but on common law. In the early days, the protection of well-known mark in Myanmar is very rare. But, its rights can be protected by passing off action or indirectly existing general laws. If the trademark is registered, the owner will take an action by Penal Code and other related laws. If the mark is unregistered, the owner will take an action by common law action of passing off. In a litigation for passing off, a producer or supplier has to prove the goodwill involved in his business. If the trademark or service mark which is well known or has a reputation in Myanmar, this trademark right is enforceable by common law action of passing off.

Well-known mark can be prevented in other countries even though the trademark owner has not registered or used that trademark in those countries. Thus, well-known mark protection is very completed issue in commercial transaction. There is no Well-Known trademark protection system in Myanmar. Therefore, the necessary evidence for proving it cannot be provided at present. Thus, it is needed to solve the issue of well-known marks and how to more effectively protect from infringement of the legitimate rights and benefits of well-known or famous mark owners.

¹ . Section 14 of the Myanmar Trademark Law, 2019

² . Ibid., Section 38

³ . Ibid, Section 78

⁴ . Phan Ngoc, Opcit., p.169

3. Current Issues of Well-known Mark Protection in Myanmar

The prevention of well-known mark under the present system, same or similar marks can be registered parallel by many people in Myanmar because there is no specific trademark registration law, no official trademark search system and network facility or database, no exact examination process for overlap trademarks registration and no opposition or invalidation processes against trademark submissions. Thus, recently, it has issues on not only regular trademarks lack protection, but also well-known trademarks lack prevention of rights of owners. Therefore, same trademarks cannot be recorded and fully published in a cautionary notice to show they are prevented in Myanmar.

Apple is the top-ranked mark in 2014 rankings and it already has an authorized dealer and reseller of Apple laptops, desktop computers and iPhones in Myanmar and it is responsible for growing the technology giant business and address customer requirements. **Coca-Cola** is also generated lastly grate impact in Myanmar by manufacturing, distributing, selling and hiring in local business. **Samsung** has established for electronic tools business, mobile phone shop in Myanmar also; other global marks such as Mercedes Benz, BMW and Toyota have opened and operated showrooms with local partners in Myanmar.¹ Actually, a rights holder must invest a significant amount of time and money creating an image, promoting and advertising it, building trust and then demonstrating the quality of its products before the public is likely to recognize the mark as well-known.

Holders of well-known marks must safeguard and prevent their rights under current practice and laws in Myanmar. If they do not, their marks will be taken over and illicit sell by infringer to any more person without their approval. It can complex the same mark being applied to below standard goods or services and leading to reputational damage.²

There are no legal restrictions on the franchisor's capability to limit the applied of the IPRs, know-how, and/or top secret information by the franchisee. Due to the absence of this legal framework, it is important for the IPR provisions to be clearly enumerated within the franchise agreement. Franchisors usually grant franchisees the right to use the franchisor's trademarks, systems and know-how in connection with the franchised business. Rights that are typically expressly reserved by the franchisor include the right to:

- Sub-licence/sub-franchise to a third party without the franchisor's consent.
- Localize franchised product and service offerings and advertising materials without the franchisor's consent.
- Use the trade marks for a different business purpose from the one which is the subject of the franchise agreement.
- There are no special requirements for franchises regarding registration of trade marks or other IPRs.
- According to current trade mark recordal practices in Myanmar, although not mandated by law, a franchisee can declare its position as a licensed trade mark user by filing a Declaration of Trademark Licence with the Office of Registration of Deeds.

¹ . Protection for well-known marks in Myanmar (www.WorldTrademarkReview.com)

² . Ibid. (www.WorldTrademarkReview.com)

Any trademark licences that are not recorded with the trade mark office would be deemed ineffective.¹

Franchisors must be diligent in preventing their IP rights in a country that does not have an intellectual property framework. Specific marks of franchise should be registered to the Registration of Deeds Office and published for cautionary notices of this mark in local newspapers and journals. Copies of franchise contract and mark license agreements should also be recorded at the Registration of Deeds Office.²

Mostly well-known marks holders can attain deterrence for their marks by declaration and publishing for cautionary notice in a newspaper periodically.³ Further, if the mark is later infringed, the holder of right can constitute a civil litigation for mark infringement and to obtain a permanent injunction.⁴ In addition, it may claim damages caused by such infringement of ownership. Moreover, temporary injunction may be ordered by the Court under Section 53 of the Specific Relief Act during the trial and to control the defendant from applying the disputed mark.⁵

In civil litigation, representing real commercial application of a mark in Myanmar is vital by proving which party has the better rights over a mark. Place of Myanmar courts significant weight on use when determining ownership of a mark. The relevant date in such cases is the registration date of the declaration of ownership and the date on which the mark was first used in Myanmar.

Under the recent system, it is probable for overlapping parties to register same or similar marks Myanmar parallel. The same cases are appearing in well-known marks. Therefore, to avoid the misleading trademarks, trademark holder should be recorded by registration and a cautionary notice published to show that these marks are protected in Myanmar. The protection of well-known marks is not enacted in the Registration Act or Criminal Law of Myanmar. It remains unclear and still in issue how to prevent the right of well-known marks owner.

It is important for brand owners to generate as much public awareness of their IP as possible. Application and registering a declaration of ownership with the Registry of Deeds Office for assurances is highly recommended and publishing a cautionary notice is to reserve any IP rights and to get as evidence of such rights. In these processes include attachment of trademark license agreements with the Registry. If the Trademark Law is enacted, it would become compulsory to register trademark license agreements. Moreover, some of the foreign brands are already in Myanmar. Biggest challenges in finding franchisee among Myanmar citizen are the lack of understanding of IP rights in franchising.

¹ . Yuwadee Thean-ngarm, Tilleke & Gibbins, Domestic and international franchising, master franchising, and regulation of franchise agreements in Myanmar: overview Parties' rights and obligations, 2019 (<https://uk.practicallaw.thomsonreuters.com>)

² . Sher Hann Chua, Tilleke & Gibbins, Franchising In Myanmar: Navigating The Local Requirements, 2016 (<https://www.conventuslaw.com/report/franchising-in-myanmar-navigating-the-local/>)

³ . Direction 3 of the Registration. Act, 1908

⁴ . Section 42 and 54 of the Specific Relief Act, 1877

⁵ . Ibid. Section 53

Conclusion

Well-known marks are always prevented and regardless of they are registered or not. All well-known goods and services have gained their reputation and they are not identical to other regular marks. Well-known marks take pleasure safeguard in most countries against any other marks in place of reproduction, replication or conversion of these marks. But, they are likely to cause complex in the respect sector of the public.

The protection of well-known mark is related in International Instruments especially in Paris Convention, TRIPs Agreement and Joint Recommendation of WIPO. The member States may set out the protection of well-known mark based on its national law especially in the definition and the criteria of well-known mark depend on the national interest and public interest.

In order to be strongly protection for well - known mark in Myanmar, the following points should be considered to add the law or the procedure.

- Well-known Mark can be any registered trademark that is well known in Myanmar or any unregistered trademark that is well known in Myanmar.
- It should specify the criteria necessary for determining that a trademark is a well-known trademark.
- The Trademark Act should prevent the registration of a mark that is confusingly similar to a well-known mark, regardless of whether the well-known mark has been registered in Myanmar.
- If the trademark is more suitable under the protection of geographical indication and the well- known mark as one of the grounds for rejection should also be considered.
- In violation of trademarks cases, courts or administrative bodies intend to grant larger awards to well-known trademarks infringers and decided such infringers to more severe punishment.

References to the protection of intellectual property rights in Myanmar, it is urgently for Myanmar to introduce the new trademark law to enough address trademark protection concerns with foreign and local businesses. Future perspective of new Trademark Law, 2019, Well-known marks will be recognized and will be available to protect sufficiently. Thus, the reformation of IP system in Myanmar, it is absolutely clear that the well-known and geographical indication are recognized and protected to solving uncertain protection problems traditional to at present in Myanmar.

This paper provides with basic knowledge relating to well-known trademarks and aided the general awareness of the importance of protection for well-known trademarks. After comparative study of international instrument and national law that can be applied to effectives protection of trademarks and well-known trademarks. Myanmar needs to strengthen educational and propaganda activities within the community and among domestic enterprises in order to knowledge of well-known trademarks and their protection. Therefore, title on protection of well-known trademarks should be supported to the community by providing the information to public for high level of consideration in legal and intellectual standards.

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Modelling and Application of Quadratic Equation

Zaw Zaw Aung*

Abstract

This paper mainly describes about the modelling of quadratic function. Firstly it constructs mathematical model with quadratic function. Next, it emphasizes solving of quadratic equation with real world problems. This study then points out the application of quadratic equation with some problems. Finally, it shows the difference applications between quadratic function and quadratic equation.

Keyword: Quadratic function, Quadratic equation

1. Introduction

Mathematics still involves in application of real-world problems. In this paper, it is presented how to model and apply quadratic function with business problems. There are two sections in this paper, quadratic function and quadratic equation. Quadratic function is regarded as the most important function in Mathematics. Moreover, quadratic equation plays in essential part in solving different problems as a part of quadratic function.

1.1 Objectives of the Study

The aims of the paper are:

1. to share the knowledge on modelling the Quadratic Function.
2. to know the solving of 'Quadratic Equation'.
3. to mention how to apply this type of function and equation.

2. Quadratic Function

Quadratic function is one of the form $f(x) = ax^2 + bx + c$ where a , b and c are constants and a is not equal to zero. The general shape of the graph of the quadratic function is *parabola* that opens upward or downward. The parabola is symmetric with respect to a vertical line called *the axis of symmetry*. This line passes through the lowest point or the highest point of the *parabola*. The point of intersection of the parabola is called *vertex of the parabola*. If $a > 0$, we get the minimum vertex and if $a < 0$, we get the maximum vertex as Figure 2.

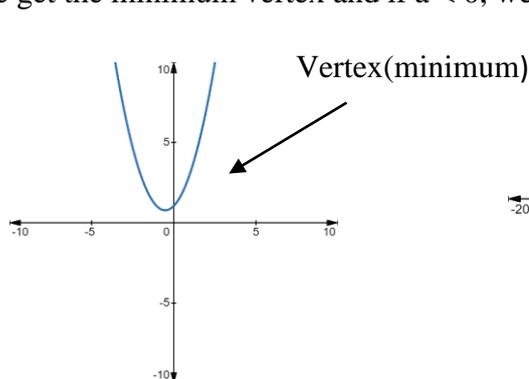


Figure 1

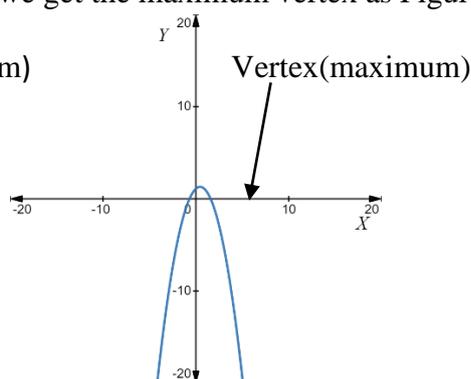


Figure 2

2.1 Modelling Business Problem with Quadratic Function

Modelling is the fundamental sector of Mathematics. Every mathematical problem is built with the help of modelling. It is important to be able to construct the real world problem

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as a *mathematical model*. There are algebraic model and graphical model in quadratic function. This paper will mainly present on algebraic model with illustrated problems. The following model will show how important the mathematical model is.

A Travel Group desires to model their maximum revenue. It offers an island trip to a group of 30 visitors for a price of \$20 per visitor, but it reduces the price per visitor by \$0.6 for each additional visitor above 30. To model their revenue, they collect the data as the following table:

Table 1. Required data for Travel Group

Increase in Group Size	Number of Visitor	Decrease in Price	New Price	Revenue
0	30	0	20	600
1	31	$0.60(1)=0.6$	19.4	601.4
2	32	$0.60(2)=1.2$	18.8	601.6
3	33	$0.60(3)=1.8$	18.2	600.6
4	34	$0.60(4)=2.4$	17.6	598.4
5	35	$0.60(5)=3.0$	17	595
.
.
.
X	$30+x$	$0.60x$	$20-0.60x$	$(30+x)(20-0.60x)$

Source: Page 157, R.J Harshbarger: Mathematical Application for Management, life and Social Sciences

According to the data given above, it can be modelled the number of visitors as $30+x$ and the reduced price as $0.60x$. It can also be modelled the new price as $20 - 0.60x$. The revenue model is product of the number of visitors and new price. Thus, the revenue model of the Travel Group is $R(x) = (30+x)(20 - 0.60x) = 600+2x - 0.60x^2$. The revenue function is in the form of the quadratic function and the graph of parabola is downward. It can be seen that the vertex of the graph $x = -b/2a = -2/2(-0.6) = 1.67$ or nearly 2. the maximum revenue is $R(2) = 601.6$ when $30+2=32$ visitors in the group. Each has to pay about 18.8 dollars. Thus, It can be seen that the use of mathematical model in real world.

2.2 Application of Quadratic Function

It is seen that the real-world problems can be modelled as quadratic function. Here, there will solve the problem that contains quadratic function. It is supposed that the total cost function of producing a product of The Aung Group is given as $C = C(x) = 200x + 0.1x^2 + 1100$ where x represents number of units. The revenue function is modelled as $R(x) = 500x$.

Then the profit function is

$$P(x) = R(x) - C(x) = 500x - (200x + 0.1x^2 + 1100) = -0.1x^2 + 300x - 1100.$$

The profit function is a quadratic function and it can be used to find how many units give maximum profit and what the profit is. $P(x)$ is a quadratic function with $a < 0$. Thus, the parabola graph is downward. And the vertex is maximum point. The coordinates of the vertex are

$$x = -b/2a = -300/2(-0.1) = 1500$$

$$P(1500) = -0.1(1500)^2 + 300(1500) - 1100 = 223,900.$$

So the maximum profit is \$223,900 when 1500 unit are sold.

As the problem above, it can be known more applications of quadratic function in real world. Knowing the application of this type of function, it is to understand why Mathematics is being taught in the class. If it is noticed that nonlinear function like quadratic function, the maximum or minimum value can be easily evaluated.

3. Quadratic Equation

A quadratic equation in one variable is an equation that can be written in the general form $ax^2 + bx + c = 0$ (a is not equal to zero) where a , b and c are constants. It is zeros of quadratic function $y = f(x) = ax^2 + bx + c$ are solution of quadratic equation for which $f(x) = 0$. It means the quadratic function becomes quadratic equation when the function $f(x) = 0$. There is a relation between quadratic function and quadratic equation like above facts.

3.1 Modelling and Solving Quadratic Equation

Factoring method and the quadratic formula are used to solve this type of equation. The aim of the paper is to emphasize the application of this type of equation. This paper models the quadratic equation with business problems. Like the quadratic function, modelling can be made. It can be known two types of solving methods (i) factoring method and (ii) quadratic formula method.

This study illustrates the modelling of this type of equations and solves it with the real-world problems with these two methods. First, it solves the illustrated example that involves quadratic equation with factoring method.

Suppose the demand function for a brand of smartphone is given by

$p = d(x) = -0.025x^2 - 0.5x + 60$, where p the wholesale unit price and x represents the quantity demanded each month, measured in units of a thousand. It is to find the maximum quantity demanded per month.

The function given is quadratic function and to get the maximum quantity demanded, it have to be set $p = 0$, that means the quadratic function becomes quadratic equation. We use the factoring method for this problem.

$$-0.025x^2 - 0.5x + 60 = 0$$

$$x^2 + 20x - 2400 = 0$$

$$(x + 60)(x - 40) = 0$$

The value of x must be 40 as the other value -60 is impossible because the number of quantity or item must not be negative. Next it can be considered the quadratic formula

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Some quadratic equations cannot be factorized easily as it was solved in above. Quadratic formula can be used to solve these equations. The following problem is solved by using quadratic formula.

With fewer workers, future income from payroll taxes used to fund Social Security benefits won't keep pace with schedule benefits. The function

$$B = -1.056785714t^2 + 8.259285714t + 74.07142857$$

describes the social security trust fund balance B , in billions of dollars, where t is the number of years past the year 2000. For planning purpose, it is important to know when the trust fund balance will be 0. That is, for what t value does

$$0 = -1.056785714t^2 + 8.259285714t + 74.07142857 .$$

We use *quadratic formula*

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

to solve the equation. The value of a , b and c are replaced in the quadratic formula. The result is $t=13.14687393$. Thus, the trust fund balance is projected to reach zero slightly more than 13 years after 2000, during the year 2014. There is difference between quadratic function and quadratic equation that quadratic equation tends to solve the value of variable in the equation.

4. Conclusion

The first section of the paper points out that many real-world problems can be modelled in the form of the quadratic function. It shows how essential the modelling in Mathematics is. This study can find that maximum value gets when $a < 0$ or minimum value when $a > 0$ in quadratic function. It is founded that these maximum and minimum can be evaluated with the help of quadratic function. As quadratic function determines the maximum or minimum value of the graph, it is suitable for scientists, engineers and business man to help solving the real world problems. The second section mentions that it can be modelled and solved the real-world problems involving quadratic equation. Quadratic equation can give the value of variable that involves in quadratic function. It is to notice that both quadratic function and equation has only one variable. Moreover, it can be seen that quadratic equation is a part of quadratic function. These are the main facts that presented in this paper. Actually, Mathematics is useful not only for business problems but also for science and other fields. Here it emphasizes the fact that the quadratic function and quadratic equation can be modelled and applied to solve the real world. Not only mathematicians but also people who are interested in Mathematics have to understand that this type of function is essential in solving different problems.

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Implementing Heart Attack Prediction System Using Data Mining Techniques

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Abstract

A disease prognosis comes after a medical diagnosis prediction must take into account more than just a simple diagnosis. Heart attack is the most common disease in human society and real life. This system uses clustering for K-Means methods and the classification methods in Artificial Neural Network (ANN). This system predicts heart attacks using k-means clustering and backpropagation algorithms. In this system, the heart disease dataset is clustered with k-means and then the backpropagation algorithm has been trained and then the system predicts the high-risk or no-risk case for the heart disease patient. This system predicts heart attack probability with the minimum error rate for new patients with heart diseases.

Keywords: Heart Attack, K-Means, Backpropagation, Artificial Neural Network (ANN)

1. Introduction

Numerous fields are associated with medical services like the prediction of the effectiveness of surgical procedures and medical tests. The discovery of relationships between clinical and diagnosis data as well employ data mining technology. Data mining can transfer an assessment of which courses of action prove effective by comparing and evaluating causes, symptoms, and courses of treatment. The data mining techniques have been utilized by a wide variety of works in the literature on varied conditions including Diabetes, Hepatitis, Cancer, and heart disease.

The K-means clustering technique is very simple and it can immediately be begun with a description of a basic algorithm. Neural networks are the adaptive method that can learn without any prior assumption of the underlying data. The design of the prediction system is capable of predicting heart attacks effectively. Computer-based patient records could reduce medical errors, decrease unwanted practice variation, and improve patient outcomes.

Classification predicts categorical labels, prediction models continuous-valued functions. In medical fields, artificial neural networks (ANNs), the subject of great interest, have been considered as alternative methods. Artificial Neural Networks are one of the most commonly used classifier techniques. This system uses K-means clustering in data mining and Backpropagation in an artificial neural network to predict the heart attack probability (No Risk or High Risk).

1.1 Objectives of the study

The objectives of the study are;

1. to transform the multiple attributes in medical data into meaningful outputs
2. to predict the heart attack by using K-Means clustering and backpropagation in artificial neural network
3. to support the heart attack probability with a minimum error rate

1.2 Literature Review

T. Kanungo, et.al establish the analysis of a simple k-means clustering algorithm and the practical efficiency of the filtering algorithm in two ways. First, it presents a data-sensitive analysis of the algorithm's running time. Second, it has been implemented the algorithm and performed several empirical studies, both on synthetically generated data and on real data from applications. M. Sorda, set up neural networks for the diagnosis of cardiovascular disease, primarily in the detection and classification of at-risk people from their ECG waveforms.

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The utilization of neural networks to waveforms and the abnormal ECG recordings had six different disease conditions.

1.3 Scope of the System

In this system, a heart diseases dataset is obtained from the UCI (Unique Client Identifier) website and is used for the heart attack prediction system. This system used the data for 270 samples of real patient data. The thirteen attribute names in this study are comprised: Age, Sex, Cp, Trestbps, Chol, Fbs, Rrestecg, Thalach, Exang, Oldpeak, Slope, Ca, and Thal.

1.4 Method of the System

There are many methods for clustering and classification in data mining. Each method has many benefits for various research purposes. In this system, the heart disease dataset is clustered with the k-means algorithm and then the backpropagation algorithm has been trained. Then the system predicts the high-risk or no-risk case for the heart disease patient with the minimum error rate.

2. Theoretical Background

2.1 Data Mining

Data Mining is the process of extracting useful and unknown information, patterns, and trends from large quantities of data, stored in databases. Data mining combines statistical analysis, machine learning, and database technology to extract hidden patterns and relationships from large databases. Data mining uses two strategies: supervised and unsupervised learning. In supervised learning, a training set is used to learn model parameters whereas, in unsupervised learning, no training set is used.

2.2 Clustering in Data Mining

The clustering algorithm can be applied in many fields, for instance:

- Marketing: finding groups of customers with similar behavior given a large database of customer data containing their properties and past buying records;
- Biology: classification of plants and animals given their features;
- Libraries: the ordering of books;
- Insurance: identifying groups of the motor insurance policyholder with a high average claim cost;
- City-planning: identifying groups of houses according to their house type, value, and geographical location;
- Earthquake studies: clustering observed earthquake epicenters to identify dangerous zones;

2.3 K-Means Clustering

The K-Means algorithm appoints instances to cluster according to the Manhattan distance to the cluster centers. Manhattan distance computes cluster centers as the means of the instances in the cluster.

Clustering techniques in the K-Means algorithm are the simplest and it is used in medical imaging, biometrics, and related fields. In unsupervised learning algorithms, K-Means is one of the simplest. The mean value of the objects in a cluster is measured in cluster similarity, that expressed as the cluster's centroid or center of gravity.

In the K-Means algorithm, the difference between the objects described by interval-scaled variables is computed, based on the distance between each pair of objects.

2.4 Classification in Data Mining

The process of classification has divided a dataset into mutually exclusive groups such that the members of each group are distance is measured with respect to a specific variable(s) that are trying to predict.

For predicting the instance class from pre-labeled classified, classification in a supervised learning method is used. In supervised learning, a collection of labeled patterns, the problem is to label a newly encountered, yet unlabeled pattern. Classification is the system of discovering a model that defines and separates data classes or concepts, to use the model to predict the class of objects whose class label is unidentified.

2.5 About Heart Disease and Heart Attack

The heart is consisting of a muscle that pumps blood, and arteries that supply blood to the heart muscle. Cardiomyopathy, Coronary heart disease, and Cardiovascular disease are some categories of heart diseases. Tightening of the coronary arteries results in the reduction of blood and oxygen supply to the heart and leads to Coronary Heart Disease (CHD).

Myocardial infarctions, known as heart attacks, angina pectoris, or chest pain are encompassed in the CHD. Many heart attacks occur as a result of Coronary Artery Disease (CAD). A section of a badge can break open, causing a blood clot. The lack of oxygen damages the muscle of the heart. The blockage is not treated quickly, the damaged heart muscle begins to die.

2.6 Data Preprocessing

The data might be necessarily carried out cleaning and filtering concerning the data and data mining algorithm. The preprocessing of a data set is the removal of duplicate records, normalizing the values used to represent information in the database, accounting for missing data points, and removing unneeded data fields. The appropriate data for the mining process needs to be changed. The raw data is changed into data sets with a few useful characteristics.

2.7 Clustering Using K-Mean Algorithm

Clustering involves dividing a set of data points into non-overlapping groups, or clusters, of points, where points in a cluster are more similar to one another than to points in other clusters. When a dataset is clustered, every point is assigned to some cluster, and every cluster can be represented by a single reference point, usually an average of the points in the cluster. The extraction of numerous appropriate features from each of the clusters. The K-Means clustering takes the input parameter, k, and partitions a set of n objects into k clusters. The mean value of the objects in a cluster is measured by cluster similarity. The popular distance measure is Manhattan distance, which is defined as

$$d(y, z) = |x_{y1} - x_{z1}| + |x_{y2} - x_{z2}| + \dots + |x_{yn} - x_{zn}|$$

where

$y = (x_{y1}, x_{y2}, \dots, x_{yn})$ and $z = (x_{z1}, x_{z2}, \dots, x_{zn})$ are two dimensional data objects. Extract a given number of clusters of patterns; K-Means clustering is an effective algorithm from a training set.

2.8 Extraction of Significant Patterns from Heart Disease Data Set

In this system, the heart diseases dataset is obtained from the UCI website. The heart disease data set contains the screening clinical data of heart patients. The data set preprocesses to make the mining process more efficient. The preprocessed data set is clustered using the K-means clustering algorithm with $K=2$. This results in two clusters, the first contains the data that is most relevant to heart attack and the second contains the remaining data.

2.9 Classification Using Backpropagation Algorithm

Backpropagation is a neural network learning algorithm. Learning on a multilayer feed-forward neural network is performed by a backpropagation algorithm. It learns by iteratively processing a set of training samples, comparing the network's prediction for each sample with the actual known class label. For each training sample, the weights are modified between the network's prediction and the actual class. These modifications are made in the "backward" direction from the output layer, through each hidden layer down to the first hidden layer. The backpropagation algorithm is used for neural network learning. Given the net input I_j to unit j , then O_j , the output unit j , is computed as Equation 1.

$$O_j = \frac{1}{1+e^{-I_j}} \quad (1)$$

The input-output relation of the j th neuron with respect to the previous layer, I

$$I_j = \sum w_{ij} O_i + \theta_j$$

where w_{ij} is the weight of the connection from the unit i in the previous layer to unit j ; O_i is the output of unit i from the previous layer; θ_j is the threshold of the unit.

2.10 Normalization

Each attribute value is normalized in the range of (0 to 1) and then feed to one node. The input is the attribute values for each data tuple. The learning rate is set between 0.0 and 1.0 and the weights are initialized to random values between [-1.0, 1.0]. As the patients are classified into two classes, a single unit of the output layer is sufficient. The targeted output is 1 if the patient belonged to class 1 and otherwise 0. The number of hidden neurons used in this system is seven. Before training a network, the data attributes are normalized by this system. Typically, input values are normalized by scaling their value so that they fall within a small specified range such as 0.0 to 1.0. The normalized value of each attribute is calculated as follows in the Equation 2.

$$\text{Normalized value} = \frac{1}{n-1} * i; \quad (2)$$

Where n = number of attribute values,

i = iteration from 0 to n

2.11 Attributes Names, Attributes Values and Normalized Values

Table 1. Normalized Values for Attributes Names, and Attributes Values

No	Attribute Names	Attribute Values	Normalized Values
1	Age	Age < 30, Age >30 to Age < 50, Age < 70, Age > 70	0, 0.33, 0.67, 1
2	Sex	1 = Male, 0 = Female	0, 1
3	Cp	Value 1: typical angina, Value 2: atypical angina, Value 3: non-anginal pain, Value 4: asymptomatic	0, 0.33, 0.67, 1
4	Trestbps	Normal (130/89), Low (<119/79), High (>200/160)	0, 0.5, 1
5	Chol	Very High (>120&<400), High 160 to 200, Normal <160	0, 0.5, 1
6	Fbs	1 = True, 0 = False	0, 1
7	Restecg	Value 0: normal, Value 1: having ST-T wave abnormality, Value 2: showing probable	0, 0.5, 1
8	Thalch	Low (<60bpm), Normal (60 to 100), High (> 100bpm)	0, 0.5, 1
9	Exang	1 = yes, 0 = no	0, 1
10	Oldpeak	0-2, 3-4, 5-6	0, 0.5, 1
11	Slope	Value 1: unsloping, Value 2: flat, Value 3: down sloping	0, 0.5, 1
12	Ca	0, 1, 2, 3	0, 0.33, 0.67, 1
13	Thal	Value 3: normal, Value 6: fixed defect, Value 7: reversible defect	0, 0.5, 1

Source: Own Compilation

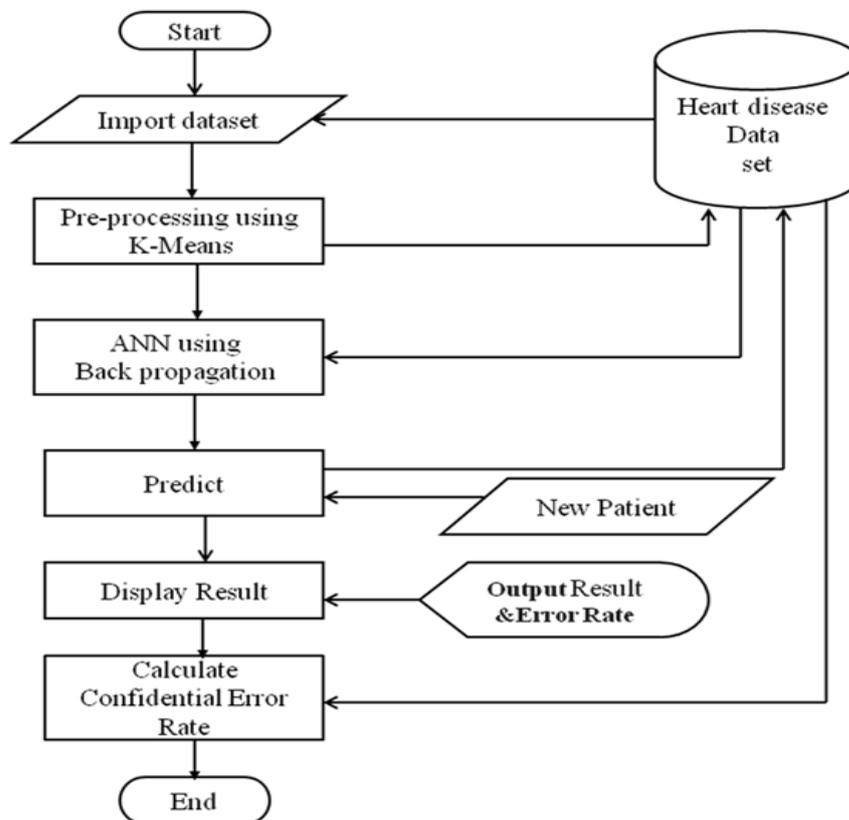
In this table, the normalized values are calculated by Equation (2). Age has four attribute values and iteration is 0 to 3, and then the calculated normalized values are 0, 0.33, 0.67 and 1. Sex has two attribute values and iteration is 0 to 1, and then the calculated normalized values are 0 and 1. Cp has four attribute values and iteration is 0 to 3, and then the calculated normalized values are 0, 0.33, 0.67 and 1. Trestbps has three attribute values and iteration is 0 to 2, and then the calculated normalized values are 0, 0.5 and 1.

Chol has three attribute values and iteration is 0 to 2, and then the calculated normalized values are 0, 0.5 and 1. Fbs has two attribute values and iteration is 0 to 1, and then the calculated normalized values are 0 and 1. Restecg has three attribute values and iteration is 0 to 2, and then the calculated normalized values are 0, 0.5 and 1. Thalch has three attribute values and iteration is 0 to 2, and then the calculated normalized values are 0, 0.5 and 1. Exang has two attribute values and iteration is 0 to 1, and then the calculated normalized values are 0 and 1.

Oldpeak has three attribute values and iteration is 0 to 2, and then the calculated normalized values are 0, 0.5 and 1. Slope has three attribute values and iteration is 0 to 2, and then the calculated normalized values are 0, 0.5 and 1. Ca has four attribute values and iteration is 0 to 3, and then the calculated normalized values are 0, 0.33, 0.67 and 1. Thal has three attribute values and iteration is 0 to 2, and then the calculated normalized values are 0, 0.5 and 1.

3. System Design

3.1 Overall Design of the System



Source: Own Compilation

Figure 1. Overall System Flow Diagram

Figure 1 describes the system flow diagram of this system. This system involves three main functions. They are pre-processing, using K-Means clustering, and Artificial Neural Network uses Backpropagation and Prediction for Heart Attack functions. The heart disease dataset is used to import for the first main function and to predict the heart attack patient. This system pre-processes this imported data using the K-Means clustering method, then trains with weights, hidden neurons, and training cycles using backpropagation network. When the new patient attributes are entered into this system, it predicts the output with a minimum error rate.

3.2 System Flow Diagram for K-Means Clustering

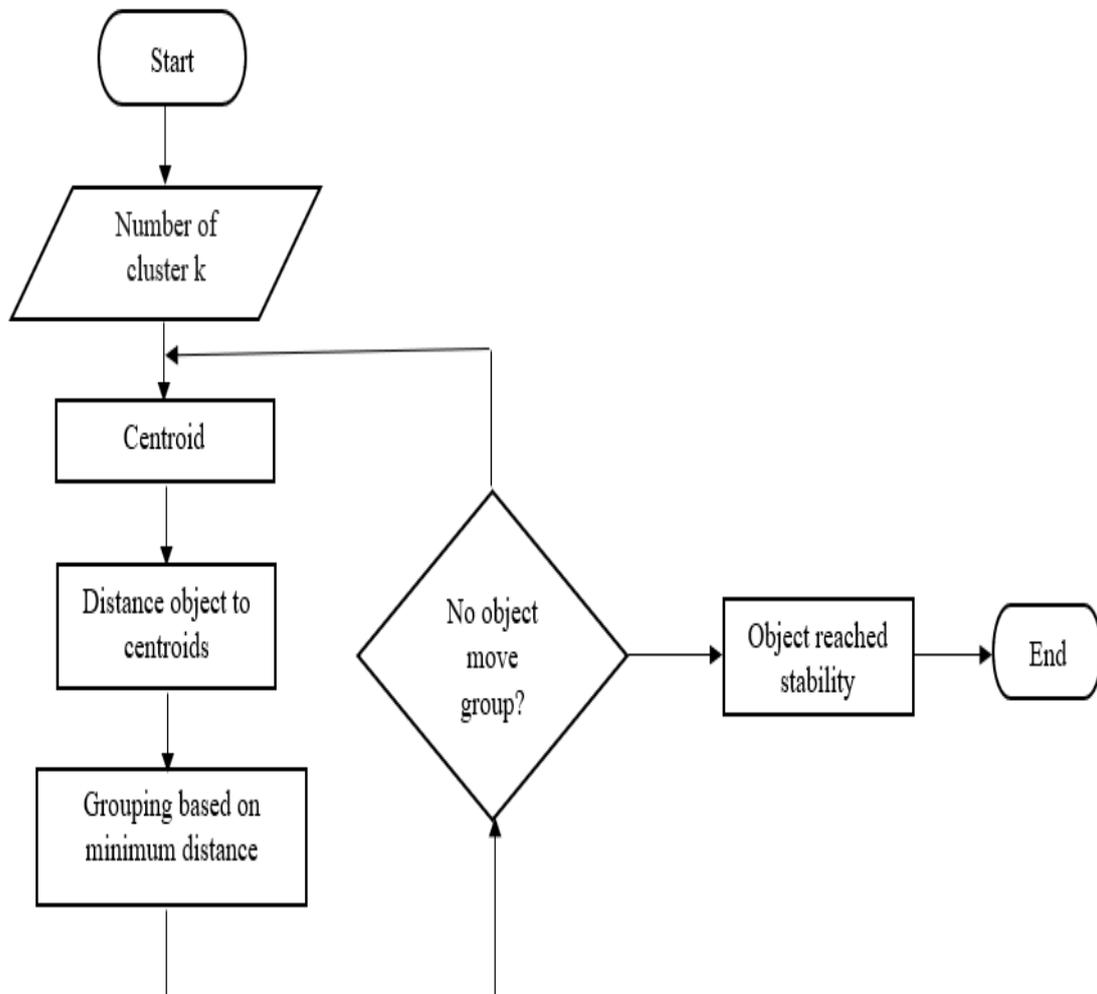
K-Means clustering resolves the number of cluster k and the centroid or center of these clusters is two steps in creating a K-Means clustering model:

1. Determine the optimal number of clusters to create.
2. Determine the center of each cluster.

Center of cluster decision is done in two issues:

1. Determine starting positions for the clusters. This is performed in two steps:
 1. Assign the first center to a random point.
 2. Find the point furthest from any existing center and assign the next center to it. Until the specified number of cluster centers has been found repeatedly.
2. Adjust the center positions until they are optimized.

The system flow diagram of K-Means clustering is represented in Figure 2. First of all, the number of clusters is added to be partitioned into k clusters. The initial value of the centroid is calculated according to the number of clusters. The distance between cluster centroid is calculated and then each object based on minimum distance is attached. Then, the objects do not move group anymore.



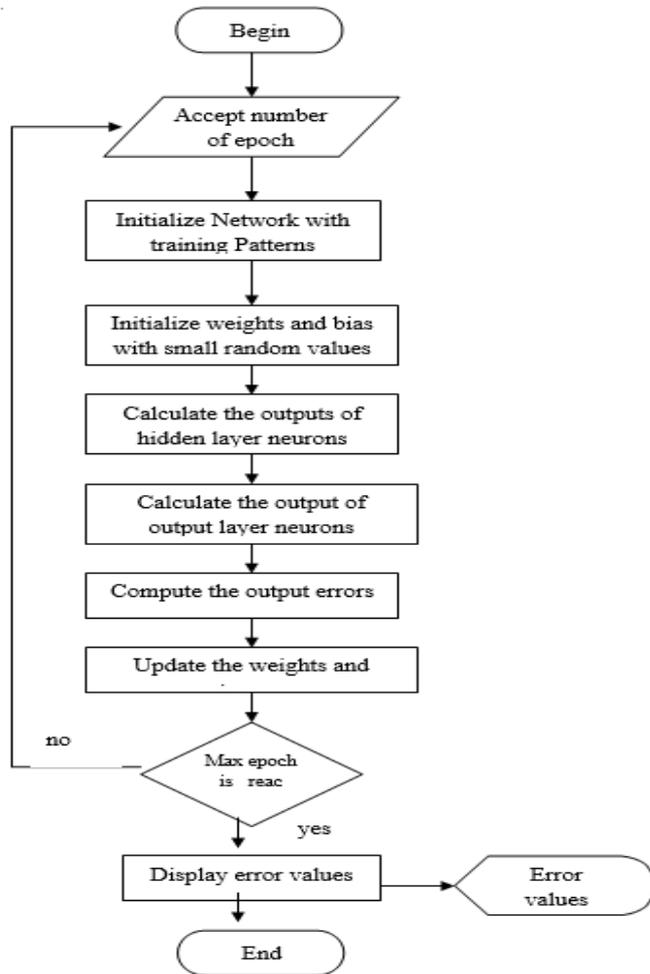
Source: Own Compilation

Figure 2. System Flow Diagram of K-Means Clustering

3.3 System Flow Diagram for Neural Network Trained with Backpropagation Method

The supervised training in the neural network performs using pairs of input and target patterns, and unsupervised algorithms train networks using input patterns only. In this system, a supervised training algorithm is used for training the Neural Network as described in Figure 3.

This system provides functions for performing a training step, evaluating an overall error value for the network (“testing the network” and resulting in the “network error” value), and for resetting the training to an initial state.



Source: Own Compilation

Figure 3. System Flow Diagram of ANN Trained with Backpropagation

4. Implementation of the System

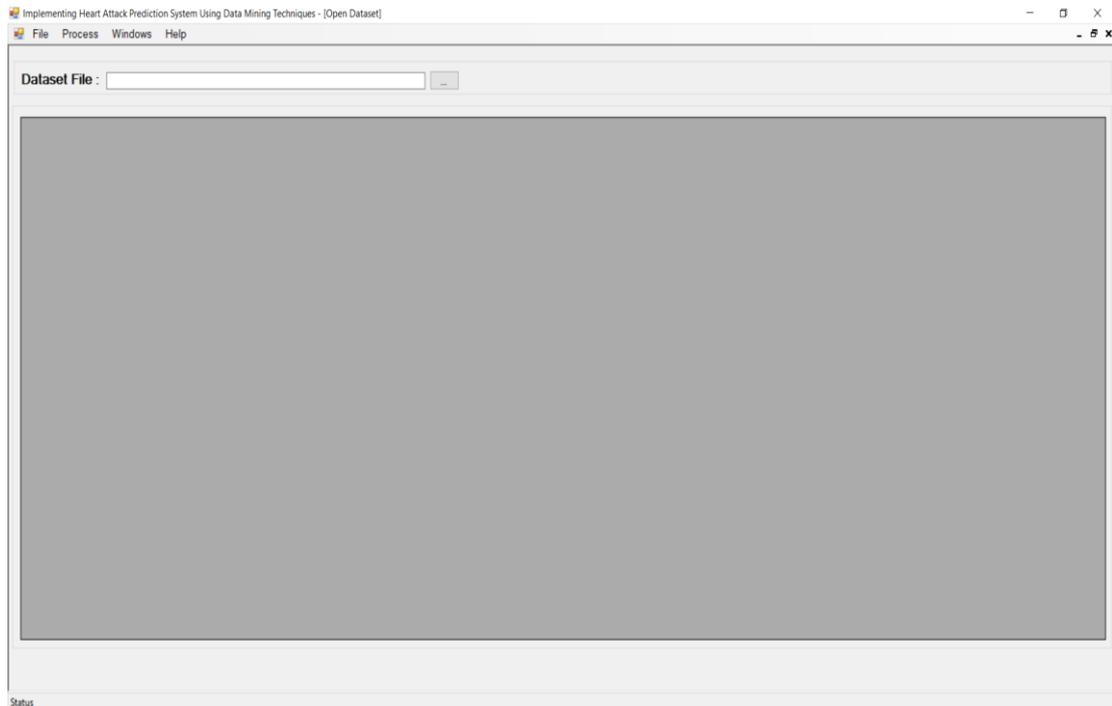
4.1 Main Form of the System



Source: Own Compilation

Figure 4. Main Form of Heart Attack Prediction System

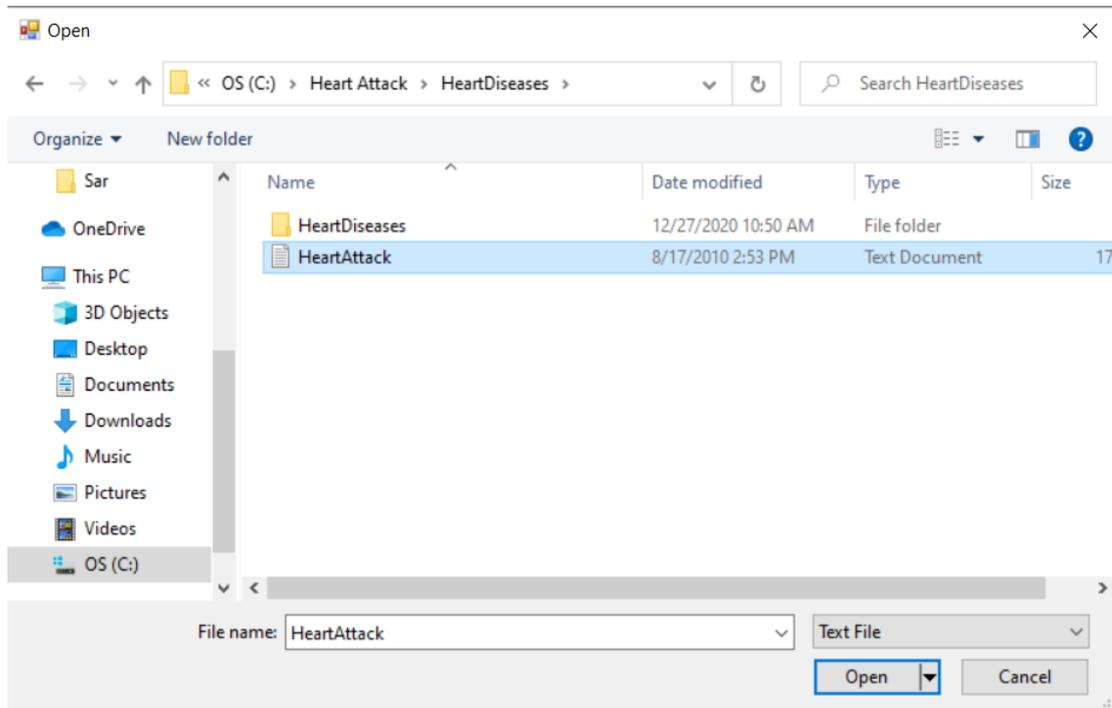
4.2 Dataset Form of the System



Source: Own Compilation

Figure 5. Import Heart Diseases Dataset Form

The Main Form of the Heart Attack Prediction System is described in Figure 4. There are four menus in this form: File (Open Dataset, Exit), Process (Cluster with K-Means, BP Neural Network), Windows, and Help. When the user clicks the “Open Dataset” button, the forms displayed in Figures 5 and 6 will appear in this system.



Source: Own Compilation

Figure 6. Open Heart Diseases Dataset Form

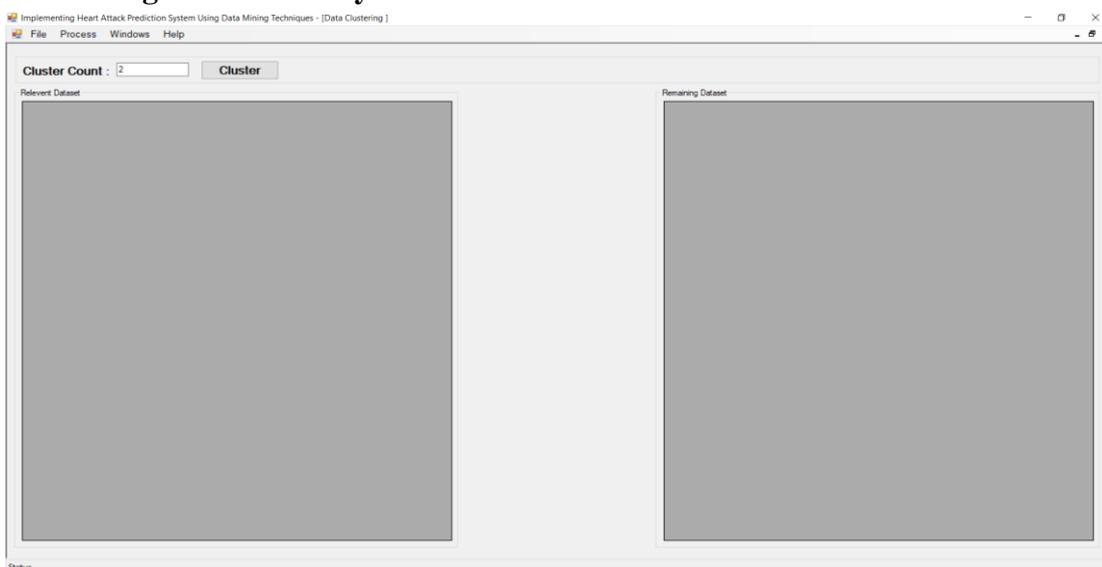
AGE	SEX	CP	TRESTBPS	CHOL	FBS	RESTECG	THALACH	EXANG	OLDPEAK	SLOPE	CA	THAL	NUM
70.0	1.0	4.0	130.0	322.0	0.0	2.0	109.0	0.0	2.4	2.0	3.0	3.0	2
67.0	0.0	3.0	115.0	564.0	0.0	2.0	160.0	0.0	1.6	2.0	0.0	7.0	1
57.0	1.0	2.0	124.0	261.0	0.0	0.0	141.0	0.0	0.3	1.0	0.0	7.0	2
64.0	1.0	4.0	128.0	263.0	0.0	0.0	105.0	1.0	0.2	2.0	1.0	7.0	1
74.0	0.0	2.0	120.0	269.0	0.0	2.0	121.0	1.0	0.2	1.0	1.0	3.0	1
65.0	1.0	4.0	120.0	177.0	0.0	0.0	140.0	0.0	0.4	1.0	0.0	7.0	1
56.0	1.0	3.0	130.0	256.0	1.0	2.0	142.0	1.0	0.6	2.0	1.0	6.0	2
59.0	1.0	4.0	110.0	239.0	0.0	2.0	142.0	1.0	1.2	2.0	1.0	7.0	2
60.0	1.0	4.0	140.0	293.0	0.0	2.0	170.0	0.0	1.2	2.0	2.0	7.0	2
63.0	0.0	4.0	150.0	407.0	0.0	2.0	154.0	0.0	4.0	2.0	3.0	7.0	2
59.0	1.0	4.0	135.0	234.0	0.0	0.0	161.0	0.0	0.5	2.0	0.0	7.0	1
53.0	1.0	4.0	142.0	226.0	0.0	2.0	111.0	1.0	0.0	1.0	0.0	7.0	1
44.0	1.0	3.0	140.0	235.0	0.0	2.0	180.0	0.0	0.0	1.0	0.0	3.0	1
61.0	1.0	1.0	134.0	234.0	0.0	0.0	145.0	0.0	2.6	2.0	2.0	3.0	2
57.0	0.0	4.0	128.0	303.0	0.0	2.0	159.0	0.0	0.0	1.0	1.0	3.0	1
71.0	0.0	4.0	112.0	149.0	0.0	0.0	125.0	0.0	1.6	2.0	0.0	3.0	1
46.0	1.0	4.0	140.0	311.0	0.0	0.0	120.0	1.0	1.8	2.0	2.0	7.0	2
53.0	1.0	4.0	140.0	203.0	1.0	2.0	155.0	1.0	3.1	3.0	0.0	7.0	2
64.0	1.0	1.0	110.0	211.0	0.0	2.0	144.0	1.0	1.8	2.0	0.0	3.0	1
40.0	1.0	1.0	140.0	199.0	0.0	0.0	178.0	1.0	1.4	1.0	0.0	7.0	1
57.0	1.0	4.0	120.0	229.0	0.0	2.0	129.0	1.0	2.6	2.0	2.0	7.0	2
48.0	1.0	2.0	130.0	245.0	0.0	2.0	180.0	0.0	0.2	2.0	0.0	3.0	1
43.0	1.0	4.0	115.0	303.0	0.0	0.0	151.0	0.0	1.2	2.0	0.0	3.0	1
47.0	1.0	4.0	112.0	204.0	0.0	0.0	143.0	0.0	0.1	1.0	0.0	3.0	1
54.0	0.0	2.0	132.0	288.0	1.0	2.0	159.0	1.0	0.0	1.0	1.0	3.0	1
48.0	0.0	3.0	130.0	275.0	0.0	0.0	139.0	0.0	0.2	1.0	0.0	3.0	1
46.0	0.0	4.0	138.0	243.0	0.0	2.0	152.0	1.0	0.0	2.0	0.0	3.0	1

Source: Own Compilation

Figure 7. Heart Diseases Dataset with thirteen Attributes

Thirteen attributes (Age, Sex, Chest pain, trestbps, Chol, fbs, Restecg, thalach, exang, Oldpeak, Slope, ca, Thal) of the heart disease dataset are described in Figure 7. This data set is downloaded from the UCI website. This dataset is the most important to predict heart attack patients.

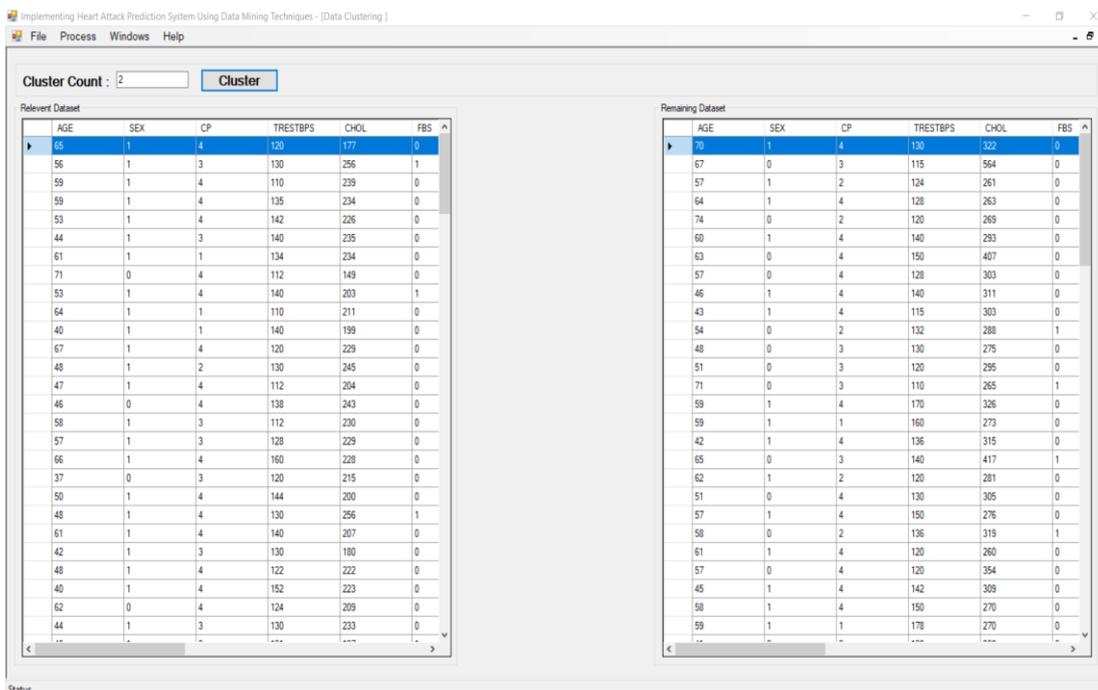
4.3 Clustering Form of the System



Source: Own Compilation

Figure 8. Clustering Form

When the user clicks the K-Means clustering button from the process menu, the clustering form described in Figure 8 will show. This form shows two clusters. When the user clicks the “Cluster” button, this system processes the dataset according to the number of a given cluster. After clustering, the system shows the clustering results of this entire dataset as described in Figure 9. In this figure, the number of clusters is two.

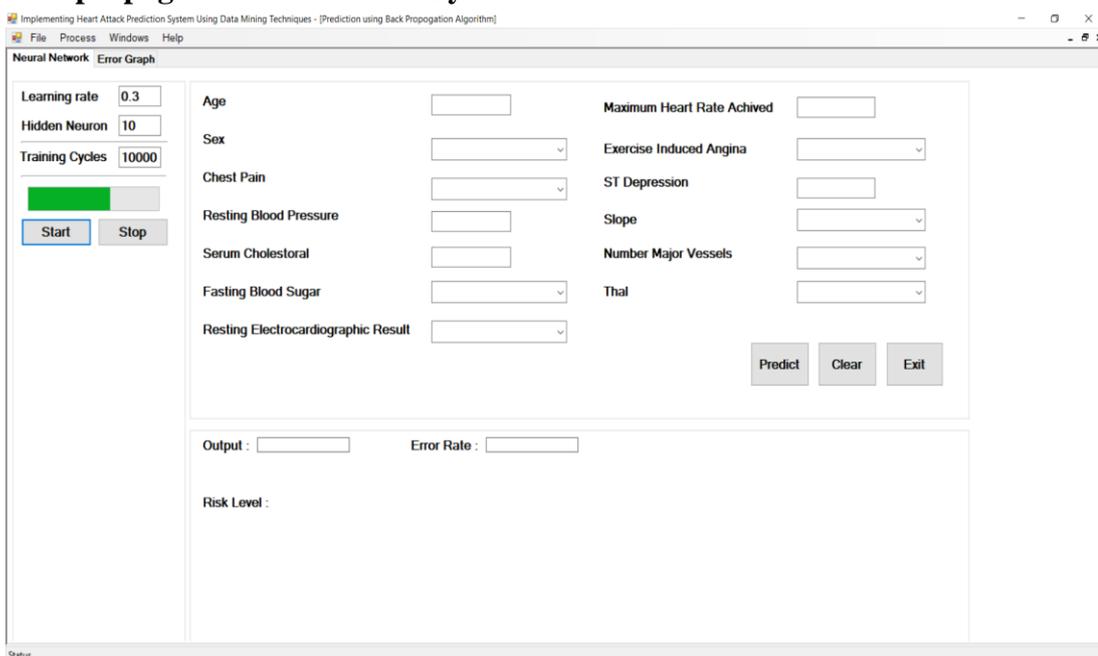


Source: Own Compilation

Figure 9. Clustered Form with 2 Clusters

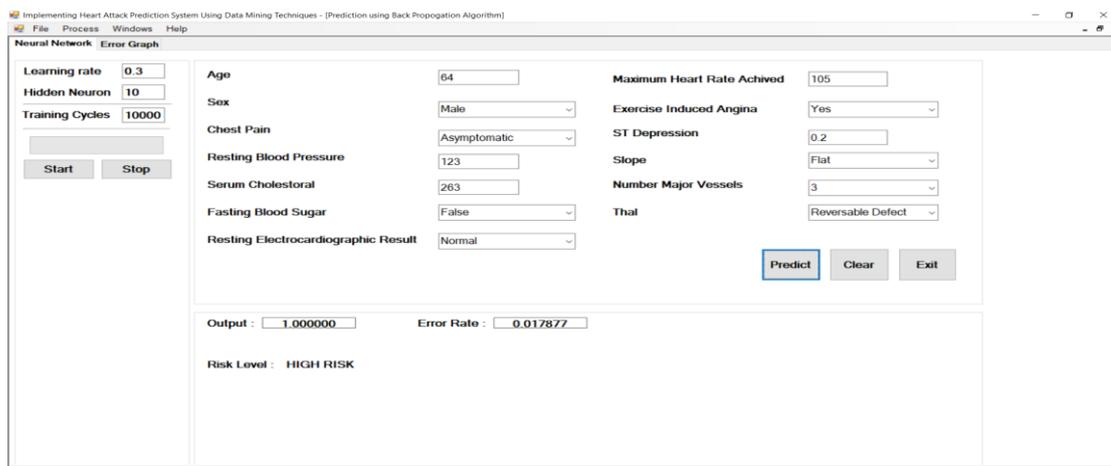
After clustering with 2 clusters shown in Figure 9, the user must click the backpropagation button from the Process menu. Then, Figure 10 will appear with Learning Rate, Hidden Neurons, and Training Cycles. In this form, the user must train the clustered dataset with desired learning rate, hidden neurons, and training cycles. After training, the user can add the new patient’s attributes.

4.4 Backpropagation Form of the System



Source: Own Compilation

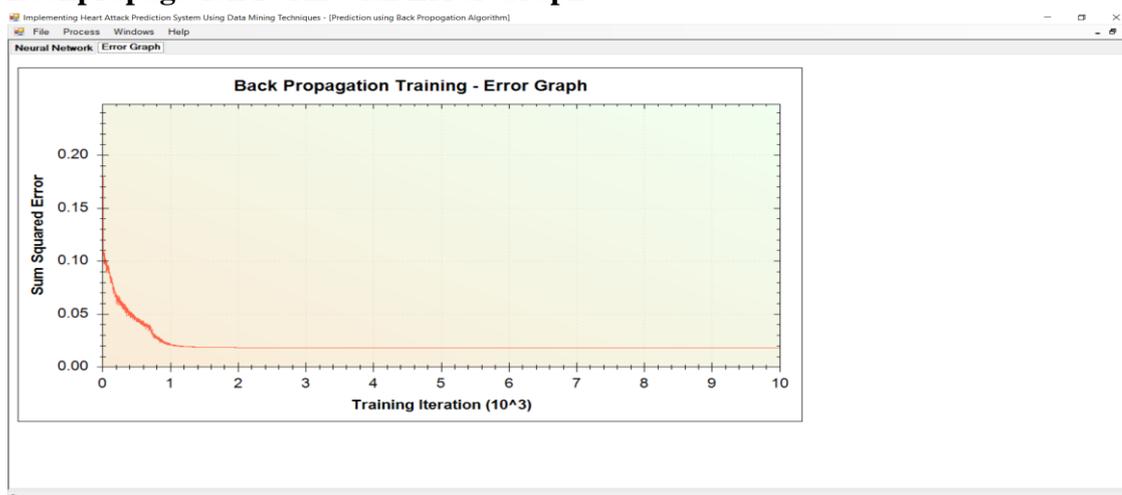
Figure 10. Backpropagation Form (Learning Rate, Hidden Neurons, Training Cycles)



Source: Own Compilation

Figure 11. Prediction of New Patient’s Data with Training Cycle (10000), Hidden Neurons (5) and Learning Rate (0.3)

4.5 Backpropagation Form with Error Graph



Source: Own Compilation

Figure 12. Backpropagation Training for Error Graph

After Backpropagation the result of output and the error rate is displayed with an error graph in Figure 12. In this error graph, X-axis shows the training iteration with 10³ and the Y-axis shows the sum squared error.

After training the backpropagation neural network with input vectors, the system can predict heart attack with the patient’s thirteen input attribute values and can produce error rate results. When the output value is equal to or smaller than the threshold value (0.5), the result of the error is recalculated as follows in Equation.

$$\frac{(output\ value * 100)}{0.5} \%$$

When the output value is greater than 0.5, the error percentage is computed as follows in Equation.

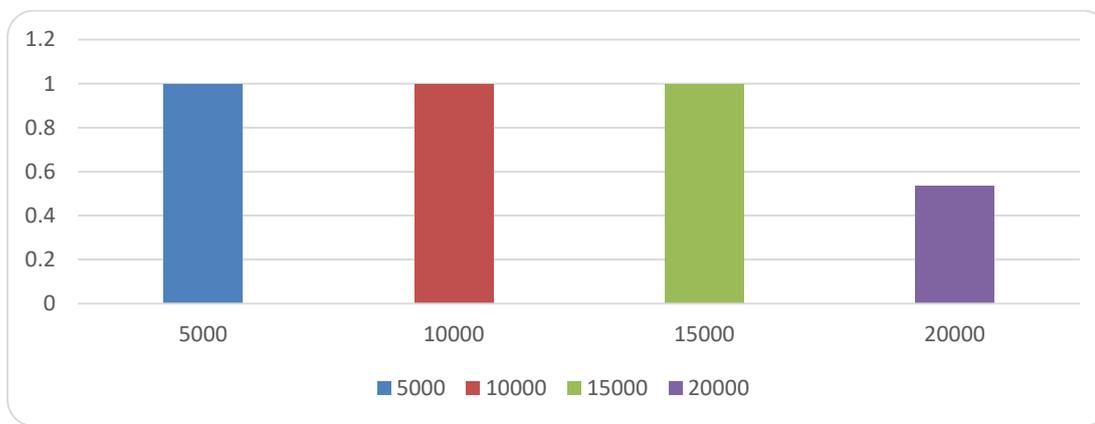
$$\frac{(output\ value * 100)}{0.5} \%$$

The patient’s result is a No-Risk when the output value is equal or smaller than 0.5.

The output value is greater than 0.5: the result is High Risk. The greater number of training cycles is, the smaller the error rate. Thus, the result is more exact and the error percentage becomes less.

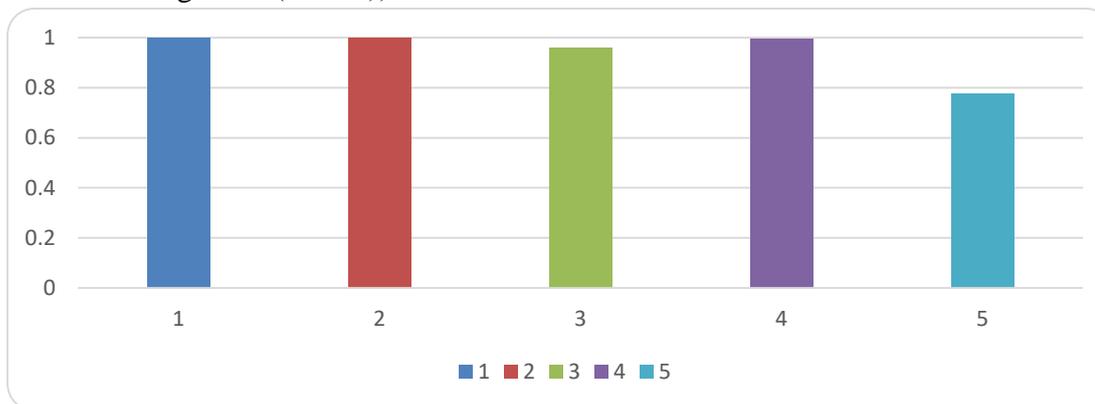
Figure 11 shows the prediction form of new patient data with the learning weight (0.3), hidden neurons (5), and training cycles (10000). When the user clicks the “**Predict**” button, the system predicts the heart attack result output (1) and Error Rate (0).

Figure 13 and Figure 14 shows the comparison between the training cycles and hidden neurons. In Figure 13, X-axis is Training Cycles and Y-axis is Output Result: no risk (≤ 0.5) or high risk (≥ 0.5). In Figure 14, X-axis is Hidden Neurons and Y-axis is Output Result: no risk (≤ 0.5) or high risk (≥ 0.5)



Source: Own Compilation

Figure 13. X-axis (Training Cycles) and Y-axis (Output Result: no risk (≤ 0.5) or high risk (≥ 0.5))



Source: Own Compilation

Figure 14. X-axis (Hidden Neurons) and Y-axis (Output Result: no risk (≤ 0.5) or high risk (≥ 0.5))

Forty cases are extracted from the dataset to act as a test heart attack set. The experimental results of the test cases are shown in Table 1. This system can estimate correctly with a minimum error rate for various heart disease patients.

In this system, the results of the output and error rate are the minimum error rate for heart attack patients. Because the average outputs are $(16.42/50=0.3284)$ and the average error rate $(6.28/50 = 0.1256)$.

Table 2. Experimental Results of Heart Attack Dataset

No	Age	Sex	Cp	Trestbts	Chol	Fbs	Restecg	Thalch	Exang	Oldpeak	Slope	Ca	Thal	Out put	Error Rate
1	70	1	4	130	322	0	2	109	0	2	2	3	3	1.0	0.23
2	67	0	3	115	564	0	2	160	0	2	2	0	7	0	0.00
3	57	1	2	124	261	0	0	141	0	0	1	0	7	0.00	0.00
4	64	1	4	128	263	0	0	105	1	0	2	1	7	0.31	0.86
5	74	0	2	120	269	0	2	121	1	0	1	1	3	0	0
6	65	1	4	120	177	0	0	140	0	0	1	0	7	0.00	0.00
7	56	1	3	130	256	1	2	142	1	1	2	1	6	0.99	0.23
8	59	1	4	110	239	0	2	142	1	1	2	1	7	0.00	0.16
9	60	1	4	140	293	0	2	170	0	1	2	2	7	0.00	0.56
10	63	0	4	150	407	0	2	154	0	4	2	3	7	1.00	0.13
11	59	1	4	135	234	0	0	161	0	1	2	0	7	1	0
12	53	1	4	142	226	0	2	111	1	0	1	0	7	0.00	0.00
13	44	1	3	140	235	0	2	180	0	0	1	0	3	0	0
14	61	1	1	134	234	0	0	145	0	3	2	2	3	0.99	0.77
15	57	0	4	128	303	0	2	159	0	0	1	1	3	0	0
16	71	0	4	112	149	0	0	125	0	2	2	0	3	0.00	0
17	46	1	4	140	311	0	0	120	1	2	2	2	7	1	0
18	53	1	4	140	203	1	2	155	1	3	3	0	7	0.06	0.1
19	64	1	1	110	211	0	2	144	1	2	2	0	3	0	0.88
20	40	1	1	140	199	0	0	178	1	1	1	0	7	0	0
21	67	1	4	120	229	0	2	129	1	3	2	2	7	1	0
22	48	1	2	130	245	0	2	180	0	0	2	0	3	0	0
23	43	1	4	115	303	0	0	181	0	1	2	0	3	0	0.22
24	47	1	4	112	204	0	0	143	0	0	1	0	3	0	0
25	54	0	2	132	288	1	2	159	1	0	1	1	3	0	0
26	48	0	3	130	275	0	0	139	0	0	1	0	3	0	0
27	46	0	4	138	243	0	2	152	1	0	2	0	3	0	0
28	51	0	3	120	295	0	2	157	0	1	1	0	3	0	0.06
29	58	1	3	112	230	0	2	165	0	3	2	1	7	1	0
30	71	0	3	110	265	1	2	130	0	0	1	1	3	0	0
31	57	1	3	128	229	0	2	150	0	0	2	1	7	0.99	0.01
32	66	1	4	160	228	0	2	138	0	2	1	0	6	0	0
33	37	0	3	120	215	0	0	170	0	0	1	0	3	0	0
34	50	1	4	170	326	0	2	140	1	3	3	0	7	0.99	0.28
35	50	1	4	144	200	0	2	126	1	1	2	0	7	0	0.04
36	48	1	4	130	256	1	2	150	1	0	1	2	7	0.99	0.04
37	61	1	4	140	207	0	2	138	1	2	1	1	7	0.99	0.11
38	59	1	1	160	273	0	2	125	0	0	1	0	3	0	0
39	42	1	3	130	180	0	0	150	0	0	1	0	3	0	0
40	48	1	4	122	222	0	2	186	0	0	1	0	3	0	0.3

Source: Own Compilation

4.6 Finding and Discussions

This system uses thirteen attributes' values and the experimental result of this system produces the high-risk or no-risk event of the heart disease patient. There are 119 samples for no-risk results and 151 samples of high-risk results. Firstly, the Heart Disease dataset is clustered with the k-means method and then it is trained with a neural network. Before training a network, this system normalizes the data attributes. After normalizing the data attributes, the system trains the backpropagation with learning rate and hidden neurons. If the learning rate is too large, the error rate is to lead the oscillation between inadequate solutions. If the learning rate is too small, the error rate is minimized. When the learning rate is too small, the training time is too long, but the result is more accurate.

5. Conclusion

In this system, the heart disease data set is clustered with the K-Means clustering algorithm to obtain an effective heart attack. The experimental results have illustrated the efficacy of the designed prediction system in predicting heart attacks. This system gives the following advantages:

- Reduce the size of the entire heart disease datasets using K-Means clustering.
- Satisfy the better probability results of heart attack for heart disease patients.
- Get the precise output (no risk or high risk) with minimum error rate using K-Means clustering and Backpropagation Neural Network.
- Implement heart disease patients with specific and perfect prediction, also can serve as an expert in diagnosis.

5.1 Limitation and Further Extension

This system uses the thirteen attributes of the heart disease dataset that is downloaded from UCI website. To get a better output result, this system uses the hybrid method that is the combination of K-Means clustering and Backpropagation Neural Network. This system normalizes attribute values in the range of 0.0 and 1.0.

In addition, the attribute values can be normalized in the range of -1.0 to 1.0. Moreover, this system can be extended using other methods and some datasets.

Acknowledgments

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A Geographical Study on Spatial Distribution of Cottage Industries in Amarapura Town

Wut Yi Oo*

Abstract

The study area is Amarapura Town and it is located at Amarapura Township, Mandalay Region. This paper studies the distribution and dispersion of cottage industries from the geographical point of view. The main aim is to present the important of cottage industries for the development of economic in Amarapura Town. Cottage industries can be classified as six types in Amarapura Town. They are foodstuff industry, clothing and apparel making industry, construction material industry, consumer goods industry, traditional courtesy industry and other cottage industry. The distribution and dispersion of cottage industry of Amarapura are presented by using the Diversification Method of Gibbs and Martin (1962) and the Location Quotient Method of Gareth Shaw and Dennis Wheeler (1905). In Amarapura, Hman Tan Ward is the main distribution of finished goods due to the accessible location and it is the highest diversified area. Taung Gyi Ward is the lowest diversified area due to the large number of clothing and apparel making works. In Amarapura Town the influenced factors of primary location are raw material, skill labors and markets. This research paper will support partially to the development of cottage industry in Amarapura Town.

Key words: Cottage industry, Distribution, Dispersion, Diversification Method, Location Quotient Method

1. Introduction

The cottage industry is the production of commodity by hand and machine, the finished products are consumed by local residents as sold at the internal and international markets. Cottage industry is the first step to develop their livelihood works. Moreover, these industries are the first types in developing in primitive people. In Myanmar, the types of cottage industry are edible oil milling industry, bean grinding industry, cotton weaving industry, bamboo matting industry, pottery industry, saw milling industry, bamboo fan making industry, furniture making industry, goldsmith work and blacksmith work. Most of the cottage industries are found in central Myanmar. Amarapura is located at the central Myanmar and most of the cottage industries are in the centre of the town. The development of cottage industry will promote the people's income. This paper is analyzed the distribution and dispersion of cottage industry in Amarapura Town from the geographical point of view.

1.1 Study Area

The study area is Amarapura Town and it is located at Amarapura Township, Mandalay City. At present, Amarapura Township is included as one of the seven townships in Mandalay City. Amarapura is composed of eight wards.

1.2 Aims and Objectives

The main aim of the study area was to the cottage industry that will sustainable developed in future. The objectives are as follows:

1. to present the spatial distribution of cottage industry in Amarapura;
2. to analyze the spatial distribution of cottage industry;
3. to evaluate the spatial pattern of cottage industry

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1.3 Literature Review

Cottage industry is described as a small business in which it is done by people in their home; weaving and limiting are traditional cottage industries. [Oxford Advanced Learners Dictionary]

Cottage industry is usually small-scale industry carried on at home by family members using their own equipment; alternative definition is a small loosely organized, yet flourishing complex of activity or industry; another definition is on industry (business/commerce) in which employees work in their homes often using their own equipment. [Wikipedia]

Clarence Fielden Jones and Gordon Gerald Darkenwald (1965), defined that the cottage industry is characterized by handmade of local raw materials in the home and consumption the finished products by the same household. True cottage industry has largely disappeared from Western Europe and Anglo-America. Due to the low buying power, it still supplies most of the manufactured products consumed. In the Andes of the South America, many Indians still prepare all their food from crops and animal manufacture their clothing, bedding, and shoes from wool and felts of sheep, llamas and alpacas. Many other people practices these types of manufacturing and those are referred as cottage industry.

1.4 Scope and Methods of Study

This paper is presented only for the cottage industry in Amarapura Town in (2018-2019). The necessary data are collected such as the primary and secondary source. The primary sources are obtained by field method and the secondary sources are collected from the governmental departments and private institutions. This paper is applied by using the statistical techniques and GIS methods and spatial analysis as well.

2. Physical Bases of Amarapura Town

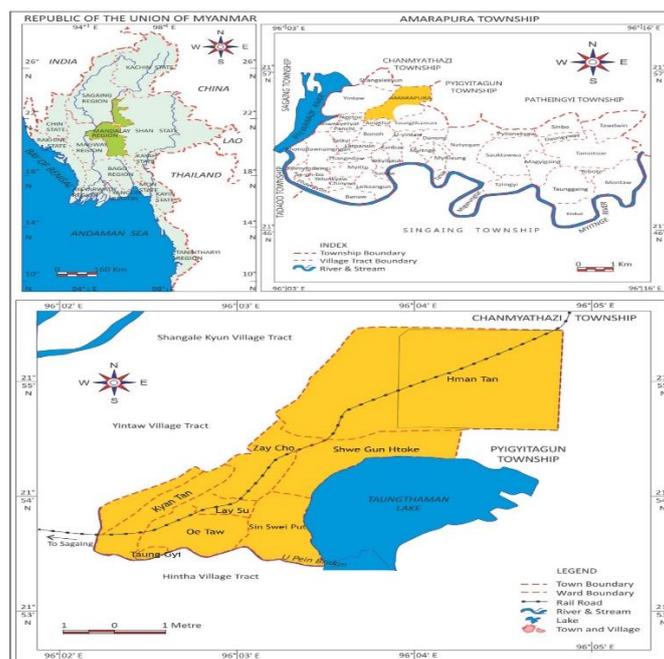
2.1 Location and Area

The Amarapura is located at the dry zone in Mandalay Region and it is one of the seven townships in Mandalay City. Amarapura Town is situated between North Latitudes of 21° 53' and 21° 57' and East Longitudes 96° 02' and 96° 05'. Its area is (3.24) square miles or (2,071) acre. It is composed of eight wards. They are Hman Tan, Zay Cho, Shwe Gun Htoke, Sin Swei Put, Lay Su, Oe Taw, Taung Gyi and Kyan Tan. The town is the elongated shape. The area and location of Amarapura are shown in table (2.1) and map (2.1).

Table (2.1) The Wards in Amarapura Town (2018-2019)

No.	The Name of Wards	Area	
		Acres	Square Miles
1	Hman Tan	1,056	1.65
2	Zay Cho	123	0.19
3	Shwe Gun Htoke	266	0.42
4	Sin Swei Put	225	0.35
5	Lay Su	71	0.11
6	Oe Taw	121	0.19
7	Taung Gyi	23	0.04
8	Kyan Tan	186	0.29
	Total	2,071	3.24

Source: Department of Agricultural Land Management and Statistic, Amarapura



MAP (2.1) Location Map of Amarapura

Source: UTM Map No. 2196_01.

2.2 Topography

Amarapura Town is located on the alluvial flat plain between Ayeyarwady River and Myitnge River. The eastern portion is slightly higher than the western portion. The highest level is found at the northeastern. In Amarapura the broadest plain area is located at the western portion between the Ayeyarwady River and the Myitnge River. Therefore the town was built on the level plain area. The two rivers such as the Ayeyarwady and the Myitnge are important. The Taung Gyi Chaung is flowing from east to west at the southern portion and not only flows into the Taungthaman Lake but also serves as southern boundary. The Taungthaman Lake is located at the southeast portion of the study area.

2.3 Climate

It influences upon the distribution and dispersion of economics. The climate factors are important for cottage industry of Amarapura. Due to locating in the Central Dry Zone of Myanmar, it is experienced as the Tropical Savanna climate (Aw). Temperature and rainfall conditions of Amarapura, during (30) year period from (1991 to 2020) are shown in figure (2.1) and table (2.2).

2.4 Temperature

During the (30) year period from (1991 to 2020), the average maximum temperature, the average mean temperature and the average minimum temperature is (33.93°C), (28.04°C) and (22.15°C) respectively. April is the hottest month with (31.83°C) and January is the coldest month with (21.99 °C). The range of temperature is (9.84°C).

2.5 Rainfall

During the (30) year period from (1991 to 2020), the study area obtained the average rainfall is (912.37 mm). There can be found the double maximum in May and September.

2.6 Soil

The soil is the most important natural resources. Its support the food, cloth and shelter for human. Most of the soil is meadow soil and it is suitable for agricultural crops. Alluvial soil and clayey alluvial soil are found after flooding. The soil colour is from light brown to dark brown and the sub layer has brown mottle and the red colour. The P^H range is from (6 to 8); the level is neutral point. Therefore, the soil is suitable for paddy, pulse, beans and vegetables.

Table (2.2) The Average Maximum, Minimum, Mean Temperature and Rainfall Condition of Amarapura (1991-2020)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Avg./ Total
Max. Temp (°C)	29.72	33.03	36.55	38.81	36.66	35.44	35.24	34.02	33.81	33.20	31.81	28.91	33.93
Mean Temp (°C)	21.99	24.64	28.53	31.83	31.47	30.80	30.71	29.86	29.61	28.69	25.99	22.41	28.04
Min. Temp (°C)	14.26	16.26	20.50	24.85	26.27	26.16	26.18	25.69	25.42	24.17	20.17	15.91	22.15
Rainfall (mm)	4.97	2.79	6.86	41.81	151.05	92.57	64.98	161.57	180.98	160.87	38.36	5.56	912.37

Source: Department of Meteorology and Hydrology, Mandalay

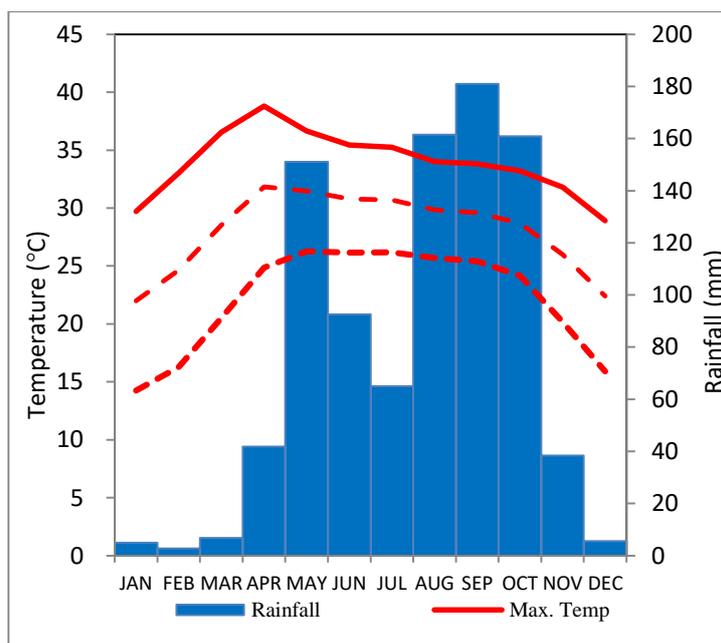


Figure (2.1) Climograph of Amarapura (1991-2020)

Source: Based on Table (2.2)

3. Human Bases of Amarapura Town

Human bases are not only the important factor and socio-economic condition that changes the development of a region and also it effects on the urban function. Amarapura is the central hub of ancient culture and also the three times as the royal capital in Konbaung history. Moreover, cottage industries sector in Amarapura is developed and also increased in population. Therefore, the human factors influenced upon the cottage industry in the study area.

3.1 Total Population and Population Growth

In 1973 census data, the total population is (30,532) persons and in (1983), there has (37,284) persons in this area. During the (10) year period, population was increased of (6,752) persons. The total growth rate is (2.01) percent of the whole population. The (10) year period between (1983 and 1993), the population is increased of (1,934) persons and the growth rate is (0.49) percent. During the (10) year period from (1993 to 2003), it is increased of (2,806) persons and the growth rate is (0.68) percent of the total population. During (10) year period from (2003 to 2013), it is increased of (5,576) persons and the growth rate is (1.23) percent.

During the (6) year period from (2013 to 2019), the total it is increased about (11,114) persons with the population growth rate of (2.09) percent. Table (3.1), Figure (3.1).

Table (3.1) Total Population and Growth Rate of Population in Amarapura Town (1973 -2019)

No.	Year	Total Population	Increased/ Decreased Population	Growth Rate
1	1973	30,532		
2	1983	37,284	6,752	2.01
3	1993	39,218	1,934	0.49
4	2003	42,024	2,806	0.68
5	2013	47,600	5,576	1.23
6	2019	58,714	11,114	2.09

Source: Department of Immigration and National Registration, Amarapura

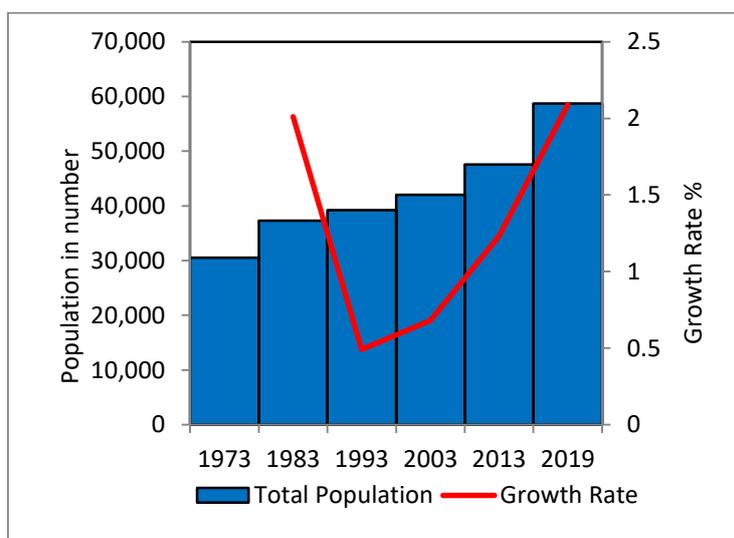


Figure (3.1) Total Population and Growth Rate of Population in Amarapura Town (1973 -2019)

Source: Based on Table (3.1)

Table (3.2) House, Household and Population Condition of Amarapura Town (2019)

No	Ward	House	Household	Population		Percentage	
				Male	Female	Total	(%)
1	Hman Tan	3,902	4,782	12,181	13,458	25,639	43.67
2	Zay Cho	1,094	1,664	2,411	3,118	5,529	9.42
3	Shwe Gun Htoke	521	647	1,544	1,905	3,449	5.87
4	Sin Swei Put	576	695	1,879	2,325	4,204	7.16

5	Lay Su	606	814	2,314	2,963	5,277	8.99
6	Oe Taw	969	1,328	2,587	3,254	5,841	9.95
7	Taung Gyi	311	487	1,178	1,374	2,552	4.35
8	Kyan Tan	797	1,231	2,878	3,345	6,223	10.59
	Total	8,776	11,648	26,972	31,742	58,714	100.00

Source: Department of Immigration and National Registration, Amarapura

According to the table (3.2), the total population is (58,714) persons in Amarapura Town. As the population is increased, the number of cottage industry and various types of functions are developed to support the requirement of local residents.

3.2 Population Distribution

Population factors are very important in cottage industry of Amarapura Town. In (2019), the total population of a Amarapura Town is (58,714) persons. The population distribution of Amarapura in (2019) is show in table (3.3). Among the urban wards, Hman Tan Ward is the largest population with (25,639) persons. It is located in Sagaing-Mandalay road and business areas. It has the largest number of inhabitants. Taung Gyi Ward is the least population with (2,552) persons. Population distribution is described as three groups of categories.

- (1) High population group (over 5,000 persons)
- (2) Medium population group (between 3,000-5,000 persons)
- (3) Low population group (under 3,000 persons)

In Amarapura, Hman Tan and (4) wards are included in the large population group. These wards are mostly situated along the Sagaing-Mandalay road and Mandalay-Myitkyina railway. These wards belong to large population group as these groups have good transportation and economic activities

According to table (3.3), there are (2) wards with the medium population group in Amarapura. These wards are Shwe Gun Htoke and Sin Swei Put wards. Shwe Gun Htoke and Sin Swei Put wards are located along the Taungthaman Lake. Taung Gyi Wards is the low population group with the total population of (2,552) persons. Taung Gyi Ward is situated along the Taung Gyi Chaung.

Table (3.3) Population Distribution and Population Density of Amarapua Town (2019)

No	Ward	Area (Sq-miles)	Total Population	Person/Sq-mile
1	Hman Tan	1.65	25,639	15,538
2	Zay Cho	0.19	5,529	29,100
3	Shwe Gun Htoke	0.42	3,449	8,211
4	Sin Swei Put	0.35	4,204	12,011
5	Lay Su	0.11	5,277	47,972
6	Oe Taw	0.19	5,841	30,742
7	Taung Gyi	0.04	2,552	63,800
8	Kyan Tan	0.29	6,223	21,458
	Total	3.24	58,714	18,121

Source: Department of Immigration and National Registration, Amarapura

3.3 Population Density

Population density of Amarapura Town is classified into three groups.

- (1) High Population Density Area (over 20,000 persons per square mile)
- (2) Medium Population Density Area (between 10,000-20,000 persons per square mile)
- (3) Low Population Density Area (under 10,000 persons per square mile)

According to table (3.4), there are five wards which occupy the high density area of more than (20,000) persons per square mile. These wards are Zay Cho, Lay Su, Oe Taw, Taung Gyi and Kyan Tan Wards. The high density area is located along the best accessibility with road and railroad. Cottage industries are mostly found in this area.

In (2019), the number of two wards are included the medium population density area between (10,000-20,000) persons per square mile. These wards are Hman Tan and Sin Swei Put Wards. The low population density area is found only in Shwe Gun Htoke Ward with the population density area under (10,000) per square mile. The population density of Amarapura in the year is shown in table (3.4).

Table (3.4) Groups of Population Density in Amarapura Town (2019)

High Population Density Area	Medium population Density Area	Low Population Density Area
>20,000 persons per square mile	Between 10,000-20,000 persons per square mile	<10,000 persons per square mile
Zay Cho Lay Su Oe Taw Taung Gyi Kyan Tan	Hman Tan Sin Swei Put	Shwe Gun Htoke

Source: Calculated by Researcher based on table 3.3

3.4 Age and Gender Composition

Age and gender composition describe the working population and depended population. The dependency ratio is obtained from age composition. According to the population sources, the age group is classified as three groups.

- (1) adolescent group (0-14 years of age)
- (2) working group (15-59 year of age)
- (3) Aging group (60 and over 60 years age)

In the above mentioned three groups, adolescent group, and aging group depended upon the working group. According to (2019) statistics, adolescent group has (11,491) persons, with (19.57) percent of the total population. Working population group is (35,748) persons with (60.89) percent of the total whole population. Aging group is (11,475) persons with (19.54) percent of the total population. Therefore, the dependency ratio of Amarapura Town is (1:1.56). Working population is more than other groups, that means there have more income due to being less dependency. Table (3.5) shows the age and gender composition of Amarapura Town (2019) and Figure (3.2) shows the population pyramid of Amarapura Town (2019).

Gender composition is the important role in considering the measure of manpower in a region. Generally, the female population is more than the male population like other region. The gender ratio of (2019) in Amarapura Town is (84).

Table (3.5) Age and Gender Composition of Population in Amarapura Town (2019)

No	Age Group	Male	Female	Total
1	0-4	865	1,400	2,265
2	5-9	1,693	1,885	3,578
3	10-14	2,682	2,966	5,648
4	15-19	3,159	2,628	5,787
5	20-24	2,741	2,933	5,674
6	25-29	2,541	2,915	5,456
7	30-34	2,637	2,902	5,539
8	35-39	2,500	2,955	5,455
9	40-44	1,876	2,442	4,318
10	45-49	1,586	1,933	3,519
11	50-54	1,214	1,584	2,798
12	55-59	973	1,997	2,970
13	60-64	1,176	1,380	2,556
14	65+	1,329	1,822	3,151
	Total	26,972	31,742	58,714

Source: Department of Immigration and National Registration, Amarapura

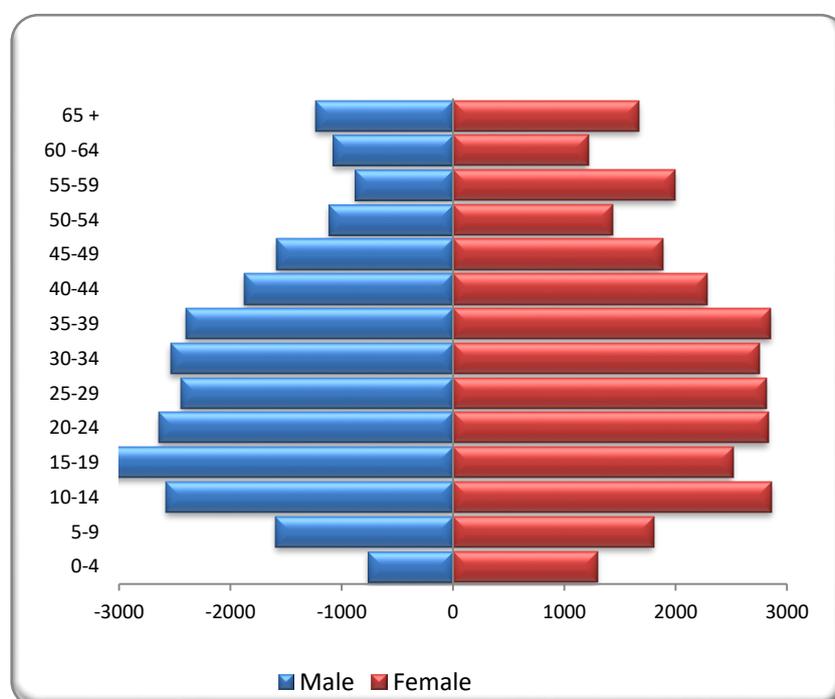


Figure (3.2) Population Pyramid of Amarapura Town in (2019)

Source: Based on Table 3.5

4. The Basic Manufacturing Factors for Cottage Industries of Amarapura Town

4.1 Capital

Capital is the main essential to set up the cottage industry. There are two types of capital (a) buying the buildings and equipment and tools (b) to buy raw materials, to pay labour charge and the cost of transportation.

In Amarapura Town, the weaving machine investment is (25) lakhs and a bundle of cotton is (35,000) kyats and one machine loom produced (20) number of weaving material per day which is equaled to (10) pounds.

In computer design weaving machine, one machine cost (100) lakhs and produced (10) weaving material. In bakery work, the cost of capital for a machine is (24) lakhs to (85) lakhs and the cost of buying raw material is (12) lakhs.

The other works includes sculpture, copper casting, mattress making, plastic work, gold embroidery work. Moreover, the cost of raw material, labour charge, salary and transportation change are not the same. The products of materials are seldom changes in Amarapura Town. Therefore, the capital investments of the cottage industries vary spatially and are changing temporally. As a result, the capital is the most requirement factor for the growth and development of cottage industry in Amarapura Town.

4.2 Raw Material

The important factor is to buy raw material for foodstuff work, clothing and apparel making work, construction material work, consumer goods work, traditional courtesy work and other works. The raw materials for foodstuff work obtain from Mandalay, Monywa, Shwebo and Yangon and other township. The amounts of raw materials for waving industry obtain from the wholesale centres of Amarapura and some from other neighboring township. All of raw materials for waving are imported mainly from India and China through Monywa and Mandalay. This industry depends on foreign countries. The raw material for construction material works obtain from Amarapura Town. The raw material for traditional courtesy work was available from Mandalay, Sagaing and Madaya.

Most of the raw materials are cotton which is produced for clothing and apparel making work. Amarapura Town is the most important for weaving work. The requirements of raw materials are bought from Amarapura Town and its neighbouring area. So, the availability of raw materials for cottage industries is easy and sufficient.

4.3 Power

The electric energy is the most important for the cottage industry. The electric power is depends the size of engine. The cottage industries located in Amarapura are found to be installed with power maters which are granted by the Government. So, it is found that the availability of power provides for the development of cottage industries.

4.4 Labour

Labour affairs is the spatial variable which depends on to decide the choice of location and the developed of industry works. In Amarapura Town, the labour wage is different with the improvement of product and the places. The labour wages are considered as the price, skillful and the number of labours. Therefore, the cheap salary labours are needed to support.

Most of the labour force engaged in the cottage industries of Amarapura Town is family labour and hired labour. The labour force for the cottage industries depends on the varied size of the cottage industries and the varied amount of productions. In large scale weaving work, the (15) labours are needed. In sculpture work, (7) labours are needed. In art of bronze casting, it is needed (5) labours. Most of the labours are male for art of carving wood and art of bronze casting industries. For hired labour, the prices are different depend on type of industry, skill and amount of labour. Table (4.1) shows the number of the labor in each industry.

Table (4.1) Labor Force in Different Cottage Industry in Amarapura Town (2019)

Sr No.	Cottage Industries	Number of Labour
1	Clothing and Apparel Making (CPM)	3,073
2	Foodstuff (FS)	535
3	Construction Materials (CM)	207
4	Consumer Goods (CG)	168
5	Traditional Courtesy (TC)	161
6	Other (O)	50
Total		4194

Source: Department of National Planning, Amarapura

4.5 Market and Transportation

Market is one of the most important factors greatly stimulating the productions of cottage industries in Amarapura Town. The finished products from cottage industry are sent to the local market and neighbouring markets of Amarapura Town. Moreover, the products of clothing and apparel making works are sent not only to nearby areas but also to nation-wide town large or small.

Transportation is one of the important factors which are easily accessible to transport the commodity. In studying the transportation in Amarapura Town, motor vehicle transport is the important role and Mandalay-Myitkyina railroad and Sagaing-Mandalay road passes through the town's centre and easily available for better trade.

4.6 Government Policy

Myanmar is not an industrialized country. Myanmar has adopted the market-oriented economic system in (1998). According to laws, orders, rules, regulations and notifications which have prohibited or restricted the private sector from engaging in economic activities in previous period were replaced and many laws and rules were amended to be lively with the change of works and circumstances. The department of cottage industry will support the technical aids, skillful, invention, research, quality control and training. In Amarapura Town, the department of cottage industry supports the raw cotton for weaving industry at the past time. At present, weaving industry is handover to the private sector and the requirement of cotton which is bought from China and India. Therefore, the cost of weaving industry is changing. Hence, the government needs to change the policy for the development of socio-economic sector.

5. Types of Cottage Industries in Amarapura Town

In Amarapura Town, the types of cottage industry are classified into six categories according to the bases of the raw material and the products. Types of cottage industry are:

- (a) Foodstuff industries
- (b) Clothing and apparel making industries
- (c) Construction material industries
- (d) Consumer goods industries
- (e) Traditional courtesies industries
- (f) Other cottage industries.

In (2018-2019), the total number of cottage industry is (974). Among them, (89) percent is the clothing and apparel making work, (5) percent is the traditional courtesies work, (3) percent is the foodstuff work, (2) percent is the consumer goods work and one percent is the construction material work. Table (5.1) shows the types of cottage industries in Amarapura Town from (2018 to 2019) and Figure (5.1) shows the distribution of cottage industries in Amarapura Town from (2018 to 2019).

According to table (5.2) and map (5.1), there are six types of cottage industry in Hman Tan Ward. There are four types of cottage industry in Zay Cho Ward. There are three types of cottage industry at Lay Su Ward and Oe Taw Ward. There are two types of cottage industry at Sin Swei Put Ward and Kyan Tan Ward. Each one cottage industry is found at Shwe Gun Htoke Ward and Taung Gyi Ward.

Table (5.1) Types of Cottage Industry in Amarapura Town (2018-2019)

No	Type of Cottage Industry	Number of Cottage Industry	Percentage
1	Clothing and Apparel Making Industries	868	89
2	Traditional Courtesies Industries	44	5
3	Foodstuff Industries	31	3
4	Consumer Goods Industries	19	2
5	Construction Material Industries	11	1
6	Other Cottage Industries	1	0
	Total	974	100

Source: Based on Field Survey Data

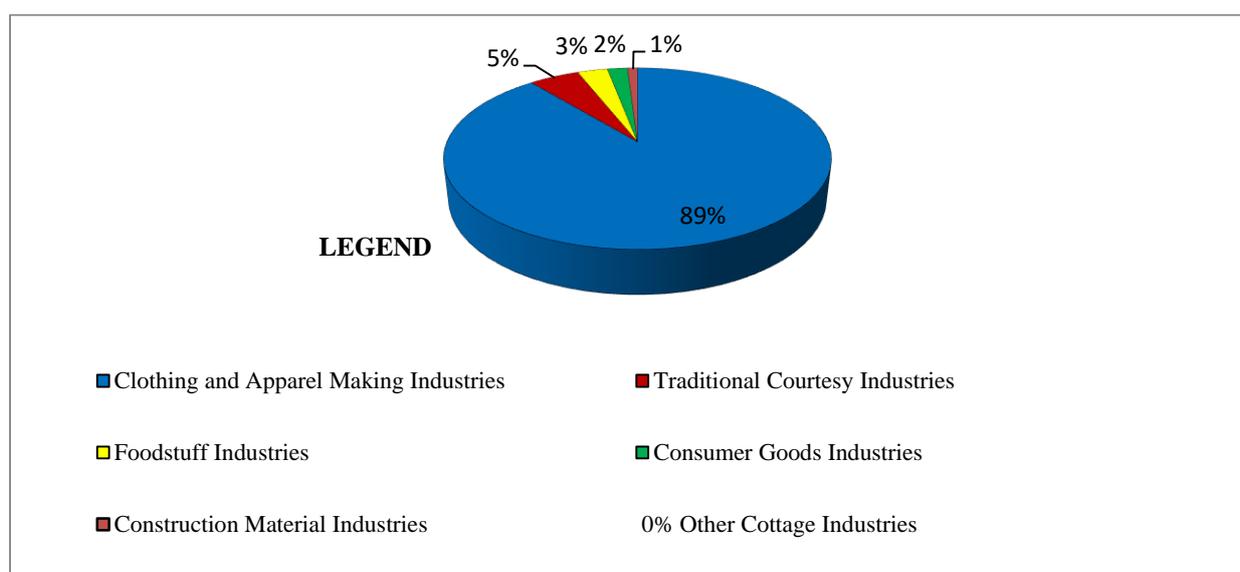


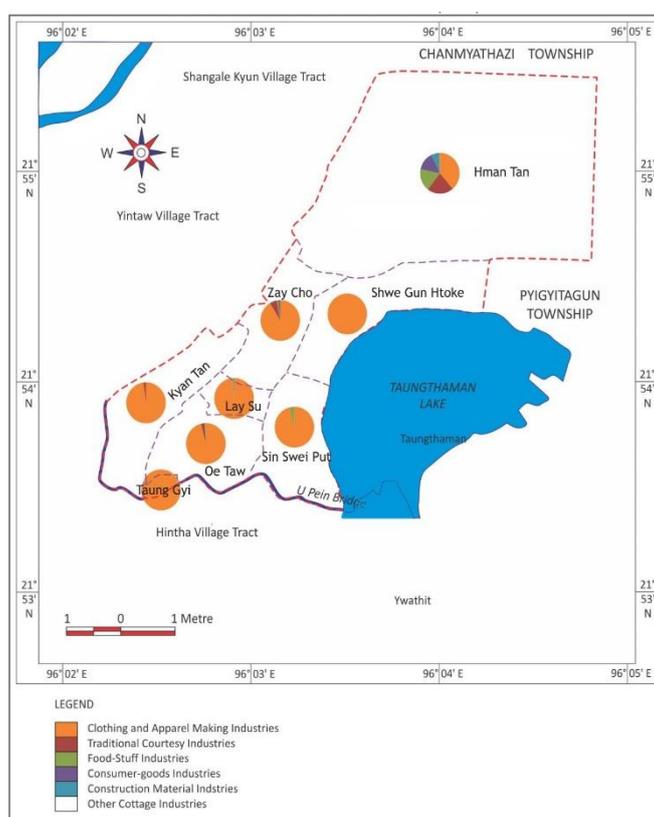
Figure (5.1) Distribution of Cottage Industries in Amarapura Town (2018-2019)

Source: Based on Table (5.1)

Table (5.2) Spatial Distribution of Cottage Industries in Amarapura Town (2018-2019)

No	Ward	Foodstuff Industries	Clothing and Apparel Making Industries	Construction Material Industries	Consumer Goods Industries	Traditional Courtesy Industries	Other Cottage Industries	Total
1	Hman Tan	23	50	8	19	28	1	129
2	Zay Cho	2	125	2	0	8	0	137
3	Shwe Gun Htoke	0	79	0	0	0	0	79
4	Sin Swei Put	3	72	0	0	0	0	75
5	Lay Su	1	146	1	0	0	0	148
6	Oe Taw	2	168	0	0	5	0	175
7	Taung Gyi	0	87	0	0	0	0	87
8	Kyan Tan	0	141	0	0	3	0	144
Total		31	868	11	19	44	1	974

Source: Based on Field Survey Data



Map (5.1) Distributions of Cottage Industries in Amarapura Town (2018-2019)

Source: Based on Table 5.2

5.1 Foodstuff Industries in Amarapura Town (2018-2019)

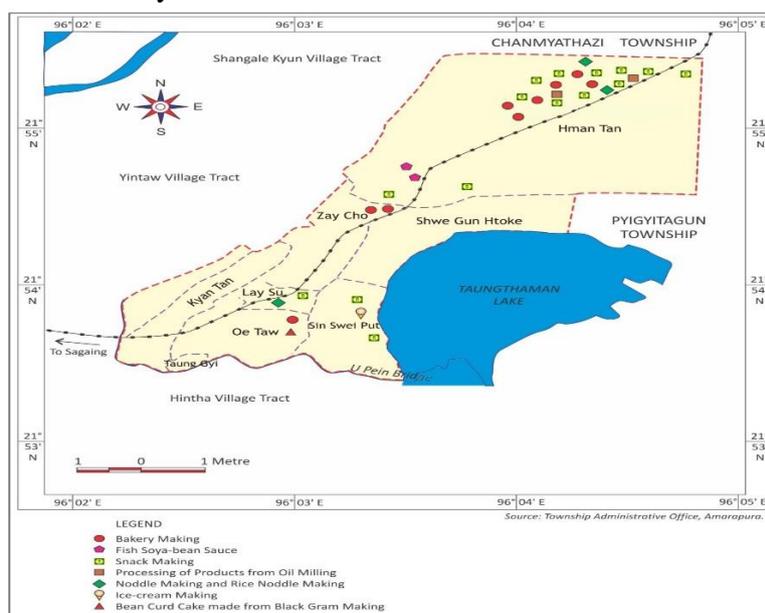
In (2018-2019), the total number of foodstuff industry work in Amarapura Town is (31) works with (3) percent of the total cottage industries. The main foodstuff works are bakery work, soya bean fish sauce, snack making work, oil mill work, noodle and rice noodle work, ice cream making and bean curd making work. According to table (5.3), snack making work is the highest number of the (14) works with (46) percent of the foodstuff industries. The raw

material for snack making work is easily available near the town area. Bakery work is the second highest work number of (8) with (26) percent of the whole foodstuff industries. Among the various works, noodle and rice noodle work is the third highest work of (3) with (10) percent of the foodstuff industries. Fish soya bean sauce work and oil mill work are the fourth highest work of (2) each work with (6) percent each respectively. Ice cream making work and bean curd made from black gram making is the least number of each one with (3) percent each respectively. (46) percent of snack making work is located at Hman Tan Ward due to the better access to the market. Bakery work is found at Hman Tan ward, Zay Cho Ward and Oe Taw Ward. Noodle and rice noodle work is found at Hman Tan Ward and Lay Su Ward. The remaining ward such as Shwe Gun Htoke Ward, Taung Gyi Ward and Kyan Tan Ward has not found the foodstuff industries. Table (5.3) shows the types of foodstuff industries in Amarapura Town (2018-2019) and Map (5.2) shows the spatial distribution of foodstuff industries in Amarapura Town (2018-2019).

Table (5.3) Types of Foodstuff Industries in Amarapura Town (2018-2019)

No	Types of Foodstuff Industries	Number of Industry	Percentage of Industry
1	Bakery making	8	26
2	Fish soya bean sauce	2	6
3	Snacks making	14	46
4	Processing of products from oil milling	2	6
5	Noddle making and rice noddle making	3	10
6	Ice-cream making	1	3
7	Bean curd cake made from black gram making	1	3
	Total	31	100

Source: Base on Field Survey Data



Source: Based on Field Survey Data.

Map (5.2) Spatial Distribution of Foodstuff Industries in Amarapura Town (2018-2019)

Source: Based on Field Survey Data

5.2 Clothing and Apparel Making Industries in Amarapura Town (2018-2019)

According to the source, cotton weaving industries, tailoring work, machine embroideries with computer work, footwear work, dying of cotton yarns work are included in the types of clothing and apparel making industries. There are (868) works in these types of work. In Amarapura Town, there are (721) machine looms, (37) hand looms, (82) tailoring works, (10) machine embroideries with computer, (4) footwear works and (14) dying of cotton yarns works.

In studying the cotton weaving industries, most of the looms are machine looms and hand looms. The cotton raw materials are imported from India and China and both looms are operated the import cotton material. Machine looms are found all of the wards in Amarapura Town. There are (721) machine looms in the town with (83) percent of the types of clothing and apparel making industries. Most of the machine looms are found at Oe Taw Ward and it has (19) percent of the types of clothing and apparel making industries. Hman Tan Ward has the least work with (5.5) percent of these types.

Most of the hand loom works are found at Hman Tan Ward, Zay Cho Ward, Lay Su Ward, Oe Taw Ward and Kyan Tan Ward. Hand loom works are mostly found at Oe Taw Ward and Kyan Tan Ward with (3) percent of these types. The remaining (3) wards are not found the hand loom works. Both the machine loom works and hand loom works are found at Hman Tan Ward, Zay Cho Ward, Lay Su Ward, Oe Taw Ward and Kyan Tan Ward. The highest number of weaving industries is found at Oe Taw Ward. This industry operated the local and foreign raw material. The products from this industry are various longyi, cloth made slim bag, Buddhist monk's robe and towels.

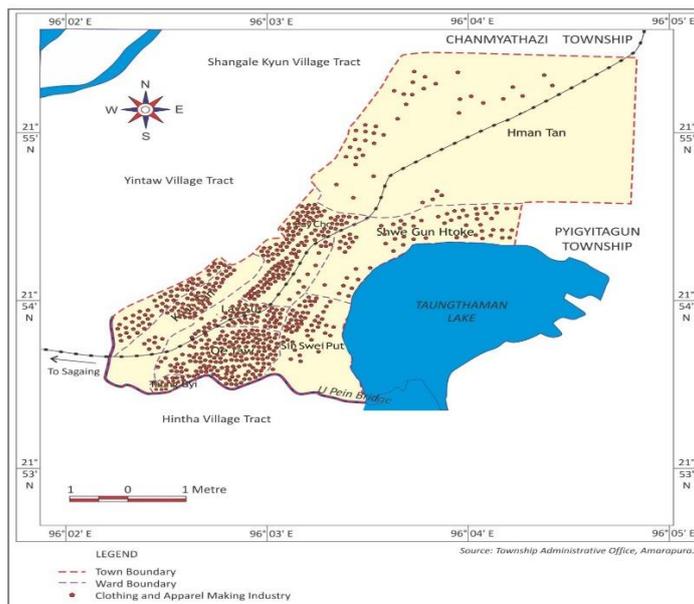
Some wards have embroideries with computer design work. The total number of this work is (10) and found at Sin Swei Put Ward, Lay Su Ward and Oe Taw Ward. Moreover, tailoring work is found at every ward and there are (82) works in the town. Most of the tailoring work is found at Lay Su ward with (20) numbers.

In Amarapura Town, there are (4) footwear making works and (14) dying of cotton yarns works. Footwear making work is found at Hman Tan Ward, Lay Su Ward and Kyan Tan Ward. Dying of cotton yarns work is found at Taung Gyi Ward and Kyan Tan Ward with (2) percent of these types. Table (5.4) shows by the types of clothing and apparel making industries in Amarapura Town (2018-2019). Map (5.3) shows by the spatial distribution of clothing and apparel making industries in Amarapura Town (2018-2019).

Table (5.4) Types of Clothing and Apparel Making Industries in Amarapura Town (2018-2019)

No	Types of Clothing and Apparel Making Industries	Number of Industry	Percentage of Industry
1	Machine looms	721	83
2	Hand looms	37	4
3	Tailoring works	82	9
4	Machine embroideries with computer	10	1
5	Footwear works	4	1
6	Dying of cotton yarns works	14	2
	Total	868	100

Source: Base on Field Survey Data



Map (5.3) Spatial Distribution of Clothing and Apparel Making Industries in Amarapura Town (2018-2019)

Source: Based on Field Survey Data

5.3 Construction Material Industries in Amarapura Town (2018-2019)

There are (11) works in the types of construction material industries in Amarapura Town. These works are bamboo mat making work known as Waphyar, bamboo wall making work known as War-hta-yan and fencing bamboo work known as Warkat. These works are found at Hman Tan Ward, Zay Cho Ward and Lay Su Ward. The bamboo raw materials are bought from the neighbouring areas. The products are sent to the town resident wards and sold to the neighbouring areas.

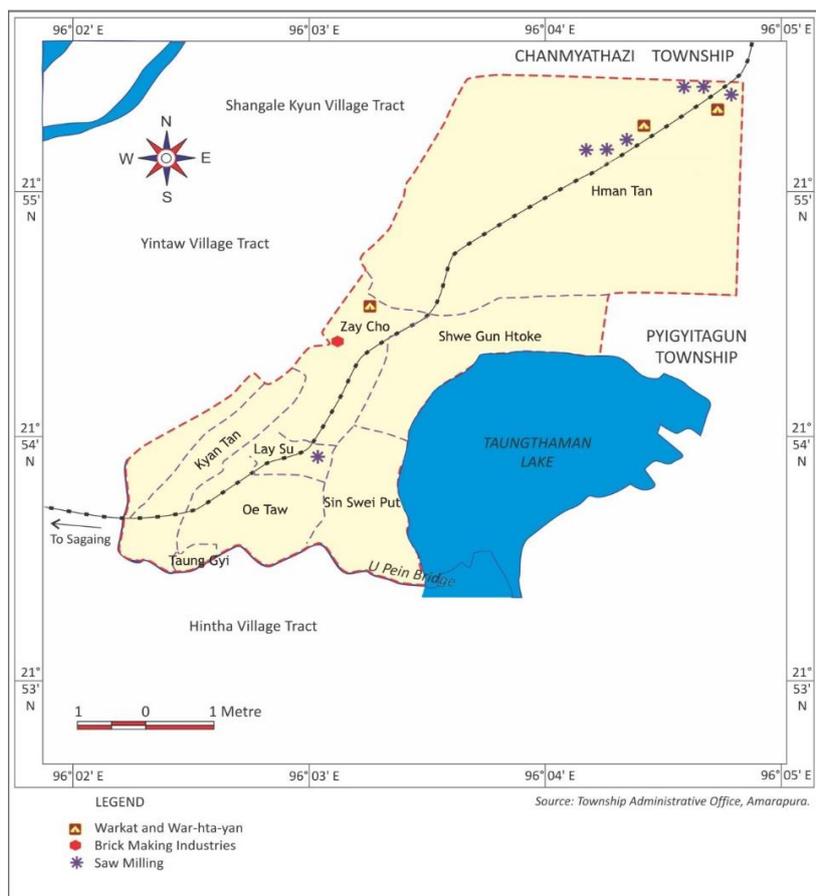
In Amarapura Town, the living standard of local resident is higher more than before and the houses and buildings are beautiful better than the post periods. Therefore, the purchasing power of brick is higher in the study area. Brick making is important in production. Brick making industries are mainly found at Zay Cho Ward.

Among the types of construction material industries, most of the industry works are saw mill. These mills are found at Hman Tan Ward and Lay Su Ward due to the nearer of the motorcar road and railroad. Table (5.5) shows the types of construction material industries in Amarapura Town (2018-2019). Map (5.4) shows the spatial distribution of construction material industries in Amarapura Town (2018-2019).

Table (5.5) Types of Construction Material Industries in Amarapura Town (2018-2019)

No	Types of Construction Material Industries	Number of Industry	Percentage of Industry
1	Warkat and War-hta-Yan	3	27
2	Brick making industries	1	9
3	Saw milling	7	64
	Total	11	100

Source: Base on Field Survey Data



Map (5.4) Spatial Distribution of Construction Material Industries in Amarapura Town (2018-2019)

Source: Based on Field Survey Data

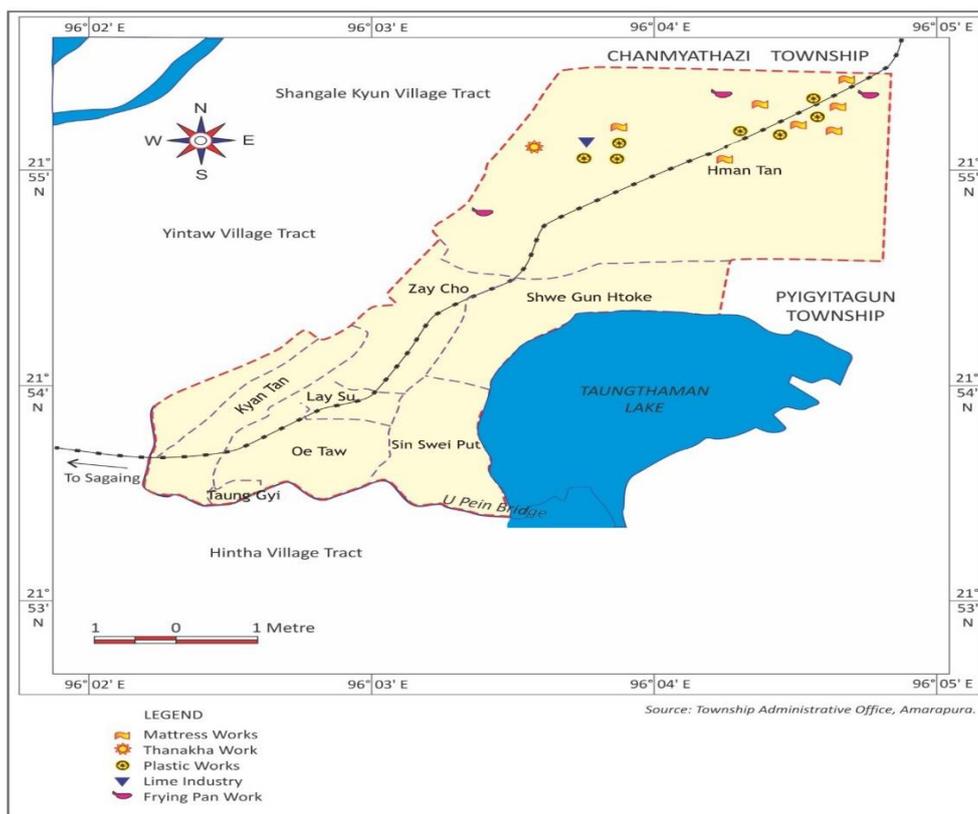
5.4 Consumer Goods Industries in Amarapura Town (2018-2019)

In the study area, there are (19) works in the types of consumer goods industries with (2) percent of the cottage industries. Among the works, mattress work, thanakha work, plastic work, lime industry and frying pan work are included. Most of the works are found in Hman Tan Ward. In Hman Tan Ward, (7) mattress works, one thanakha work, (7) plastic works, one lime industry and (3) frying pan work are found in Amarapura Town. Table (5.6) shows by the types of consumer goods industries in Amarapura Town (2018-2019). Map (5.5) shows by the spatial distribution of consumer goods industries in Amarapura Town (2018-2019).

Table (5.6) Types of Consumer Goods Industries in Amarapura Town (2018-2019)

No	Types of Consumer Goods Industries	Number of Industry	Percentage of Industry
1	Mattress works	7	37
2	Thanakha work	1	5
3	Plastic works	7	37
4	Lime industry	1	5
5	Frying Pan work	3	16
	Total	19	100

Source: Base on Field Survey Data



Map (5.5) Spatial Distribution of Consumer Goods Industries in Amarapura Town (2018-2019)

Source: Based on Field Survey Data

5.5 Traditional Courtesy Industries in Amarapura Town (2018-2019)

In the study area, there are (44) works in the types of traditional courtesy industries in (2018-2019). Gold Embroidery work, marionette making work, the art of wood curving, the art of turning designs on a lathe, the art of bronze casting, religious goods, the art of curving stone, the art of making items cast and the art of painting industries are included in these types. Table (5.7) shown by the types of traditional courtesy industries in Amarapura Town (2018-2019). Map (5.6) shown by the spatial distribution of traditional courtesy industries in Amarapura Town (2018-2019).

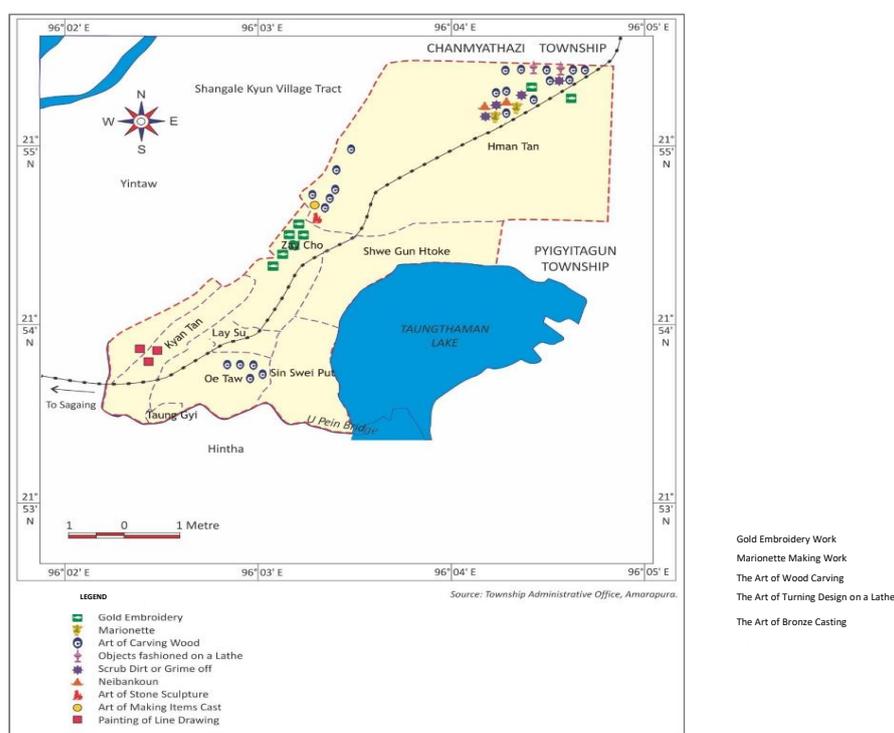
According to the data, Hman Tan Ward has the highest number of works of these traditional courtesy industries of (28). The second highest number of works is found at Zay Cho Ward with (8) works. The third highest number of works is found at Oe Taw Ward with (5) works. The least number of works is found at Kyan Tan Ward with (3) works.

Among the works, the art of wood carving is the highest number of (20) works with (45) percent of these types of traditional courtesy industries. Gold embroidery work is the second highest number of (8) works with (18) percent of these types. The art of bronze casting is the third highest number of (5) works with (11) percent of these types. The art of painting is the fourth highest number of (3) works with (7) percent of these types. Marionette making work, the art of turning design on a lathe and religious goods are the fifth highest number of (2) works each with (5) percent respectively. The art of carving stone and the art of making items cast is the least number of one works each with (2) percent respectively.

Table (5.7) Types of Traditional Courtesy Industries in Amarapura Town (2018-2019)

No	Types of Traditional Courtesy Industries	Number of Industry	Percentage of Industry
1	Gold embroidery work	8	18
2	Marionette Making work	2	5
3	The art of carving wood	20	45
4	The art of turning design on a lathe	2	5
5	The art of bronze casting	5	11
6	Religious goods	2	5
7	The art of curving stone	1	2
8	The art of making items cast	1	2
9	The art of painting	3	7
	Total	44	100

Source: Base on Field Survey Data



Map (5.6) Spatial Distribution of Traditional Courtesy Industries in Amarapura Town (2018-2019)

Source: Based on Field Survey Data

5.6 Other Cottage Industries in Amarapura Town (2018-2019)

In Amarapura Town, there is one work in other cottage industries. Printing press work is at Hman Tan Ward in Amarapura Town.

6. Spatial Analysis of Cottage Industry in Amarapura Town

In Amarapura Town, the spatial distribution of cottage industries is basically different. Moreover, the cottage industries are increased with population in the town. Its need to analysis the spatial cottage industries. The Index of Diversification is a useful technique for measuring

the extent of diversification in cottage industries in an area. The percentages of the total cottage industries occupied by each works are used as a basic. In order to analyze the diversification of cottage industries in Amarapura Town, the formula is applied in this research paper. The formula is as follow:

$$\text{Index of Diversification} = 1 - \frac{\sum X^2}{(\sum X)^2}$$

Where X is the number of cottage industry occupied in each ward. If the total area in a region is devoted wholly to one type of cottage industry, the index of diversification is zero and if it is evenly distributed the index of diversification approaches to (0.9). Therefore, the index of diversification varies from (0.0 to 0.9).

6.1 Analysis on Diversification of Cottage Industries

The index diversification of cottage industry was calculated for each ward was based on Table (6.1). The index values are presented in Table (6.2). The mean value of index diversification of cottage industries is (0.14) and the standard deviation is (0.23).

Due to being accessible in transportation and it is located at the surrounding of Mandalay City. There has the high diversification that means such as six types of cottage industry and four types of cottage industries. Those wards are Hman Tan and Zay Cho. The diversification index values are (0.75) and (0.16) respectively.

There is no ward in the moderate diversification. The low diversification of cottage industries can be found in (6) wards such as Oe Taw, Sin Swei Put, Kyan Tan, Laysu, Shwe Gun Htoke and Taung Gyi. The diversification index values are (0.08), (0.08), (0.04), (0.03), (0.00) and (0.00) respectively. In Amarapura, there can be found clothing and apparel making industries as one type in Shwe Gun Htoke and Taung Gyi Wards; foodstuff industries and clothing and apparel making industries in Sin Swei Put Ward, and clothing and apparel making industries and traditional courtesy industries in Kyan Tan Ward as two types; foodstuff industries, clothing and apparel making industries, construction material industries in Lay Su Ward and foodstuff industries, clothing and apparel making industries, traditional courtesy industries in Oe Taw Ward as three types.

Table (6.1) Diversification of Cottage Industries in Amarapura Town (2018-2019)

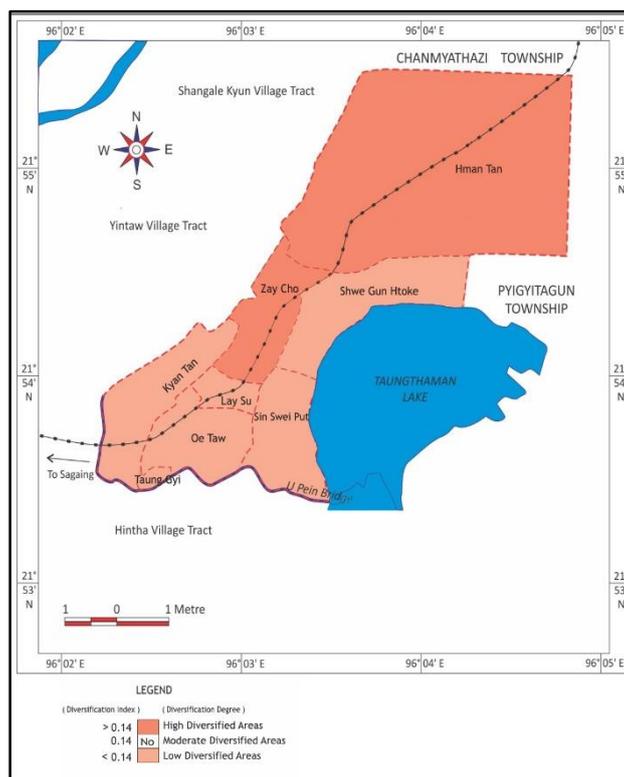
No	Ward	Variety of Industry	Number of Cottage Industry	Diversification Index
1	Shwe Gun Htoke	1	79	0.00
2	Taung Gyi	1	87	0.00
3	Lay Su	3	148	0.03
4	Kyan Tan	2	144	0.04
5	Sin Swei Put	2	75	0.08
6	Oe Taw	3	175	0.08
7	Zay Cho	4	137	0.16
8	Hman Tan	6	129	0.75

Source: Compiled by the Researcher

Table (6.2) Degree of Cottage Industry Diversification in Amarapura Town (2018-2019)

Sr No.	Index value	Degree	No of Ward	Name of Ward
1	>0.14	High	2	Hman Tan and Zay Cho
2	0.14	Moderate	-	-
3	<0.14	Low	6	Oe Taw, Sin Swei Put, Kyan Tan, Lay Su, Shwe Gun Htoke and Taung Gyi

Source: Based on Table (6.1)



Map (6.1) Diversification of Cottage Industries in Amarapura Town (2018-2019)

Source: Compiled by Researcher

6.2 Analysis on Concentration of Cottage Industries

The concentration of cottage industry means that the types of cottage industries are clustered at an area or a place. In the spatial distribution, the concentration index is applied by using the location quotient method. Location Quotient (LQ) is a simple ratio used to determine the concentration or dominance of a particular industry in a region. Location Quotient (LQ) is a way of quantifying how concentrated a particular industry. In (2018-2019), there are (974) works in cottage industry in Amarapura Town. Based on the index of location quotient, it will be classified into three groups. They are as follows:

1. High clustered pattern (more than 2.0)
2. Clustered pattern (between 1.0 and 2.0)
3. Disperse pattern (less than 1.0)

6.2.1. Clothing and apparel making industries

There are (7) wards which include in clustered area such as Shwe Gun Htoke Ward, Taung Gyi Ward, Lay Su Ward, Kyan Tan Ward, Sin Swei Put Ward, Oe Taw Ward and Zay Cho Ward. The index of concentration is between (1.0 and 2.0). Hman Tan Ward includes in the dispersed area with the index of concentration (0.43). See Table (6.3) and Map (6.2)

6.2.2. Traditional courtesy industries

The high clustered area is Hman Tan Ward with the index value of (4.80). As the largest area near the Mandalay, Hman Tan Ward has the high clustered area of concentration quotient. Zay Cho Ward include in the clustered area with the index value of (1.29). The remaining Oe Taw Ward, Kyan Tan Ward, Shwe Gun Htoke Ward, Sin Swei Put Ward, Lay Su Ward and Taung Gyi Ward include in the dispersed area. Because the most of the clothing and apparel making industries are found in this area, and the concentration of traditional cottage industries was low. See Table (6.3) and Map (6.2)

6.2.3. Foodstuff industries

The high concentration area or the high clustered area is Hman Tan Ward with the index value of (5.60). Population is mostly found in Hman Tan Ward where the highest value of location quotient. Sin Swei Put Ward includes in the medium concentration group or clustered area with the index of (1.26). Zay Cho Ward, Oe Taw Ward and Lay Su Ward include in the low concentration group or the dispersed area. The clothing and apparel making industries are also mostly found in these wards. So, the concentration of foodstuff industries was low. See Table (6.3) and Map (6.2)

6.2.4. Consumer goods industries

The high concentration area or the high clustered area is Hman Tan Ward with the index value of (7.55). As the largest number of household industries is found in Hman Tan Ward and there has the highest concentration area or the high clustered pattern as only the consumer goods industries. The remaining (6) wards have no consumer goods industry. See Table (6.3) and Map (6.2)

6.2.5. Construction material industries

The construction materials industries are found as the high concentration area of the high clustered area in Hman Tan Ward with the index value of (5.49). The medium concentration or the clustered pattern is found in Zay Cho Ward with the index value of (1.29). The low concentration or the dispersed pattern is found in Lay Su Ward with the index value of (0.60). See Table (6.3) and Map (6.2)

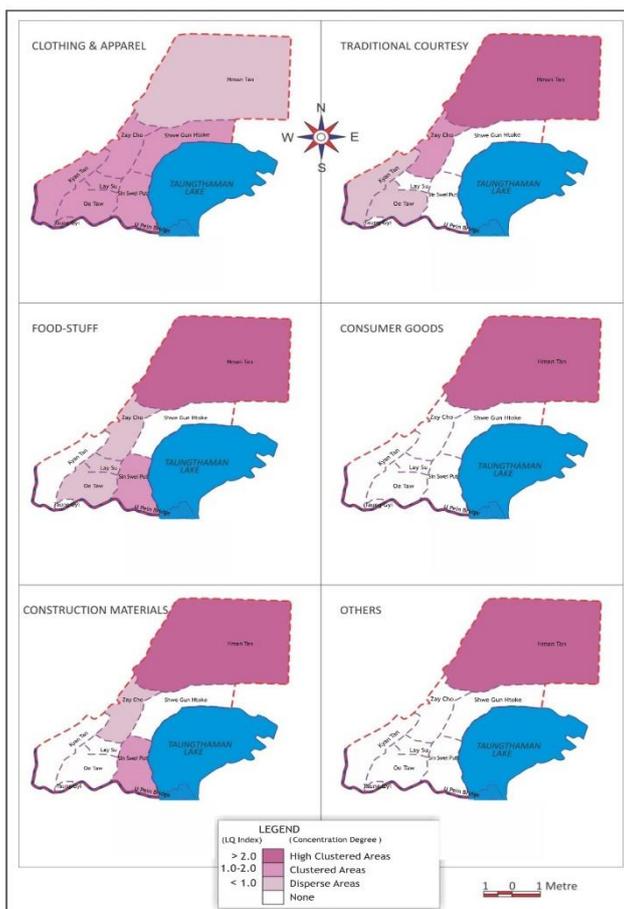
6.2.6. Other cottage industries

Other cottage industries are found only in Hman Tan Ward and it is the high concentration or the high clustered pattern in that ward. The remaining wards are including in the low concentration or disperse pattern. See Table (6.3) and Map (6.2)

Table (6.3) Location Quotients shown the Concentration of Cottage Industries in Amarpura Town (2018-2019)

No	Ward	Clothing and Apparel Making Industries (LQ)	Traditional Courtesy Industries (LQ)	Foodstuff Industries (LQ)	Consumer Goods Industries (LQ)	Construction Material Industries (LQ)	Other Cottage Industries (LQ)
1	Hman Tan	0.43	4.80	5.60	7.55	5.49	7.55
2	Zay Cho	1.02	1.29	0.46	0.00	1.29	0.00
3	Oe Taw	1.08	0.63	0.36	0.00	0.00	0.00
4	Kyan Tan	1.10	0.46	0.00	0.00	0.00	0.00
5	Shwe Gun Htoke	1.12	0.00	0.00	0.00	0.00	0.00
6	Sin Swei Put	1.08	0.00	1.26	0.00	0.00	0.00
7	Lay Su	1.11	0.00	0.21	0.00	0.60	0.00
8	Taung Gyi	1.12	0.00	0.00	0.00	0.00	0.00

Source: Compiled by the Researcher



Map (6.2) Concentration of Cottage Industries in Amarpura Town (2018-2019)

Source: Compiled by Researcher

7. Findings and Results

The cottage industries are unevenly distributed in Amarapura Town. The number of clothing and apparel making industries are the largest in Amarapura. Clothing and apparel making industries are (89) percent of the total number of cottage industries in Amarapura Town. It was found in all of the wards of Amarapura Town. The number of construction material industries is the smallest with one percent of the total number of cottage industries in Amarapura Town. Construction material industries are found in Hman Tan, Zay Cho and Lay Su Wards.

Objective (1): In Amarapura Town, the spatial distribution of cottage industries is basically different. Moreover, the cottage industries are increased with population in the town. The cottage industries in Amarapura Town may be grouped into six types as foodstuff industries, clothing and apparel making industries, construction material industries, consumer goods industries, traditional courtesy industries and other cottage industries. In Amarapura Town, the main cottage industries are clothing and apparel making industries, traditional courtesy industries, foodstuff industries and consumer goods industries.

Objective (2): Depending on the analyze data, especially there can be found that the more cottage industries there have the more population in Amarapura. They can was found more population depending on the cottage industries the live in that area. In addition, due to being accessible in transportation and it is located at the surrounding of Mandalay City. There has the high diversification that means such as six types of cottage industry and four types of cottage industries. Those wards are Hman Tan and Zay Cho. The diversification index values are (0.75) and (0.16) respectively.

Objective (3): The distribution pattern is searched for the future research work based on the index of location quotient; it will be classified into three groups: High clustered pattern (more than 2.0), Clustered pattern (between 1.0 and 2.0) and Disperse pattern (less than 1.0) respectively. According to table (3.4), there are five wards which occupy the high density area of more than (20,000) persons per square mile. These wards are Zay Cho, Lay Su, Oe Taw, Taung Gyi and Kyan Tan Wards. The high density area is located along the best accessibility with road and railroad. The primary locational factors of the cottage industries are access to the raw material and access the market. In order to increase the development of cottage industries in Amarapura Town, the sources of the raw material should be conserved and the expansion of the market should be carried out simultaneously and continuously.

8. Conclusion

The study area, Amarapura lies between latitudes 21° 53' and 21° 57' North and longitudes 96° 02' and 96° 05' East Amarapura has an area of (3.24) square miles or (2,071) acres. It consists of (8) wards. It has an elongated shape. Amarapura lies on the alluvial flat plain area between the Ayeyarwady and Myitnge rivers. It also located within the Central Basin of Myanmar. According to Köppen's Climatic Classification System, it is estimated that Amarapura has Aw (Tropical Savanna) Types of Climate. The main soil type of Amarapura is Meadow soil.

The total population of Amarapura was increasing year after year. The total population of Amarapura was (58,714) persons in (2019). Hman Tan Ward is the most populated area, with the population of (25,639) persons. The least population is in Taung Gyi Ward with (2,552) persons. In Amarapura, population density can be divided into three groups. There are

five wards which occupy the high density area. It is located along the best accessibility with road and railroad. According to (2019) data, adolescent constitute (19.57) percent, the working population was (60.89) percent and the aging population was (19.54) percent. In Amarapura, the dependency ratio was (1:1.56).

The total number of labour force engaged in the cottage industries are (4,194) persons in (2019). The clothing and apparel making industries has the largest amount of total number force with (3,073) persons. The types and distribution of cottage industry vary spatially in Amarapura based on the basic manufacturing factors such as capital, raw material, power, labour, market and transportation and government policy.

The cottage industries in Amarapura may be grouped into six types as foodstuff industries, clothing and apparel making industries, construction material industries, consumer goods industries, traditional courtesy industries and other cottage industries. In Amarapura there are (31) industries of foodstuff industries, (868) industries of clothing and apparel making industries, (11) of construction material industries, (19) of consumer goods industries, (44) of traditional courtesy industries and (1) of other cottage industries.

In order to analyze the diversification of cottage industries in Amarapura, the Gibbs-Martin Index of Diversification is applied in this research paper. Based on survey data, the degree of cottage industry diversification in Amarapura can be classified into high diversification and low diversification. Hman Tan Ward is the high diversification group. Hman Tan Ward is the most diversification for doing all kinds of cottage Industries. In Amarapura, two wards are included in low diversification group. They are Shwe Gun Htoke and Taung Gyi Wards. Shwe Gun Htoke Ward and Taung Gyi Ward are the least diversification for doing only the clothing and apparel making industries. The concentration of cottage industry in Amarapura had been analyzed by means of Location Quotient Method applied by Gareth Shaw and Dennis Wheeler. It is found that Hman Tan Ward is the highest concentration area of traditional courtesy industries, foodstuff industries, consumer goods industries, construction material industries and other cottage industries.

8.1 Suggestions and Future Prospect

According to this research, it is found that most of cottage industries are being operated with amount of investment, all of raw materials for weaving are imported mainly from India and China, depending upon the skill labours, these factors delays the development of cottage industry in Amarapura.

The most important requirement is to upgrade the quality of cottage industrial products. In order to meet it, labour division system should be more practiced and it will lead to the production in scale economy. Moreover, most complementary places should be searched and carried out so that the industries will stand longer and will become more prosperous in future.

According to this research, it is known that most of the cottage industries in Amarapura are growing in number and certain surplus income is obtained from these industries. In Amarapura, in order to carry out the cottage industries, raw materials can be obtained easily. There are many labour forces in Amarapura. Amarapura has good transportation facility in order to transport the raw materials and finished products. According to the study, most convenient places should be searched and founded the industries that will sustainable and prosperous in near future.

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အမတ်ကြီးသုဘရာဇ်ကျောက်စာကို စာပေရှုထောင့်မှ လေ့လာချက်
လွင်မာမာထွန်း*
စာတမ်းအကျဉ်း

ဤစာတမ်းသည် ရှေးခေတ်စာပေဟု သတ်မှတ်ထားသော ကျောက်စာစကားပြေကို လေ့လာထားသော စာတမ်း ဖြစ်ပါသည်။ ကျောက်စာစကားပြေများထဲမှ ပုဂံခေတ်လယ်တွင် ရေးထိုးထားသော အမတ်ကြီး သုဘရာဇ် ကျောက်စာကို စာပေရှုထောင့်မှနေ၍ အလေ့လာခံအဖြစ် တင်ပြသွားမည် ဖြစ်ပါသည်။ ဤကျောက်စာသည် ပုဂံခေတ်ကျောက်စာများတွင် ပါဝင်လေ့ရှိသော အလှူပြုချိန်၊ အလှူရှင်၊ အလှူပြုရာနေရာ၊ အလှူပစ္စည်း၊ ဆုတောင်း၊ အမျှဝေ၊ ကျိန်စာဟူသော ပုဂံခေတ် ကျောက်စာအင်္ဂါရပ်များနှင့် ပြည့်စုံသော ကျောက်စာတစ်ချပ် ဖြစ်သည်။ ထိုကျောက်စာကို လေ့လာရာတွင် အကြောင်းအရာပိုင်းအနေဖြင့် ဘာသာရေး၊ လူမှုရေး၊ အုပ်ချုပ်ရေး၊ စီးပွားရေး၊ ယဉ်ကျေးမှုဟူ၍ လေ့လာတင်ပြသွားမည် ဖြစ်ပါသည်။ အရေးအသားပိုင်းအနေဖြင့် စာလုံးပေါင်း၊ စကားလုံး အသုံးအနှုန်း၊ ဝါကျအသုံး ဟူ၍ ခွဲခြားလေ့လာသွားမည် ဖြစ်ပါသည်။

နိဒါန်း

ရှေးခေတ်မြန်မာစာပေခရီးကို ခြေရာခံ၍ စာပေအသီးသီးပေါ်ပေါက်ရန် အထောက်အပံ့ပြုသော ခေတ်အခြေအနေကို နောက်ခံအဖြစ် ဆက်စပ်ကြည့်ရန် လိုအပ်ပါသည်။ ရှေးခေတ်ဆိုရာ၍ မြန်မာမင်းများ ထီးနန်းစိုက်ကာ စိုးမိုးအုပ်ချုပ်သော ပုဂံခေတ်မှ ကုန်းဘောင်ခေတ်အထိ ကာလကို ဆိုလိုခြင်းဖြစ်သည်။

ရှေးခေတ် မြန်မာစာပေခရီး၏ အစသည် မြန်မာစာ အရေးအသား စတင်ပေါ်ပေါက်ချိန် ဖြစ်သည်ဟု ယေဘုယျအားဖြင့် ဆိုနိုင်ပါသည်။ စာအရေးအသား မပေါ်ပေါက်မီ ဖွဲ့လိုသော အကြောင်းအရာကို နှုတ်ဖြင့်ရွတ်ဆိုဖန်တီးဖွဲ့နွဲ့သော “နှုတ်ပြောစာပေ”များ လူမျိုးအသီးသီးတွင် ရှိမည်ဖြစ်သည်နှင့်အညီ မြန်မာတို့ စာအရေးအသား မတီထွင်ရသေးမီက နှုတ်ဖြင့် ဖွဲ့နွဲ့သော သီချင်း၊ ကဗျာ၊ ပုံပြင် စသည်တို့သည် နှုတ်ပြောစာပေအဖြစ် ပေါ်ပေါက်ခဲ့မည် ဖြစ်သည်။ နှုတ်ပြောစာပေသည် စာနှင့်ပေနှင့် အကွာရာတင်သော “အရေးစာပေ”၏ ရှေးပြေးသဖွယ် ဖြစ်သည်။ မြန်မာစာအရေးအသား မပေါ်မီက ပျူ၊ မွန်၊ ပါဠိ၊ သက္ကတ စာအရေးအသားများ ပုဂံတွင် ထွန်းကားနေသည့်အလျောက် ထိုစာ အရေးအသားများသည် မြန်မာစာအရေးအသား ပေါ်ပေါက်ရေးအတွက် လမ်းခင်းပေးသည်။ အနော်ရထာမင်းလက်ထက်တွင် သထုံမှပိဋကတ်များ ပုဂံသို့ ရောက်လာပြီးနောက် မြန်မာတို့သည် ပုဂံတွင် ပေါ်ပေါက်ပြီးဖြစ်သော အခြားစာ အရေးအသားများ (အထူးသဖြင့် မွန်စာအရေးအသား)ကို အခြေပြု၍ မြန်မာစာအရေးအသား တီထွင်ခြင်းဖြစ်ရာ အနော်ရထာမင်း နန်းစံသည့်ကာလသည် မြန်မာစာပေ အစပျိုးသည့်

* ကထိက၊ မြန်မာစာဌာန၊ သမဝါယမနှင့် စီမံခန့်ခွဲမှုပညာတက္ကသိုလ် (စစ်ကိုင်း)

ကာလဟု ဆိုနိုင်ပါသည်။ ထို့ကြောင့် ထိုကာလကို မြန်မာစာပေခရီးအစဟု မှတ်ယူခြင်း ဖြစ်ပါသည်။

ရှေးခေတ်မြန်မာစာပေသည် ခေတ်အဆက်ဆက် မြန်မာမင်းများ ထီးနန်းစိုက်ထူရာ မင်းနေပြည်တော်များတွင် ထွန်းကားခြင်းဖြစ်သည့်အလျောက် ထိုမင်းနေပြည်တော်များ အမည်ဖြင့် သမိုင်းခေတ် သတ်မှတ်သည့် အစဉ်အလာနှင့်အညီ ရှေးခေတ်မြန်မာစာပေခရီးကို-

- (၁) ပုဂံခေတ် (၁၀၄၄ - ၁၂၈၇)
- (၂) ပင်းယခေတ် (၁၂၉၉ - ၁၃၆၄)
- (၃) အင်းဝခေတ် (၁၃၆၄ - ၁၅၅၅)
- (၄) တောင်ငူခေတ် (၁၅၁၀ - ၁၅၉၉)
- (၅) ညောင်ရမ်းခေတ်(ဒုတိယအင်းဝခေတ်) (၁၆၀၀ - ၁၇၅၂)
- (၆) ကုန်းဘောင်ခေတ် (၁၇၅၂ - ၁၈၈၅)

ဟူ၍ ခေတ်များပိုင်းခြားထားပါသည်။^၁

ပုဂံခေတ်သည် မြန်မာစာပေသမိုင်းတွင် အဓိကကျသော အခန်းကဏ္ဍမှ ပါဝင်ခဲ့သည်။ “မြန်မာစာပေအစ “ပုဂံကျောက်စာက”ဟုဆိုခဲ့ရသည့်အတိုင်း ပုဂံခေတ်တွင် မြန်မာစာပေ၏ အခြေခံအုတ်မြစ်ဖြစ်သော ကျောက်စာစကားပြေရေးသားမှု အလေ့အထများစွာ ထွန်းကားခဲ့ ပါသည်။ ဆရာဇော်ဂျီ၏ ရသစာပေအဖွင့်နှင့်နိဒါန်းမှ ပထမအခန်း၊ ရှေးခေတ်မြန်မာစာပေတွင် ပါဝင်သော အတိတ်ခေတ် မြန်မာစာတွင်-

“သက္ကရာဇ် ၄၀၀ကျော်လောက်မှစ၍ ရေးသားကြသော ပုဂံကျောက်စာ မြန်မာ စကားပြေတို့သည် မြန်မာစာပေတွင် တောင်ထွတ်ပမာ မားမားမတ်မတ် ထင်ရှား၍ ပုဂံဂူဘုရားများကဲ့သို့ပင် ဆန်းကြယ်ခံသည်ကိုတွေ့ရသည်။”^၂

ဟူ၍ ရေးသားထားပါသည်။

ထို့ကြောင့် မြန်မာစာပေကို လေ့လာလိုက်စားသူများသည် ပုဂံခေတ်မြန်မာကျောက်စာ စကားပြေများကို စာပေအမွေအနှစ်တစ်ရပ်အဖြစ် လေ့လာသင့်ပေသည်။ ကျောက်စာများသည် လူမျိုးတစ်မျိုး၏အမျိုးဘာသာ၊ စာပေယဉ်ကျေးမှုတိုးတက်ခြင်းရှိမရှိကို ဖော်ဆောင်နိုင်သည့် အပြင် ခေတ်၏ကြေးမုံ၊ ခေတ်၏အခြေအနေအမျိုးမျိုးကိုလည်း ထင်ဟပ်နေကြောင်း တွေ့ရပါ သည်။ ကျောက်စာများသည် အလွန်အဖိုးတန်သော ရာဇဝင်သမိုင်းပစ္စည်းများဟုလည်း ဆိုနိုင်ပါသည်။ “ရာသီမသိလျှင် ပန်းနှင့်ညှိ” ဆိုသကဲ့သို့ ရာဇဝင်မသိလျှင်ဖြစ်စေ၊ ရာဇဝင်

^၁ ခင်မင်၊မောင်(ဓနုဖြူ)၊ ၂၀၁၄၊ ၁၇။
^၂ ဇော်ဂျီ၊ ၁၉၇၆၊ ၉။

မတိကျလျှင်ဖြစ်စေ ကျောက်စာနှင့်ညှိက အစစ်အမှန်ကို ကောင်းစွာ သိနိုင်ပေသည်။ ကျောက်စာတို့၏ ကျေးဇူးကား ကြီးမားလှပါသည်။

ပုဂံခေတ် အနော်ရထာမင်းလက်ထက် ရှင်အရဟံ၏ကျေးဇူးကြောင့် သုဝဏ္ဏဘူမိ သထုံပြည်မှ ပိဋကတ်သုံးပုံတို့ ပုဂံပြည်သို့ရောက်ရှိလာပြီး ဗုဒ္ဓဘာသာ သာသနာတော်သည် တစ်ရှိန်ထိုး စည်ပင်ပြန့်ပွားလာခဲ့သည်။ ဗုဒ္ဓစာပေနှင့်အတူ မြန်မာစာပေသည်လည်း ပုဂံပြည်ကြီးတွင် တိုးတက်ထွန်းကားလာပါသည်။ ထိုအချိန်မှစ၍ ဗုဒ္ဓ၏အဆုံးအမ၌ သက်ဝင် ယုံကြည်ကြသော ပုဂံပြည်သူ၊ ပုဂံပြည်သား အလှူရှင်တို့သည် မိမိတို့ စေတနာသဒ္ဓါတရား၏ လှုံ့ဆော်မှုအရ အလှူပစ္စည်း အမျိုးမျိုးကို လှူဒါန်းကာ ဒါနတရားကို ကြိုးစားအားထုတ်ခဲ့ကြ သည်။ ဤသည်ပင်လျှင် မြန်မာ စာပေ၊ မြန်မာ့ယဉ်ကျေးမှု တိုးတက်ရန် အကြောင်းရင်း ဖြစ်ပေတော့သည်။ ဒါနတရား အားသန်ခဲ့ကြသော အလှူရှင်တို့သည် မိမိတို့အလှူကို သာသနာ ၅၀၀၀တည်စေလိုသောဆန္ဒ၊ နောက်လူတို့ သာဓုအနုမောဒနာ ခေါ်ဆိုနိုင်လိုသော ဆန္ဒတို့ဖြင့် ကျောက်တုံးကျောက်ပြားများပေါ်တွင် ကမ္မည်းရေးထိုး မှတ်တမ်းတင်ခဲ့ကြပါသည်။ ကျောက်စာအများစုသည် အလှူ မှတ်တမ်းများ ဖြစ်ကြပါသည်။ ထိုကျောက်စာများသည် မြန်မာစာပေသမိုင်း၏ အခြေခံအုတ်မြစ်လည်း ဖြစ်ပါသည်။ ပုဂံခေတ်ကို လေ့လာရာတွင် ယေဘုယျအားဖြင့် ခေတ်သုံးခေတ် ပိုင်းခြားနိုင်သည်။ သက္ကရာဇ်(၄၀၀) မှ (၅၀၀) အထိကို ခေတ်ဦးဟူ၍လည်းကောင်း၊ သက္ကရာဇ်(၅၀၀)ကျော်မှ (၆၀၀)အထိကို ခေတ်လယ်ဟူ၍ လည်းကောင်း၊ သက္ကရာဇ် (၆၀၀) ကျော်မှ (၆၆၀) နောက်ပိုင်းကို ခေတ်နှောင်းဟူ၍ လည်းကောင်း ပိုင်းခြားနိုင်ပါသည်။ ပုဂံခေတ်လယ် ကျောက်စာများအနက်မှ အမတ်ကြီး သုဘရာဇ် ကျောက်စာကို စာပေရှုထောင့်မှ လေ့လာတင်ပြသွားမည်ဖြစ်ပါသည်။

၁။ အကြောင်းအရာအကျဉ်းချုပ်

အမတ်ကြီးသုဘရာဇ် ကျောက်စာသည် ပုဂံခေတ်လယ်တွင် ရေးထိုးထားသော ကျောက်စာ တစ်ချပ် ဖြစ်သည်။ အလှူရှင် အမတ်ကြီးသုဘရာဇ်၏အမည်ကို အစွဲပြု၍ အမတ်ကြီး သုဘရာဇ် ကျောက်စာဟု ခေါ်ခဲ့ပါသည်။ ကျောက်စာတွင် စာမျက်နှာ ၂မျက်နှာ ပါရှိသည်။ ရှေ့စာမျက်နှာတွင် စာကြောင်းရေ (၃၁)ကြောင်းပါရှိသော်လည်း (၂၉)ကြောင်းသာ ဖတ်ရှု၍ ရပါသည်။ နောက်ကျောက်စာတွင် စာမျက်နှာတွင် စာကြောင်းရေ (၁၁)ကြောင်း ပါရှိသည်။ အမတ်ကြီး သုဘရာဇ်ကျောက်စာတွင် အလှူပြုချိန်၊ အလှူရှင်၊ အလှူပြုရာနေရာ၊ အလှူပစ္စည်း၊ ဆုတောင်း၊ အမျှဝေ၊ ကျိန်စာတို့ စုံလင်စွာပါရှိသည်ကို တွေ့ရသည်။

အလှူရှင်မှာ အမတ်ကြီးသုဘရာဇ် ဖြစ်သည်။ သုဘရာဇ်အမတ်ကြီးသည် သက္ကရာဇ် ၅၃၆ ခုနှစ် ပုဂံထီးနန်းကိုစိုးစံသော နရပတိစည်သူမင်း၏ ယောက်ဖတော်ဖြစ်ကြောင်းကို မှန်နန်းရာဇဝင် တော်ကြီး ပထမတွဲတွင်-

“သုဘရာဇ်ကားကုလားကျမင်းကြီးမယ်တော်မောင်မြေးရင်းတည်း၊
သုဘရာဇ်နှမကို ဦးဆောက်ပန်းဟု သမုတ်တော်မူ၏”^၁

“နရပတိစည်သူမင်းလည်း ယောက်ဖတော် သုဘရာဇ်မယားကိုမြင်
တော်မူလျှင် ဝမ်းမြောက်ဝမ်းသာဖြစ်လေ၏”^၂

အလှူရှင်အမတ်ကြီးသည် သက္ကရာဇ် ၅၅၆ခု ပိညှက်နှစ်၊ တန်ဆောင်မုန်းလဆန်း ၄ ရက် တနင်္လာနေ့တွင် သမထထီးမည်သောအရပ်တွင် အရှင်မင်းကြီး၏စေတီတော်နှင့် မနီးမဝေးအရပ်၌ အလှူပြုခဲ့သည်ဟုရှိပါသည်။ နရပတိစည်သူမင်းကြီး၏စေတီတော်မှာ ဓမ္မရာဇိကဘွဲ့တော်ဖြစ် ကြောင်းကို မှန်နန်းရာဇဝင်တော်ကြီး ပထမတွဲတွင်-

“ထိုမှတပါးလည်း သမထီးအရပ်၌ ဘုရားငါးမျက်နှာ တစ်ဆူ
တည်တော်မူ၍ ဓမ္မရာဇိက ဟူသောအမည်ကို သမုတ်တော်မူ၏”^၃

ဟူ၍ ဖော်ပြထားပါသည်။ အမတ်ကြီးသည် သဒ္ဒါတရားထက်သန်စွာဖြင့် ဂူ၊ ကျောင်း၊ အရံ တို့ကို တည်ဆောက်လှူဒါန်းခဲ့သည်။ မိမိအလှူကို သာသနာ ၅၀၀၀ တည်စေလိုသည်။ သင်ပုတ်ဝတ်၊ ဆီးမီးဝတ်၊ တရားဝတ်နှင့် သံဃာတော်တို့အတွက် ရည်မှန်းကာ မြေ ၈၇၀၊ ကျွန် ၃၀ ၊ နွားရှဉ်း ၃၀ တို့ကို လှူဒါန်းခဲ့ပါသည်။ အလှူရှင်သည် ကျောက်စာ၌ မြေတည်ရှိရာအရပ်၊ မြေတန်ဖိုး ရွှေအချိန် ၊ မြေပိုင်ရှင်အမည်များကို တိတိကျကျဖော်ပြထားသည်။ ထို့ပြင် မြေ၊ ကျွန်၊ နွား ရရှိခဲ့ပုံကိုပါ ဖော်ပြထားပါသည်။

အမတ်ကြီး သုဘရာဇ်ကျောက်စာတွင် အလှူရှင်သည် အလှူကောင်းမှုပြုလုပ်ပြီး မိမိအတွက် ဆုတောင်းခဲ့သည်ကို တွေ့ရပါသည်။ “ဤကျွန်နွာကာ ငါ၏ ကိုဝ်စာ၊ ဤမွေယံကာ ငါ၏ အဆွေယံ” ဟု ဆုတောင်းထားသည်ကို တွေ့ရပါသည်။ ပုဂံခေတ် စိုက်ပျိုးရေးတွင် မြေ၊ ကျွန်၊ နွား တို့ ယှဉ်တွဲ ထောက်ပံ့မှုသည် အရေးပါသကဲ့သို့ အလှူရှင်က ကျွန်နှင့်နွားသည် မိမိ၊ မြေသည် မိမိအဆွေပမာ သံသရာ၌ အထောက်အပံ့ဖြစ်လိုသော ဆန္ဒ ဖြစ်လိမ့်မည်ဟု မှန်းဆမိပါသည်။ အလှူရှင်သည် အရိမေတ္တေယျ ဘုရားလက်ထက် အကျွတ်တရားရ၍ ရဟန္တာမွန် ဖြစ်လိုကြောင်း၊ နိဗ္ဗာန်မရမီကြား အရှင်မင်းကြီးနှင့်အတူ ဖြစ်လိုကြောင်း ဆုတောင်းထားသည်။ ထို့ပြင် အလှူကိုစောင့်ရှောက် ချီးပင့်သူများအတွက်

^၁ မှန်နန်းရာဇဝင်တော်ကြီး၊ပထမတွဲ၊၂၀၀၃၊ ၃၁၇။
^၂ မှန်နန်းရာဇဝင်တော်ကြီး၊ပထမတွဲ၊၂၀၀၃၊ ၃၁၉။
^၃ မှန်နန်းရာဇဝင်တော်ကြီး၊ပထမတွဲ၊၂၀၀၃၊ ၃၂၇။

ကောင်းမှုအကျိုးကို မိမိနှင့်ထပ်တူရပါစေ၊ ကောင်းမှုအကျိုးကို လူ၊ နတ်တကာ သတ္တဝါတို့ ရကြပါစေဟု အမျှပေးဝေထားပါသည်။ အလှူရှင်သည် မိမိအလှူကို ဖျက်ဆီးသူများအား ငရဲကြီး ၈ထပ်၊ ငရဲငယ် ၁၂၈ထပ်၌ ကျက်ပါစေ၊ မြေပုံလုံးမျှ ကြိုးမကသော ဘုရားအဖြစ်ဖြစ် ချွတ်၍မကျွတ် ရစ်စေဟူ၍ ကျိန်စာရေးထိုးထားခဲ့သည်ကို တွေ့ရပါသည်။

ဤကဲ့သို့ အလှူရှင်သည် မိမိ၏ ကုသိုလ်ကောင်းမှုကို နှောင်းခေတ်လူတို့ ထိပါး ဖျက်ဆီးလိုစိတ်ကင်း၍ သာဓုအနုမောဒနာ ခေါ်စေလိုသော စေတနာဆန္ဒများ အရင်းခံကာ ဤအမတ်ကြီး သုဘရာဇ်ကျောက်စာ အလှူမှတ်တမ်းကို ရေးထိုးခဲ့ခြင်းဖြစ်သည်ဟု ယူဆမိ ပါသည်။

၂။ အကြောင်းအရာပိုင်းလေ့လာချက်

ပုဂံခေတ်တွင် မြန်မာ၊ ပါဠိ၊ မွန်၊ ပျူ ဘာသာ (၄)မျိုး ထွန်းကားခဲ့သည်။ ထိုဘာသာ (၄)မျိုး အနက် မြန်မာဘာသာသည် ပုဂံသူ၊ ပုဂံသားမြန်မာတို့၏ကြိုးပမ်းအားထုတ်မှုကြောင့် မြန်မာစာပေ လောကအထွတ် အုတ်မြစ်သဖွယ် အခြေခိုင်ခိုင် ရပ်တည်နိုင်ခဲ့သည်။

ကျန်စစ်သားမင်း လက်ထက်တွင် မြန်မာစာပေ စပြီးသုံးလာသည်။ အလောင်းစည်သူမင်း လက်ထက်တွင် မြန်မာစာပေအား ယူလာပြီး အလောင်းစည်သူ၏ နောက်ပိုင်း မင်းများလက်ထက် အထူးသဖြင့် နရပတိစည်သူ (စည်သူ) လက်ထက်မှစပြီး မြန်မာစာပေကို အဓိကစာပေအဖြစ် အသုံးပြုလာကြသည်။^၁

ပုဂံခေတ် ကျောက်စာများကို မှတ်တမ်းတင်ရာတွင် မိမိကောင်းမှုကို အခြားသူများ ချီးပင့်ကြစေရန် ဆုတောင်းအမျှဝေ၍လည်းကောင်း၊ မသမာသူများ နှောင့်ယှက်ဖျက်ဆီးခြင်း ဘေးမှ ကင်းဝေးနိုင်စေရန် ကျိန်စာဖြင့် အကာအကွယ်ပြု၍လည်းကောင်း အမှတ်အသားပြု ရေးထိုးခဲ့ကြသည်။

ပုဂံခေတ်ကျောက်စာ စကားပြေများသည် ထိုခေတ်၏ခေတ်ကြေးမုံကို ထင်ဟပ်နေပါ သည်။ ပုဂံခေတ်လယ်ထိုး ကျောက်စာတစ်ချပ်ဖြစ်သော အမတ်ကြီးသုဘရာဇ် ကျောက်စာကို အကြောင်းအရာပိုင်းမှ လေ့လာပါလျှင် ထိုခေတ်၏ ဘာသာရေး၊ လူမှုရေး၊ အုပ်ချုပ်ရေး၊ စီးပွားရေး၊ ယဉ်ကျေးမှု တို့ကို တွေ့ရှိနိုင်ပါသည်။

၂.၁။ ဘာသာရေး

ပုဂံခေတ်တွင် ဗုဒ္ဓသာသနာ ထွန်းကားသည်နှင့်အညီ မင်းသည် သာသနာ့ဒါယကာအဖြစ် ခံယူ၍ သာသနာထွန်းကားရေးကို အားပေးချီးမြှောက်သည်။ ဘုရားတည်ခြင်း၊ ကျောင်းဆောက်ခြင်း၊

^၁ သက်လွင်၊ဒေါက်တာ၊၂၀၁၈၊၆၁။

ကျွန်လှူခြင်း၊ လယ်လှူခြင်း စသည့် အလှူပွဲများကို မင်းအမှူးပြုသော ပုဂံသားများ အလေးအမြတ် ဆောင်ရွက်သည်။ မင်းသည် ဗုဒ္ဓ၏အဆုံးအမကိုခံယူသည်။ သံဃာတော် များကို ကိုးကွယ်ဆည်းကပ်၍ အဆုံးအမခံသည်။ မှူးမတ်ပညာရှိများ၏ အကြံပေး လျှောက်ထားမှုကိုလည်း နာယူသည်။

ပုဂံခေတ်တွင် မဟာယန၊ ဗုဒ္ဓဘာသာ၊ ဟိန္ဒူဘာသာ ကိုးကွယ်မှုများနှင့် နောက်ပိုင်းတွင် နတ်ကိုးကွယ်မှုများ ရှိသော်လည်း ထေရဝါဒ ဗုဒ္ဓဘာသာ ကိုးကွယ်မှု အားကောင်းသည်။ ကုသိုလ်ပြုပြီးနောက် သဗ္ဗညုတဘုရားဆုတောင်းခြင်း၊ အလှူဖျက်ဆီးသူကို “အရိမေတ္တေယျ ဘုရားရှင်ကို မဖူးရပါစေနှင့်”ဟု ကျိန်စာဆိုခြင်းတို့အရ ဘာသာရေး ခံယူမှု နက်ရှိုင်းပုံကို သိနိုင်သည်။^၂

ပုဂံပြည်ကြီးတွင် အနော်ရထာမင်းစော လက်ထက် စတင်ရောက်ရှိလာသော ဗုဒ္ဓသာသနာတော်၏ စစ်မှန်သောတရားများသည် နှောင်းခေတ်မင်းများ လက်ထက်တွင် ပိုမိုအခြေခိုင်ကာ တိုးတက်စည်ပင်လာခဲ့သည်။ သက္ကရာဇ် ၅၅၆ခုနှစ်ထိုး အမတ်ကြီးသုဘရာဇ် ကျောက်စာမှ နရပတိစည်သူမင်းကြီးလက်ထက် ပုဂံခေတ်၏ ဘာသာသာသနာဆိုင်ရာ ခံယူချက်များကို တွေ့နိုင်ပါသည်။ အလှူရှင်အမတ်ကြီးသည် ဗုဒ္ဓဘာသာဝင်ပီပီ အလှူမှတ်တမ်း၏ နိဒါန်းတွင် ‘နမောဗုဒ္ဓါယ’ဟု ဘုရားရှိခိုးဖြင့် အစချီထားရာ ပုဂံခေတ်အလှူရှင်တို့၏ ရတနာသုံးပါးကို ဦးထိပ်ထား ရိုသေကိုးကွယ်တတ်သောသဘောကို တွေ့ရသည်။ ပုဂံခေတ်တွင် မင်းမှစ၍ ပြည်သူတို့သည် စေတီ၊ ဂူဘုရားများတည်၍ ဥဒ္ဓိဿစေတီအဖြစ် ကိုးကွယ်လေ့ရှိကြသည်ကိုလည်း တွေ့ရပါသည်။ ထို့ပြင် ကျောင်းလှူဒါန်းလျှင် အရံတံတိုင်းပါ တစ်ပါတည်း ပြုလုပ်လှူဒါန်းလေ့ရှိပုံကိုလည်း တွေ့ရပါသည်။ အလှူရှင်တို့သည် မိမိကောင်းမှုကို သာသနာ ၅၀၀၀တည်စေလိုသော သဘောရှိကြောင်း တွေ့ရပါသည်။ ရတနာသုံးပါးနှင့် စပ်လျဉ်းသော ဝတ္တရားများ ပြုလုပ်စောင့်ရှောက်နိုင်ရန် ကျွန်၊ နွား၊ မြေများ လှူဒါန်းလေ့ ရှိကြောင်း တွေ့ရပါသည်။ အမတ်ကြီးသုဘရာဇ်သည် အလှူပြုပြီး ဖြစ်လိုသောဆုများကို တောင်းထားသည်ကို တွေ့ရသည်။ အရိမေတ္တေယျ ဘုရားရှင်လက်ထက် ရဟန္တာမွန် ဖြစ်လိုသည်။ နိဗ္ဗာန်မရမီ အရှင်မင်းကြီးနှင့်အတူ ဖြစ်လိုသည်ဟု ဆုတောင်းထားသည်။ အမတ်ကြီး၏ ဆုတောင်းစာမှ ပုဂံခေတ် ဗုဒ္ဓဘာသာဝင်တို့၏ ကံ၏ အကျိုးယုံကြည်မှု၊ ဆုတောင်းလျှင် ပြည့်သည်ဟု ယုံကြည်မှု စသော ဘာသာရေးဆိုင်ရာ ယုံကြည်မှုများကို တွေ့ရပါသည်။

^၂ ခင်မင်းမောင်(ခနုဖြူ)၊ ၂၀၁၄၊ ၂၉၊ ၃၀။

အလှူရှင်အမတ်ကြီးသည် မိမိအလှူကောင်းမှုအကျိုးကို အမျှဝေရာတွင် လူနတ်တကာ သတ္တဝါတို့အား ရပါစေဟု တပြေးညီ အမျှဝေထားသည်။ ထို့ပြင် မိမိအလှူ ချီးပင့် စောင့်ရှောက်သူသည် ကောင်းမှုအကျိုးကို မိမိနှင့်ထပ်တူရပါစေဟု အမျှပေးဝေထားသည်ကို တွေ့ရပါသည်။ ဤသို့ အလှူပြုပြီး အမျှဝေထားခြင်းသည် ဗုဒ္ဓ၏အဆုံးအမကို ခံယူထားသော ပုဂံသားအလှူရှင်တို့၏ မြင့်မြတ်သော ဘာသာရေးဆိုင်ရာလေ့တစ်ခုအဖြစ် တွေ့ရပါသည်။ အလှူရှင်အမတ်ကြီးသည် မိမိအလှူကောင်းမှုအကျိုးကို ကျိန်စာရေးထိုးကာ အကာအကွယ် ပေးထားသည်ကို တွေ့ရသည်။ ကျိန်စာဆိုလျှင် ကျိန်စာသင့်သည်ဟူသော ယုံကြည်ချက်ကို တွေ့ရသည်။ ကျောက်စာတွင် အလှူရှင်က မိမိ အလှူကို -

“ဖျက်ဆီးသသူကာ ငရဲကြီ ဂ ထပ် ငရဲ ၁၂၈ ထပ်လျှင် ကျက်စေ သတေည်၊ မြွယ်ပုံလုံမျှကြိုမိမကာသော ဖုရာအဖွဲ့ဝ်၂၂၈ဝ်ရယ် မက္ကတ်ရစ် စေသော”^၁

ဟု ရေးထိုးထားပါသည်။ ပုဂံခေတ်သည် ဗုဒ္ဓသာသနာနှင့်အတူ ဗုဒ္ဓစာပေ ကျမ်းဂန်များ ထွန်းကားစည်ပင်ချိန်ဖြစ်ရာ ဘုရားအဆူဆူ ပွင့်သော်လည်း သံသရာဆင်းရဲဒုက္ခမှ လွတ်ရာ တရားတို့ကို မရလျှင် များစွာနစ်နာဆုံးရှုံးကြောင်း ပုဂံသားတို့ သိကြမည်ဟု ယူဆမိပါသည်။ ထို့ကြောင့် အမတ်ကြီးသည် ဗုဒ္ဓဘာသာဝင်တိုင်းအတွက် အလွန်ထိရောက်၍ ကြောက်မက်ဖွယ် ကျိန်စာဖြင့် ရွေးချယ်ကျိန်ဆို ရေးထိုးထားသည်ဟု ယူဆမိပါသည်။ အမတ်ကြီး၏ ကျိန်စာမှ တစ်ဆင့် ပုဂံသားတို့၏ ကျယ်ပြောလှသော ဘာသာရေးအမြင်ကို ခန့်မှန်းသိရှိနိုင်သည့်အပြင် ကောင်းမှုကိုဖျက်ဆီးလျှင် ငရဲကျနိုင်သည်ဟူသော ဘာသာရေးဆိုင်ရာ ယုံကြည်မှုတစ်ရပ်ကိုလည်း တွေ့မြင်ရပါသည်။

၂.၂။ လူမှုရေး

ရှေးခေတ်လူမှုရေးကို နောက်ခံအဖြစ် ဖော်ပြရာတွင် လူ့အဖွဲ့အစည်းတွင် မင်းသည် သက်ဦး ဆံပိုင်ဖြစ်သည်။ ရေမြေရှင်ဖြစ်သည်။ တိုင်းသူပြည်သားအားလုံး မင်း၏ ကျေးတော်မျိုး၊ ကျွန်တော်မျိုးများ ဖြစ်သည်။

မင်းသည် လူ့အဖွဲ့အစည်းတွင် ထိပ်ဆုံးကပုဂ္ဂိုလ် ဖြစ်သည်။ ပုဂံခေတ်က မင်းကို မင်း၊ မင်းကြီးဟု ဖော်ညွှန်းသည်။ နောက်ပိုင်းတွင် “ဘုရားရှင်” ဟုလည်း ရည်ညွှန်းသည်။ “ဘုရားရှင်” ဟူသောစကားသည် “ဘုရင်”ဟု ပြောင်းလဲသွားသည်။ မင်းကို ဗဟိုပြုသော မိဖုရား၊ မင်းညီမင်းသား၊

^၁ အမတ်ကြီးသုဘရာဇ်ကျောက်စာကျောက် - က-၈၂၅။

မင်းသမီး စသည် ထီးနန်းဝန်းကျင်အသိုက်အဝန်းသည် လူ့အဖွဲ့အစည်း
တွင် ထိပ်တန်းမှာရှိခဲ့သော အသိုက်အဝန်း ဖြစ်သည်။^၁

မင်းကိုခစားသော မင်းမှုထမ်းများမှာ အမတ်၊ ကလန်၊ သံပျင် စသည်ဖြင့် လုပ်ငန်း
တာဝန် အမျိုးမျိုး ခွဲဝေထမ်းဆောင်ရသည်။ မင်းသည် ခုံညားသောဘွဲ့အမည်များ ခံယူပြီး
အမှုထမ်းများကိုလည်း ဘွဲ့မည်အမျိုးမျိုး ချီးမြှင့်သည်။ အမတ်ကြီးသုဘရာဇ်ကျောက်စာကို
ကြည့်၍ လူမှုရေးကို တိုင်းတာကြည့်ပါက လူတန်းစား ခွဲခြားမှုရှိသည်ကို တွေ့ရပါသည်။
ပုဂံခေတ်တွင် မင်း၊ မှူးမတ် စသော အုပ်ချုပ်သူလူတန်းစားနှင့် မင်းမှုထမ်း မဟုတ်သော
အတတ်ပညာရှင်နှင့် ကျွန်လူတန်းစား အမျိုးမျိုးရှိပါသည်။ ပုဂံခေတ်တွင် ကျွန်များကို
သက်မဲ့များပမာ လက်ပြောင်းလက်လွှဲ ပြုလုပ်လေ့ရှိသည်ကို တွေ့ရပါသည်။ ကျွန်များကို
မိမိတို့လိုသလို ခြယ်လှယ်ကြသော်လည်း နှိပ်စက်ညှဉ်းပန်းခြင်း မပြုကြောင်း တွေ့ရပါသည်။
ပုဂံခေတ်တွင် ကျွန်များကို စေတီ၊ ဂူ၊ ကျောင်းတို့၌ လှူဒါန်းခဲ့ရာ ထိုကျွန်များသည်
အောက်တန်းမကျဘဲ ဘုရားကျောင်းဝေယျာဝစ္စများကိုသာ ပြုလုပ်ကြရသည်။ အမတ်ကြီး
သုဘရာဇ်ကျောက်စာတွင် အလှူရှင်သည် လှူဒါန်းခဲ့သော မြေ၊ ကျွန်၊ နွားတို့နှင့်ပတ်သက်၍
တိတိ ကျကျ မှတ်တမ်းတင်ထားပါသည်။ အလှူမြေ၏တည်နေရာ၊ မြေတမ်းပေါင်း၊ မြေပိုင်ရှင်၊
မြေဖိုးရွှေ၊ ရရှိပုံတို့ကို တိကျစွာ မှတ်တမ်းတင်သည့်နည်းတူ ကျွန်၊ နွားများ ရရှိပုံ၊
ကျွန်အရေအတွက်၊ နွားအရေအတွက်များကို တိကျစွာ မှတ်တမ်းတင်ရေးထိုးခဲ့သည်။ ဤသို့
မှတ်တမ်းတင်ထားသည်ကိုကြည့်၍ ပုဂံခေတ်တွင် ကျွန်ပိုင်ဆိုင်မှု၊ မြေပိုင်ဆိုင်မှုနှင့်
ပတ်သက်၍ အရှုပ်အရှင်းရှိဟန်တူပါသည်။ ထို့ကြောင့် အလှူရှင်က နောင်လူမှုရေး အရှုပ်အရှင်း
မရှိရန် အမှတ်အသားပြုပြဆိုခဲ့ဟန်ရှိပါသည်။ ဤသည်ကပင် ပုဂံခေတ်၏ မြေအုပ်ချုပ်ပုံကိုပါ
တစ်စိတ်တစ်ဒေသ အကဲခတ်သိရှိခွင့်ရပါသည်။

၂.၃။ အုပ်ချုပ်ရေး

ရှေးခေတ်ဖြစ်သော ပုဂံခေတ်မှ ကုန်းဘောင်ခေတ်အထိကာလသည် မင်းအဆက်ဆက် စိုးမိုး
အုပ်ချုပ်သောကာလ ဖြစ်သည်။ ပဒေသရာဇ်ခေတ်ဟုလည်း ခေါ်သည်။ ထိုခေတ်တွင်
မင်းသည် နိုင်ငံတွင် အရေးပါဆုံး၊ ထိပ်ဆုံးပုဂ္ဂိုလ် ဖြစ်သည်။

“ရေမြေသခင်”၊ “ဘဝရှင်”၊ “သက်ဦးဆံပိုင်” ဟူသော အယူအဆများနှင့်အညီ
မင်းသည် ရေမြေအားလုံးကို စိုးပိုင်သည်။ တိုင်းသူပြည်သားများ၏
ဘဝနှင့်အသက်ကို စိုးပိုင်သည်။ တိုင်းသူပြည်သားများသည် မင်း၏

^၁ ခင်မင်မောင်၊ ၂၀၁၄၊ ၂၉။

ကျေးတော်မျိုး၊ ကျွန်တော်မျိုးများ ဖြစ်သည်။ မင်းကိုဗဟိုပြုသော မိဖုရား၊ မင်းညီမင်းသား၊ မင်းဆွေမျိုးတို့သည် နိုင်ငံတွင်အရေးပါဆုံး ပုဂ္ဂိုလ်များ ဖြစ်သည်။”^၁

“ပုဂံခေတ် အုပ်ချုပ်ရေးသမိုင်းတွင် အနော်ရထာမင်းလက်ထက်သည် များစွာ အရေးပါသည်။ အနော်ရထာမင်း လက်ထက်မှစလျက် မြန်မာသမိုင်းကို ခေတ်ပြိုင် အထောက်အထားများဖြင့် စနစ်တကျ သုတေသနပြု၍ အခွင့်သာလာသောကြောင့် ဖြစ်သည်။ အနော်ရထာမင်း နောက် ဆက်ခံသော မင်းတို့လက်ထက်တွင်မူ ခေတ်နှောင်းပိုင်း ကျလာလေ သမိုင်းဆိုင်ရာ အချက်အလက်များမှာ ကြည်လင်ခိုင်မာ ပြတ်သားလာလေ ဖြစ်သည်။ ထို့ကြောင့် ပုဂံသမိုင်းတွင် အနော်ရထာမင်း လက်ထက်သည် အရေးပါသောမှတ်တိုင် ဖြစ်သည်။”^၂

အမတ်ကြီးသုဘရာဇ် ကျောက်စာမှ မင်းနှင့်အမတ်တို့၏ ဆက်ဆံရေးကို တွေ့ရပါ သည်။ မင်းသည် သာသနာပြုသော တရားမင်းဖြစ်သည်နှင့်အညီ လက်အောက်ငယ်သား အမှုထမ်းတို့အား အခါအားလျော်စွာ ကျွန်၊ မြေ၊ နွားစသည်တို့ ပေးကမ်းချီးမြှောက်လေ့ ရှိကြောင်းတွေ့ရသည်။ ထို့ကြောင့် ပြည်သူတို့၏ ကိုးစားယုံကြည်ခြင်းခံရသော မင်းတစ်ပါး ဖြစ်မည်ဟု ယုံကြည်မိပါသည်။ အမတ်ကြီး သုဘရာဇ်သည်လည်း အရှင်မင်းကြီး၏ ကျေးဇူးသစ္စာကို စောင့်သိရိုသေသူဖြစ်ရကာ ဆုတောင်းရာ၌ပင် နိဗ္ဗာန်မရမီ မင်းကြီးနှင့်အတူ ဖြစ်လိုကြောင်း ဆုတောင်းထားသည်။ အလှူရှင်သည် ပုဂံခေတ် အလှူရှင်တို့ တောင်းလေ့ရှိ သော ဘုရားဆုကိုမတောင်းဘဲ ရဟန္တာမွန်ဖြစ်လိုသည်ဟု တစ်ထစ်လျော့၍ ဆုတောင်းထားရာ ဘုရားဆုကို အရှင်သခင်မင်းကြီးအတွက် ချန်လှပ်ထားလေသလောဟု ခန့်မှန်းမိပါသည်။ အမတ်ကြီးသည် အလှူမှတ်တမ်းကို အဆုံးသတ်ရာ၌ မိမိအလှူကိုပင် ‘စေည်သူ မင်္ဂလာ ကောင်မူတေည်’ ဟုရေးထိုးထားရာ အမတ်ကြီး၏ မင်းကြီးအပေါ်ထားရှိသော ကျေးဇူး သိတတ်မှု၊ ယုံကြည်မြတ်နိုးမှု၊ အရှင်သခင်ကို ရှေ့တန်းတင်တတ်သော ကျွန်ကောင်းပီသမှုကို တွေ့ရပါသည်။

အုပ်ချုပ်ရေးအကြည့်လျှင် သက်ဦးဆံပိုင်မြေရှင် ပဒေသရာဇ်အုပ်ချုပ်ရေးစနစ် ဖြစ်ပါသည်။ ပုဂံခေတ်၌ မင်း၊ အမတ်စသော အုပ်ချုပ်သူလူတန်းစားနှင့် အုပ်ချုပ်ခံပြည်သူများ

^၁ စောလူ(ပထမတွဲ)၊၁၉၉၆၊၁၇။
^၂ စောလူ(ပထမတွဲ)၊၁၉၉၆၊၁၁။

ရှိသည်ကို တွေ့ရသည်။ အုပ်ချုပ်သူမင်းကလည်း ကူညီစောင့်ရှောက်မှုများ ရှိသကဲ့သို့ ပြည်သူ တို့ကလည်း ယုံကြည်ကိုးစား၍ အမြဲအလေးထား ချစ်ခင်ရိုသေကြသည်ကို တွေ့ရပါသည်။

၂၃။ စီးပွားရေး

ပုဂံခေတ်၏ စီးပွားရေးကို လေ့လာရာ၌ အားကိုးလောက်သော အထောက်အထားမှာ သာသနာတွင် လှူသောမြေအကြောင်းကို ကျောက်စာ၌ တွေ့ရသမျှသာဖြစ်ခြင်းကြောင့် သာသနာမြေမှ ထွက်ကုန်ပစ္စည်းများကို ပြောပြခြင်းဖြင့်လည်းကောင်း၊ ဘုရားတွင် တင်လှူသော လှူဖွယ်ဖြစ်သည့် ကောက်ပဲသီးနှံ စသည်တို့ကို စာရင်းလုပ်ခြင်းဖြင့်လည်းကောင်း ပုဂံခေတ်၏ လယ်ယာကိုင်း ဥယျာဉ်တို့၏ ထွက်ကုန်ကို သိရပါမည်။^၁

ပုဂံခေတ်သည် ပဒေသရာဇ်ခေတ်ဖြစ်ရာ မင်းအပါးတွင် ခစားထမ်းရွက်သော မင်းမှုထမ်းဘဝဖြင့် အသက်မွေးမှုပြုသူများရှိကြောင်း တွေ့ရသည်။ ဆန်စပါးသည် အဓိက စားသောက်ကုန် ဖြစ်သည့်အတွက် ပင်မစီးပွားရေးလုပ်ငန်းအဖြစ် လယ်ယာစိုက်ပျိုးရေး လုပ်ငန်းကို လုပ်ကိုင်ကြသည်။ ယဉ်ကျေးမှုထွန်းကားသောခေတ်ဖြစ်ရာ အနုသုခုမပညာရပ်ဖြင့် ရပ်တည်သူများ လည်းရှိမည်ဟု ယူဆမိပါသည်။ အမတ်ကြီး သုဘရာဇ် ကျောက်စာမှ ပုဂံခေတ်၏ စီးပွားရေးကို ခန့်မှန်းချင့်တွက်နိုင်ပါသည်။ အလှူမှတ်တမ်းကျောက်စာ၌ စေတီ၊ ဂူ၊ ကျောင်း၊ အရံတို့ ဆောက်လုပ်လှူဒါန်းထားသဖြင့် ထိုခေတ်တွင် လက်မှုလုပ်ငန်းဖြင့် အသက်မွေးသူများရှိကြောင်း တွေ့ရပါသည်။ ထို့ပြင် အလှူပစ္စည်းများ၌ မြေပေါင်းများစွာ လှူဒါန်းထားသောကြောင့် ပုဂံခေတ်တွင် စိုက်ပျိုးရေး ထွန်းကားပြီး စိုက်ပျိုးရေးလုပ်ငန်းသည် ပုဂံနိုင်ငံတော်ကြီး၏ အဓိကစီးပွားရေးလုပ်ငန်း ဖြစ်မည်ဟု ခန့်မှန်းရပါသည်။ ကျောက်စာအရ ပုဂံခေတ်တွင် လယ်မြေအရောင်းအဝယ်များရှိရာ တန်ဖိုးကိုပေးချေရာတွင် ငွေကြေးအစား ရွှေအချိန်ကိုသာ အသုံးများကြောင်း တွေ့ရပါသည်။ ကျောက်စာကို လေ့လာရာတွင် လယ်ယာနှင့် အသက်မွေးသူများအပြင် တံငါမုဆိုးလုပ်ကိုင်၍ အသက်မွေးသူများ ရှိမည်ဟု ခန့်မှန်း မိပါသည်။

၂၄။ ယဉ်ကျေးမှု

“ပုဂံခေတ် အနုပညာနှင့် ဗိသုကာပညာကို ကြွင်းကျန်သမျှ ကျောင်း၊ ဘုရားနှင့် ကျောက်စာများ အားကိုးလျက် ပြန်လည်ဖော်ထုတ်ရာတွင် လူမှုပစ္စည်းထက်သာသနာမှု ဝတ္ထုပစ္စည်းက ပို၍ရှာဖွေ တွေ့ရှိနိုင်သောကြောင့် သာသနာရေး လက်ရာသည်ပင်လျှင် ထိုခေတ်

^၁ သန်းထွန်း၊ဒေါက်တာ၊၁၉၆၉၊၁၇၆။

လူတို့၏ စွမ်းသမျှလက်ရာ ကုန်ဖြစ်သောကြောင့် ထိုခေတ်၏ ယဉ်ကျေးမှုအဆင့်အတန်းကို ကောင်းကောင်းသိနိုင်သည်ဟု ယူဆရပေမည်။”^၁

အနော်ရထာမင်းလက်ထက် သထုံပြည်ကို အောင်နိုင်သောအခါ အဖိုးထိုက်တန်သော ဗုဒ္ဓသာသနာတော်နှင့်အတူ ယဉ်ကျေးမှုအရပ်ရပ်တို့သည် ပုဂံပြည်သို့ ရောက်ရှိလာခဲ့သည်။ ထိုအခါ ပုဂံပြည်ကြီးတွင် ရှိရင်းစွဲပျူယဉ်ကျေးမှုအသစ်တို့ ပေါ်ထွန်းခဲ့သည်။ အမတ်ကြီး သုဘရာဇ်ကျောက်စာအရ စေတီ၊ ဂူ၊ ကျောင်းများ ဆောက်လုပ်လှူဒါန်းကြောင်း ပါရှိရာ ပန်းပု၊ ပန်းရံစသော ပန်းဆယ်မျိုး ထွန်းကားနေကြောင်း တွေ့ရပါသည်။

၄။ အရေးအသားပိုင်းလေ့လာချက်

ပုဂံခေတ် အနော်ရထာမင်းလက်ထက် သထုံပြည်မှ ဗုဒ္ဓသာသနာတော်ကြီးနှင့်အတူ ပိဋကတ်တော်များ၊ ရဟန်းသံဃာများ ပုဂံပြည်သို့ ရောက်ရှိလာခြင်းသည် မြန်မာစာပေ ဖြစ်ထွန်း တိုးတက်စေရန် အစပျိုးခဲ့ခြင်းပင် ဖြစ်ပါသည်။ ပုဂံခေတ်တွင် ရှေးဦးစွာတွေ့ရသော မြန်မာကျောက်စာအရေးအသားတို့တွင် မြန်မာတို့သည် မြန်မာစကားများကို ပြောဆိုသည့် အတိုင်း ရေးသားရာ၌ စာလုံးများကို အမျိုးမျိုးပေါင်း၍ စကားဝါကျများကိုလည်း အတော် ခဲခဲယဉ်းယဉ်းစီစဉ်၍ ရေးသားကြရသည်ကို တွေ့ရပေသည်။ ပုဂံခေတ်က တီထွင်သုံးစွဲခဲ့သော ဝေါဟာရများမှာ ယနေ့တိုင် မပြုမပြင်၊ မပြောင်းလဲဘဲ ပုဂံခေတ်သုံးအတိုင်း လက်ခံသုံးစွဲ နေသည်လည်းရှိ၍ အချို့ဝေါဟာရများမှာမူ သုံးစွဲခြင်း မရှိတော့သည်ကို တွေ့ရပါသည်။

စကားပြေအရေးအသားသည် တစ်ဆင့်ထက်တစ်ဆင့် တိုးတက်လာခဲ့ရာ စကားအသုံးအနှုန်းသည် လေးနက်လာသည်။ဆိုလိုသောအကြောင်းအရာကို ပြည့်စုံပေါ်လွင်အောင် အကျိုးအကြောင်းပြနှင့် ရေးသားနိုင် စွမ်းလေသည်။ ကျိန်စာတိုက်ခြင်းမျိုးသာ မဟုတ်ဘဲ အကျိုးအကြောင်းနှင့် တရားညွှန်ပြ သည်လည်း ရှိသည်။^၂

ဤသို့ ပုဂံခေတ်ဦးမှစတင်ခဲ့ရသော မြန်မာစာပေခရီးသည် ပုဂံခေတ်လယ် ရောက်ချိန်တွင် အတော်အတန် ခရီးပေါက်ခဲ့သည်ဟု ဆိုနိုင်ပါသည်။ ပုဂံခေတ်လယ် စာပေအရေးအသားကို အမတ်ကြီးသုဘရာဇ် ကျောက်စာမှ လေ့လာတင်ပြမည် ဖြစ်ပါသည်။ ထိုသို့ လေ့လာတင်ပြရာတွင်-

- (၁) စာလုံးပေါင်း
- (၂) စကားလုံးအသုံးအနှုန်း

^၁ သန်းထွန်း၊ဒေါက်တာ၊၁၉၆၉၊၂၇၀။
^၂ လှသမိန်၊၂၀၁၆၊၇၀။

(၃) ဝါကျအသုံး

ဟူ၍ ခွဲခြားလေ့လာသွားပါမည်။

၃၊ ၁။ စာလုံးပေါင်း

အမတ်ကြီးသုဘရာဇ် ကျောက်စာသည် ခေတ်လယ်ကျောက်စာတစ်ချပ်ဖြစ်၍ ဆိုလိုရင်းကို အတော်အတန် နားလည်သဘောပေါက်အောင် ရေးသားနိုင်သော်လည်း ရေးထုံး မတည်ငြိမ် သေးသည်ကို တွေ့ရသည်။ အချို့စကားလုံးများမှာ ခေတ်ဦးအရေးအသားအတိုင်း အသုံးပြုနေဆဲ ဖြစ်သည်ကို တွေ့ရသည်။ ဥပမာ-

ယနေ့ခေတ် ‘-ြ’ ရရစ်အစား ‘လ’(လဆွဲ) သုံးသည်ကို တွေ့ရသည်။

‘ပြု’	ကို	‘ပျူ’	ကြောင်းရေ (၅၊ ၆)
‘ကျောင်း’	ကို	‘ကျောင်း’	ကြောင်းရေ(၇)
‘မြေ’	ကို	‘မွေယ်’	ကြောင်းရေ (၁၀၊ ၁၂၊ ၁၅၊ ၁၆၊ ၁၇၊ ၁၈၊ ၁၉၊ ၂၀၊ ၂၂၊ ၂၃၊ ၂၆၊ ၂၈) ကျော -၉
‘မြောက်’	ကို	‘မွောက်’	ကြောင်းရေ (၁၂၊ ၂၂)
‘ချောင်း’	ကို	‘ချောင်း’	ကြောင်းရေ (၁၃)
‘ပြင်’	ကို	‘ပွင်၏’	ကြောင်းရေ (၁၃)
‘ချွတ်’	ကို	‘ချွတ်’	ကြောင်းရေ (၂၀)၊ ကျော -၁၀
‘ကျောက်’	ကို	‘ကျောက်’	ကြောင်းရေ (၂၁)
‘ဖြစ်’	ကို	‘ဖွစ်’	ကြောင်းရေ (ကျော-၂၊ ၆၊ ၁၀)
‘ကျွတ်’	ကို	‘ကျွတ်’	ကြောင်းရေ (ကျော- ၂၊ ၁၀)
‘ချင်’	ကို	‘ချင်’	ကြောင်းရေ (ကျော - ၃၊ ၆)
‘ကျိုး’	ကို	‘ကျိုး’	ကြောင်းရေ (ကျော - ၃၊ ၇)

ယနေ့ခေတ် ‘ေ’ အသရအစား ပုဂံခေတ်တွင် ‘-ိယ်’ ကို သုံးကြောင်း တွေ့ရသည်။

‘နေ’	ကို	‘နိယ်’	ကြောင်းရေ (၂)
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ရေးထုံးမတည်ငြိမ်သေးသောသဘောကိုဆောင်သည့် အက္ခရာများကိုလည်း တွေ့ရသည်။

‘တရား’	ကို	‘တြာ’	ကြောင်းရေ (၇၊ ၂၄)
‘ဆရာ’	ကို	‘ဆျော’	ကြောင်းရေ (၂၅)

တို့တွင် ရရစ် ‘ြ-’ နှင့် ‘-ျ’ စမ်းသပ်ကာရေးထိုးနေသည်ကို တွေ့ရသည်။ ထို့ပြင် ယခုခေတ် ‘- ဝိဝု’ အသုံးကို ကျောက်စာတွင် ဝိဝု ဖြင့်အသုံးပြုသည်ကိုလည်း တွေ့ရပါသည်။

‘ဖိုး’	ကို	‘ဖိဝ်’	ကြောင်းရေ (၁၀၊ ၁၂၊ ၁၆၊ ၁၇၊ ၁၉၊ ၂၁)
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‘ကို’	ကို	‘ကိုဝ်’	ကြောင်းရေ (၁၂၊ ၂၈၊ ကျော - ၆)
‘ထို’	ကို	‘ထိုဝ်’	ကြောင်းရေ (၂၄၊ ၂၅၊ ၂၇၊ ကျော - ၂)
‘သို့’	ကို	‘သိုဝ်’	ကြောင်းရေ (၂၅)
‘တို့’	ကို	‘တိုဝ်’	ကြောင်းရေ (၂၆)

ဤ အမတ်ကြီးသုဘရာဇ် ကျောက်စာတွင် ယခုခေတ်ရေးထုံးများနှင့် နီးစပ်သော ရေးထုံးများကို တွေ့ ရှိရပါသည်။

၃၊၂။ စကားလုံးအသုံးအနှုန်း

အမတ်ကြီးသုဘရာဇ် ကျောက်စာမှ စကားလုံး အသုံးအနှုန်းပိုင်းကို လေ့လာရာတွင် ယနေ့ခေတ်နှင့် မတူသော စကားလုံး အသုံးအနှုန်းများကို စိတ်ဝင်စားဖွယ်တွေ့ရသည်။

သို့သော် ဆိုလိုရင်းအဓိပ္ပာယ် ထင်ရှားပေါ်လွင်ကြောင်း တွေ့ရပါသည်။ သာဓကအားဖြင့် -

‘ရက်’	ကို	‘ရျာက်’	ကြောင်းရေ (၂)
‘တနင်္လာ’	ကို	‘၂လာ’	ကြောင်းရေ (၂)
‘အရှေ့’	ကို	‘အရှေယ်’	ကြောင်းရေ (၈၊ ၁၂၊ ၂၁)
‘ရွှေ’	ကို	‘ရှယ်၊ ရှေယ်’	ကြောင်းရေ (၉၊ ၁၀၊ ၁၄၊ ၁၆၊ ၁၇၊ ၁၉၊ ၂၀၊ ၂၁၊ ၂၃)
‘စုစုပေါင်း’	ကို	‘အပေါင်း’	ကြောင်းရေ (၂၃) ^၁
‘ရှိ၏’	ကို	‘ဟိ၏’	ကြောင်းရေ (၁၃၊ ၂၂)
‘ပိုင်ဆိုင်သည်’	ကို	‘အစိုဝ်ရ’	ကြောင်းရေ (၂၅) ^၂
‘ငြီးငွေ့’	ကို	‘ညီဝေယ်’	ကြောင်းရေ (ကျော - ၁)
‘ဖြစ်တိုင်းဖြစ်တိုင်း’	ကို	‘အဖွစ်၂’	ကြောင်းရေ (ကျော - ၁၀)

ဟူ၍ သုံးနှုန်းထားသည်ကို တွေ့ရသည်။ ထို့ပြင် မြန်မာဘာသာစကား၌ ဘာသာခြား စကားလုံးများ ရောနှောပါဝင်လျက်ရှိသည်ကို တွေ့ရပါသည်။

သာဓကအားဖြင့် -

နမော သဗ္ဗဗုဒ္ဓါယ	ပါဠိ	ကြောင်းရေ - ၁
ပိသျှက်	သက္ကတ	ကြောင်းရေ - ၁
သက္ကရာဇ်	ပါဠိ	ကြောင်းရေ - ၁
အမတ်	သက္ကတ	ကြောင်းရေ - ၃

^၁ မြတ်ကျော်ဦး၊ ၂၀၀၉၊ ၃၂၅။

^၂ မြတ်ကျော်ဦး၊ ၂၀၀၉၊ ၃၁၁။

သုဘရာဇ်	ပါဠိ	ကြောင်းရေ -၃
ဂူ	ပါဠိ	ကြောင်းရေ - ၅
သာသနာ	ပါဠိ၊ သက္ကတ	ကြောင်းရေ - ၆
သင်ပုတ်	ပါဠိ	ကြောင်းရေ - ၆
ဝတ်	ပါဠိ	ကြောင်းရေ - ၆၊ ၇၊ ၂၄
တြာ	ပါဠိ၊ သက္ကတ	ကြောင်းရေ - ၇
ထေည်ရ	ပါဠိ	ကြောင်းရေ - ၇
ဆျာ	ပါဠိ၊ သက္ကတ	ကြောင်းရေ - ၂၅
ကျွန်	မွန်	ကြောင်းရေ - ၂၅၊ ၂၆၊ ၂၇၊ ၂၈
သင်္သရာ	ပါဠိ	ကြောင်းရေ - ကျော (၁)
အရိယမိတ္တည်	ပါဠိ	ကြောင်းရေ - ကျော (၁)
ရဟန္တာ	ပါဠိ	ကြောင်းရေ - ကျော (၂)
နတ်	ပါဠိ	ကြောင်းရေ - ကျော (၃)
သတ္တဝါ	ပါဠိ	ကြောင်းရေ - ကျော (၄)
နိဗ္ဗန်	ပါဠိ၊ သက္ကတ	ကြောင်းရေ - ကျော (၅)
ငရဲ	ပါဠိ၊ သက္ကတ	ကြောင်းရေ - ကျော (၈)
ဖုရာ	ပါဠိ၊ သက္ကတ	ကြောင်းရေ - ကျော (၁၀)
စည်သူ	ပါဠိ	ကြောင်းရေ - ကျော (၁၁)

အမတ်ကြီးသုဘရာဇ် ကျောက်စာတွင် ကြိယာသီးခြားစကားလုံး ဟုခေါ်သော လုံးချင်း ကြိယာများကို တွေ့ရပါသည်။ သာဓကအားဖြင့် -

ပျူ၏	ကြောင်းရေ (၅၊ ၆)
ဟိ၏/ရို၏	ကြောင်းရေ (၁၃၊ ၁၄၊ ၂၂)

ဤကျောက်စာတွင် သဒ္ဒါဆိုင်ရာ အခြားစကားအသုံးအနှုန်းများကိုလည်း စိတ်ဝင်စားဖွယ် တွေ့ရပါ သည်။ သာဓကအားဖြင့် -

နာမ်စားအသုံး	
ဤ	ကြောင်းရေ (၂၆၊ ၂၈၊ ၂၉၊ ကျော - ၃၊ ၆)

နာမဝိသေသနအသုံး

မည်သ	ကြောင်းရေ (၃)
မနိမဝေသ	ကြောင်းရေ (၄)
နေသော	ကြောင်းရေ (၇)
လှူသော	ကြောင်းရေ (၈၊ ကျော - ၃)
စစ်ထိုင်သော	ကြောင်းရေ (၂၇)
ပေသော	ကြောင်းရေ (၂၇)
ခိပင်သ	ကြောင်းရေ (ကျော - ၇)
ပျက်ဆိသ	ကြောင်းရေ (ကျော - ၈)

ကြိယာဝိသေသနအသုံး

သာစွာ	ကြောင်းရေ (၅)
ဝိဘတ်အသုံး	ကြောင်းရေ (၃)
နှိုက်	ကြောင်းရေ (၃၊ ၄၊ ကျော - ၂)
၏	ကြောင်းရေ (၄၊ ၅၊ ၆၊ ၁၃၊ ၁၄၊ ၂၂၊ ၂၅၊ ၂၈၊ ၂၉၊ ကျော - ၆)
ကို	ကြောင်းရေ (ကျော - ၆)
တေည်	ကြောင်းရေ (၁၀၊ ၁၆၊ ၂၈၊ ကျော - ၄၊ ၇၊ ၉၊ ၁၁)
နှင်	ကြောင်းရေ (ကျော - ၅)
ပါစေ	ကြောင်းရေ (ကျော - ၄၊ ၇)
စေ	ကြောင်းရေ (ကျော - ၉၊ ၁၀)

သမ္ပန္နအသုံး

စိမ်သောငှါ	ကြောင်းရေ (၆၊ ၈)
ရယ်	ကြောင်းရေ (ကျော - ၂)

ပစ္စည်းအသုံး

လေည် (နာမ်ထောက်)	ကြောင်းရေ (၅၊ ကျော - ၄)
ရကာ (ကြိယာထောက်)	ကြောင်းရေ (ကျော - ၁)
အရပ် (ပစ္စည်းဆက်နာမ်)	ကြောင်းရေ (၃၊ ၄၊ ၂၃)
အဖိုင် (ပစ္စည်းဆက်နာမ်)	ကြောင်းရေ (၁၀၊ ၁၇၊ ၁၉၊ ၂၁)

- “ရမည်သင် အရေယ် ပဲခွတ် ရှေယ်သပိတ် မွေယ်တံ ၄၀၀” က-၁၉၊၂၀
- “မွေယ်အဖိုင်ကာ ရှေယ် ၃၀၀” က-၂၁
- “စကုအရပ် ရှေယ်သပိတ် ၁၀၀” က-၂၃
- “ထိုင်သိုဝ်လာသော ငကြချာအစိုဝ်ရစေ၏” က-၂၅
- “အမွမ်ကျွန်ကာ ၃၀ နွာယျန် ၃၀” က-၂၅၊၂၆

အစရှိသည့် ဝါကျရိုးကလေးများဖြင့် တိုတိုတုတ်တုတ် ရေးသားထားပါသည်။ ရှင်းလင်း တိကျ၍ အနက်အဓိပ္ပါယ် ပေါ်လွင်စေပါသည်။ ပုဂံသားတို့၏ ပေါ့ပါးသွက်လက်သော စာရေးဟန်ကို ချီးကျူးဖွယ် တွေ့ရပါသည်။

ဝါကျရောဟူသည် ဝါကျရိုးနှစ်ခု (သို့မဟုတ်) နှစ်ခုထက်ပိုသော ဝါကျရိုးများကို တစ်ခုတည်း ဖြစ်စေရန် ဝိဘတ်၊ ပစ္စည်း၊ သမ္ပန္န တစ်ခုခုဖြင့် ဆက်၍ရေးသော ဝါကျကို ဝါကျရော ဟုခေါ်ပါသည်။^၁

- ဤကျောက်စာတွင်တွေ့ရသော ဝါကျရောတို့ကို သာဓကပြရလျှင် -
- “ဣောင်နှိုက်နေသော ထေည်ရစာဖွစ်စိမ်သောငှါ လှူသော” ကြောင်းရေး (၇၊ ၈)
- “ဤမွေယ် ကျွန် နွာတိုဝ်ကာ တန်လိုင်သရေ စစ်ထိုင်သော အသျင်မင်ကြီပေသော လဲ ကျွန် နွာတေည်” ကြောင်းရေး (၂၆၊ ၂၈)
- “သင်္သရာနှိုက် ညိုဝေယ်ရကာ အရိယမိတ္တည် လက်ထက် ရဟန္တာမွန်ဖွစ်ရယ် အက္ကတ် ထိုင်နှိုက်ရချင်သော” ကြောင်းရေး (၁၊ ၃)

စသည်ဖြင့် တွေ့ရပါသည်။

ဤအမတ်ကြီးသုဘရာဇ် ကျောက်စာတွင် ဝါကျရိုးနှင့်ဝါကျရောများကို သူ့နေရာနှင့်သူ လိုက်လျောညီထွေဖြစ်အောင် အသုံးပြုထားသည့်အတွက် အဓိပ္ပါယ် ရှုပ်ထွေးမှုမရှိပေ။ ဆိုလိုရင်းကိုလည်း ပေါ်လွင်စေပါသည်။ ထို့ပြင် ကျောက်စာကိုဖတ်ရှုရာ၌လည်း လွယ်ကူ ချောမွေ့စွာ ဖတ်ရှုနိုင်ကြောင်းကို လေ့လာတွေ့ရှိရပါသည်။

ခြုံငုံသုံးသပ်ချက်

ဤကျောက်စာသည် အလှူမှတ်တမ်းကျောက်စာတစ်ချပ် ဖြစ်သည့်အတွက် အလှူပြုပုံ၊ အလှူနှင့် ပတ်သက်သောအကြောင်းများ ပါဝင်သော ကျောက်စာတစ်ချပ် ဖြစ်သည်။ ပုဂံခေတ်၏ဘာသာရေး၊ လူမှုရေး၊ အုပ်ချုပ်ရေး၊ စီးပွားရေး၊ ယဉ်ကျေးမှု တို့ကို ကျောက်စာအရ သိရှိရသည်။ ဤကျောက်စာ သည် ပုဂံခေတ်လယ်တွင်ရေးထိုးထားသော ကျောက်စာတစ်ချပ် ဖြစ်သော်လည်း အရေးအသားပိုင်းတွင် ယနေ့ခေတ်နှင့် နီးစပ်သော အရေးအသားများကို

^၁ မြန်မာစာအဖွဲ့၊ ၂၀၀၅၊ ၄၀၀။

တွေ့ရပါသည်။ ဆိုလိုရင်းအဓိပ္ပါယ်ကို နားလည်သဘောပေါက်အောင် ရေးထိုးထားနိုင် ပါသည်။ သို့သော် ရေးထိုးအနေနှင့် မတည်ငြိမ် သေးသည်ကို တွေ့ရပါသည်။ ယခုခေတ် အရေးအသားနှင့် ကွာခြားမှုအနည်းငယ်သာရှိသည်ဖြစ်၍ ဖတ်ရာ၌ အလွန်အမင်းအခက်အခဲ မတွေ့ရှိရပါ။ ဤကျောက်စာကို ခြုံငုံသုံးသပ်ရပါလျှင် ပုဂံခေတ် လယ်တွင် ရေးထိုးထားသော ကျောက်စာအရေးအသားသည် စနစ်ကျ၍မြန်မာစာပေအဆင့်အတန်း မြင့်မားပုံ၊ ယဉ်ကျေးမှု တို့ကို တွေ့ရှိရသော ကျောက်စာတစ်ချပ် ဖြစ်ပါသည်။

နိဂုံး

ဤကျောက်စာသည် ပုဂံခေတ်လယ်တွင် ရေးထိုးထားသော အမတ်ကြီးသုဘရာဇ် ကျောက်စာကို စာပေရှုထောင့်မှ လေ့လာတင်ပြထားခြင်း ဖြစ်ပါသည်။ ကျောက်စာတစ်ချပ်တည်းကို အလေ့လာ ခံအဖြစ်ထား၍ လေ့လာတင်ပြထားပါသည်။ ဤစာတမ်းသည် ယနေ့ခေတ်တွင် အသုံးပြုလျက် ရှိသော မြန်မာစာပေ အရေးအသားသည် ပုဂံကျောက်စာတည်းဟူသော အုတ်မြစ်ပေါ်မှ ဆင့်ပွားတိုးတက်လာသော စာပေအရေးအသားဖြစ်သည်။ ဤစာတမ်းကို မြန်မာစာပေ လေ့လာသူတို့အတွက် တစ်ထောင့်တစ်နေရာမှ အကျိုးပြုနိုင်ပါရန် ရည်ရွယ်၍ ကြိုးစား အားထုတ်ခဲ့ခြင်းဖြစ်ကြောင်း တင်ပြလိုပါသည်။

ကျေးဇူးတင်လွှာ

သမဝါယမနှင့်စီမံခန့်ခွဲမှုပညာတက္ကသိုလ် (စစ်ကိုင်း)၊ တက္ကသိုလ် ၁၀-နှစ်ပြည့် အထိမ်းအမှတ် စာတမ်းဖတ်ပွဲတွင် “အမတ်ကြီးသုဘရာဇ်ကျောက်စာကို စာပေရှုထောင့်မှ လေ့လာချက်”စာတမ်းဖတ်ကြားနိုင်ရန် ခွင့်ပြုပေးပါသော ပါမောက္ခချုပ်၊ ဒေါက်တာမိုးမိုးရီအား အထူးကျေးဇူးတင်ရှိပါသည်။ ဒုတိယပါမောက္ခချုပ်(စီမံ) ဦးဝင်းနိုင်ထွန်း၊ သမဝါယမနှင့် စီမံခန့်ခွဲမှုပညာတက္ကသိုလ် (စစ်ကိုင်း)အား ကျေးဇူးတင်ရှိပါသည်။ သဘာပတိအဖြစ် ဆောင်ရွက်ပေးပါသော ဆရာကြီး ဒေါက်တာမောင်မောင်လေး (အငြိမ်းစား ပါမောက္ခ၊ ဌာနမှူး၊ မြန်မာစာဌာန၊ မန္တလေးတက္ကသိုလ်)၊ ၁၉၉၆ ခုနှစ်မှ ၂၀၀၇ ခုနှစ်အထိ မြန်မာစာ ဘာသာရပ်ကို သင်ကြားပြသပေးခဲ့သော ဆရာ၊ ဆရာမများအားလုံး၊ စာတမ်းအား အကောင်းဆုံးဖြစ်အောင် ဖတ်ကြားစိစစ်ပြီး ဖြည့်စွက်ပေးပါသော ဒေါ်အေးစိုးဝင်း၊ တွဲဖက်ပါမောက္ခ၊ ဌာနမှူး၊ မြန်မာစာဌာန၊ သမဝါယမနှင့်စီမံခန့်ခွဲမှုပညာတက္ကသိုလ် (စစ်ကိုင်း) နှင့် လိုအပ်ချက်များကို ကူညီဆောင်ရွက်ပေးကြသော မြန်မာစာဌာနမှ ညီအစ်ကို မောင်နှမများ အားလုံးကို ကျေးဇူးတင်ရှိပါသည်။

ကျမ်းကိုးစာရင်း

ခင်မင်၊မောင် (ခနုဖြူ)။ ၂၀၁၄။ မြန်မာစာပေခရီး (ပုဂံခေတ်မှကိုလိုနီခေတ်အထိ)။ ရာပြည့်
 စာအုပ်တိုက်၊ရန်ကုန်မြို့။

ငြိမ်းမောင်၊ဦး။၁၉၉၈။ရှေးဟောင်းမြန်မာကျောက်စာများ(ပထမတွဲ)။ ပုံနှိပ်ရေးနှင့် စာအုပ်
 ထုတ်ဝေရေး ကော်ပိုရေးရှင်း၊ရန်ကုန်။

စောလူ။၁၉၉၆။ပုဂံခေတ်မြန်မာစာ၊စာပေဗိမာန် ပုံနှိပ်တိုက်၊ရန်ကုန်မြို့။

ဇော်ဂျီ။၂၀၀၄။ရသစာပေအဖွင့်နှင့်နိဒါန်း၊အင်ကြင်းပုံနှိပ်တိုက်နှင့်ဦးလွင်စာပေ၊ ရန်ကုန်မြို့။

မြတ်ကျော်၊ဦး၊ (မြန်မာစာအဖွဲ့)။ ၂၀၀၉။ ပုဂံခေတ်ကျောက်စာအဘိဓာန်။ ဦးမြတ်ကျော်
 စာလုပ်ငန်း ပုံနှိပ်တိုက်၊ ရန်ကုန်မြို့။

မြန်မာစာအဖွဲ့။၂၀၀၅။မြန်မာသဒ္ဒါ၊တက္ကသိုလ်များပုံနှိပ်တိုက်၊ရန်ကုန်မြို့။

မှန်နန်းရာဇဝင်တော်ကြီး(ပထမတွဲ)၊ပဉ္စမအကြိမ်။၂၀၀၃။ပြည်ကြီးမဏ္ဍိုင်ပိဋကတ်ပုံနှိပ်တိုက်၊
 ရန်ကုန်မြို့။

လှသမိန်။၂၀၁၆။ပုဂံခေတ်မြင်ကွင်းကျယ်၊စိတ်ကူးချိုချိုပုံနှိပ်တိုက်၊ရန်ကုန်မြို့။

သက်လွင်၊ ဒေါက်တာ။ ၂၀၁၈။ သမိုင်းကပြောသောပုဂံ၊ ပုဂံကပြောသောသမိုင်း၊ ရှင်မတောင်
 စာပေ၊ ရန်ကုန်မြို့။

သန်းထွန်း၊ ဒေါက်တာ။ ၁၉၆၉။ ခေတ်ဟောင်းမြန်မာရာဇဝင်၊ မဟာဒဂုံစာပေထုတ်ဝေရေး၊
 ရန်ကုန်မြို့။

သက်စိုးတောင်ပေါ်မှ ရှေးဟောင်းကျောက်ရေကန် နှင့်
ပုဂံဒေသရေအသုံးချမှု လေ့လာချက်
မြင့်မြင့်စန်း*
စာတမ်းအကျဉ်း

ဤစာတမ်းသည် ပုဂံခေတ်ရှေးဟောင်းကျောက်ရေကန်ဟု သတ်မှတ်ထားသော ရေကန်ကို လေ့လာထားသော စာတမ်းဖြစ်ပါသည်။ သက်စိုးတောင်ပေါ်မှ တွေ့မြင်ရသော ကျောက်ဖြင့် တည်ဆောက်ထားသော ဘုရားများ၊ မြကန်၊ ကျောက်ရေကန်များအကြောင်းကို လေ့လာ၍ တင်ပြသွားမည် ဖြစ်ပါသည်။ ထိုကျောက်ရေကန်ကို လေ့လာရာတွင် ကျောက်ရေကန်ထဲမှ ရေကို ပုဂံလွင်ပြင်ဒေသရှိ ရေကန်များ၊ တူးမြောင်းများနှင့် ဆက်သွယ်၍ ရေအသုံးချမှုတို့ကို လေ့လာသွားမည် ဖြစ်ပါသည်။

နိဒါန်း

ပုဂံသည် မြန်မာတို့၏ အမွန်အစဖြစ်ပါသည်။ ‘မြန်မာ’ဆိုသည့် ဝေါဟာရကို ကျန်စစ်သားမင်း၏ နန်းတည်ကျောက်စာ(နန်းတော်ကို ခရစ်နှစ် ၁၁၀၁၊ ဒီဇင်ဘာလမှာ စတင်တည်ဆောက်ပြီး ခရစ်နှစ် ၁၁၀၂ ဧပြီလတွင် ပြီးစီးသည်)တွင် ရမည်(မွန်)၊ တိရ်စုလ် (ပျူ)တို့နှင့် အတူ “မိရ်မာ” အရေးအသားနှင့် ပထမဆုံး စတင်တွေ့ရှိရပါသည်။

“ပုဂံ” အမည်ကိုလည်း ကျန်စစ်မင်းကြီး (ခရစ်နှစ် ၁၀၈၄ - ၁၁၁၃) မွန်ကျောက်စာတွင် ပါဠိဘာသာအားဖြင့် ပေါကာမ၊ မွန်ဘာသာအနေနှင့် ပေါကာမ်ဟုပါရှိနေပါသည်။ ဓမ္မစေတီမင်း (ခရစ်နှစ် ၁၄၇၂ - ၁၄၉၂) ကလျာဏီမွန်ကျောက်စာတွင် “ပျူဂါမ” နဂရလို့ ပါဠိစာသားဖြင့် တွေ့နိုင်ပါသည်။

“ပုဂံ”ဆိုသည့် နာမည်သည် မြန်မာအမည်မဟုတ်ပေ။ ပျူနာမည် ဖြစ်နိုင်သည်။ ပျူလူမျိုးများ၏ ဆက်သွယ်ရေးလမ်းကြောင်း (ဟန်လင်း အထက်ပျူနှင့် သရေခေတ္တရာ (ပြည်) အောက်ပျူ) မှာ အလယ်စခန်းတစ်ထောက်ဖြစ်သည့် ပျူဝတ်၊ ပျူဂါမ မှ “ပုဂံ” ဖြစ်လာသည်ဟု နီးစပ်မှုရှိကြောင်း ဆရာကြီး ဒေါက်တာသန်းထွန်းက ဆိုထားပါသည်။

မြို့တော်၏ မြို့ထောင့်မှတ်တိုင်လေးခုဟုဆိုနိုင်သည့် တန့်ကြည်တောင်၊ ရွှေစည်းခုံ၊ လောကနန္ဒာ၊ တုရင်တောင်တို့အတွင်း အကျယ်အဝန်းမှာ မိုင်(၂၀)ခန့် ရှိသည်ဟု ယူဆရပါသည်။ ယနေ့အချိန်တွင် ထိုဒေသလေးခုသည် မဟာရာဇဝင်ကြီးတွင် ရေးသားထားချက်အရ စွယ်တော်ပွားများ တည်ရှိရာ စေတီများဟု လူသိများကြသည်။

ပုဂံသည် မူလကရွာ၊ ပြီးမှ မြို့ဖြစ်လာသည်ဟု ယူဆရပါသည်။ ပုဂံခေတ်တွင် မြို့ဆိုသည်မှာ ခံတပ်မြို့အဆင့်သာရှိပြီး ပုဂံကို မြို့ဟု မခေါ်ဘဲ မြို့တော်အဆင့် အဓိပ္ပါယ် ရသည့် “ပြည်” ဟု ခေါ်ကြောင်း ဆရာကြီး လုခံက ဖော်ပြထားပါသည်။

*ဒေါ်မြင့်မြင့်စန်း၊ လက်ထောက်ကထိက၊ ယွန်းပညာကောလိပ်(ပုဂံ)

ပုဂံမြို့၏ နယ်နိမိတ်

ပုဂံတွင် စေတီပုထိုး၊ ဂူ၊ ကျောင်းအရေအတွက်ကို အများသိသံပေါက် လင်္ကာ “လှည်းဝင်ရိုးသံ တည်ညံ့၊ ပုဂံဘုရားပေါင်း” က ရှေ့စကားလုံး “လှည်းဝင်ရိုးသံ”ကို ဂဏာန်း ချကြည့်လျှင် (၄၄၄၆) အရေအတွက်ရှိသည်။^၁ ထိုအချက်ကို ထောက်ခံသော အင်းဝ၊ မိုးညှင်းမင်းတရားက ပုဂံဘုရားများကို ရေတွက်ကောက်ယူပြီး သင်္ကေတအဖြစ် မှတ်သားသော “ဝင်းဝင်းထိန်လျှံ၊ ပုဂံဘုရားပေါင်း”က “ဝင်းဝင်းထိန်လျှံ”ကို ဂဏာန်းချကြည့်လျှင် (၄၄၇၄) အရေအတွက် ရှိသည်။ ခရစ်နှစ် ၁၉၆၈မှာ ကြွင်းကျန်သော အဆောက်အအုံတွေကို စာရင်းသစ်၊ စာရင်းဟောင်း ညှိပြီး ရေတွက်ရာမှရသည့် (၂၂၇) ရှိပါသည်။ ပုဂံခေတ် ကောင်းစားစဉ်အချိန်တွင် အရေအတွက် (၅၀၀၀) ခန့်ရှိလိမ့်မည်ဟု မှန်းဆနိုင်ပါသည်။ ယခုအချိန်တွင် ဘုရားပေါင်း ၃၈၇၃ ဆူ ရှိပါသည်။

မြို့ထောင့်မှတ်တိုင်ရာစေတီများ၊ လောကနန္ဒာ၊ တန့်ကြည်တောင်တို့မှာ အနော်ရထာ မင်းကြီးနှင့်ဆိုင်သော အထောက်အထားများ တွေ့မြင်ရပါသည်။ နှောင်းခေတ် မြန်မာစေတီ များ၏ အကြို ဗိသုကာပုံစံ ရွှေစည်းခုံစေတီကြီးသည် အနော်ရထာမင်းကြီးစတင်ခဲ့ကြောင်း ကျန်စစ်သားက (ခရစ်နှစ် ၁၀၉၇) တွင် ဆက်လက်တည်ကြောင်း သိရှိရပါသည်။

တုရင်စွယ်တောင်စေတီနှင့် ပတ်သက်၍ တင်ပြရလျှင် (၅ မတ်လ ၁၄၇၆) စောနန်းဖိုင် အလှူ ကျောက်စာတွင် “တုရင်စွဲတော”ဟု ပါနေသည့်အတွက် ထိုအချိန်မှာကတည်းက စွယ်တော်ဘုရားဟု ခေါ်ဆိုနေကြောင်း သိနိုင်သော်လည်း ရှေးကျသော ကာလတွေ ကတည်းက စွယ်တော်အခေါ်ရှိ-မရှိ မပြောနိုင်ပေ။^၂ “ရှေးကျသော ဗုဒ္ဓဝင်တွေမှာ သရီရခါတု(ခါတ်တော်) အကြောင်းဘဲပါတယ်။ စွယ်တော်အကြောင်း မတွေ့ရ”ဟု ဆရာကြီး ဒေါက်တာသန်းထွန်းက ရေးသားဖော်ပြထားပါသည်။

သက်စိုးတောင်သည် ကျောက်စာတွင် တုရင်သက်စိုးဟု တွဲပါနေသော နေရာဒေသ ဖြစ်ပါသည်။^၃ တုရင်တောင်ပေါ်တွင် အနော်ရထာမင်းကြီး ခေတ်ကာလ မတိုင်မီကပင် ဗုဒ္ဓသာသနာ ထွန်းကားနေသည့် အထောက်အထား ခိုင်ခိုင်လုံလုံ တွေ့ရသည်။ တုရင်တောင် ပေါ်တွင် ပျက်စီးသွားခဲ့သည့် စပ်ရဟန်သိမ်ကို အိုက်ပန်ဦးသင်နှင့် စာခီဗိုလ်တို့က နန်းတောင်း များမင်း (ခရစ်နှစ် ၁၂၁၁-၁၂၃၀)ထံ ခွင့်ပန်ပြီး ပြင်ဆင်ထားသော ကျောက်စာအရ (ခရစ်နှစ် ၁၀၀၀) ကျော်ကတည်းက ဘုရား၊ ရဟန်းကျောင်း၊ သိမ်တို့ ရှိနေပြီဟု မှတ်ယူရပါသည်။

သက်စိုးတောင်သမိုင်း

သက်စိုးတောင်ကို သမိုင်းကြောင်းအချို့တွင် ပျူစောထီးက ရှူးပျံကြီးရန်ကို အောင်မြင်သော တောင်ဟု ပြောစမတ်ရှိကြသကဲ့သို့ တစ်ချို့ကလည်း ပုဂံခေတ် အလောင်းစည်သူမင်း

^၁ လှသမိန်၊ ၁၉၉၉၊ ၁၅
^၂ သန်းထွန်း၊ ဒေါက်တာ၊ ၂၀၀၆၊ ၁၉၃
^၃ ကျော်ဇောအောင်၊ ၂၀၀၄၊ ၄၅

လက်ထက်က ပုဂံကို ပုန်ကန်ခြားနားသူ သက်လူမျိုး သက်မင်းကတို့၏ ဦးခေါင်းကို မြှုပ်နှံခဲ့ရာတောင်ဟုလည်း ဆိုကြပါသေးသည်။

သက်စိုးတောင် တည်နေရာသည် တုရင်စွယ်တော်စေတီတော်ဘက်မှ ကြည့်လျှင် အရှေ့ဘက် နှင့် မြောက်ဘက်အထိ ရောက်နေသော တောင်တန်းဖြစ်ပါသည်။ ညောင်ဦး-ကျောက်ပန်းတောင်း ကားလမ်းဘက်မှ ဝင်လာလျှင် စတင်မြင်ရသော တောင်တန်းဖြစ်ပါသည်။ သက်စိုးတောင်၏ မြောက်ဘက်အကျဆုံး အစနေရာသည် ယနေ့တုရင်တောင် ဘုန်းကြီးကျောင်း၏ အထက်ဘက်တွင်ရှိသည့် ပထမတောင်ပေါ်ဆရာတော်ကြီး ဦးအာလောက၏ ကျောင်းဟောင်းနေရာဖြစ်ပါသည်။ သက်စိုးတောင်၏ တောင်ဘက်အကျဆုံးတောင်သည် သိကြားတောင်ဖြစ်ပြီး ပုဂံရှေးဟောင်းနယ်မြေ အဆုံးဖြစ်ပါသည်။^၁ မြန်မာသက္ကရာဇ် ၈၃၄ ခုနှစ်၊ အင်းဝပြည်စုန် မင်းသီဟသူ ပြည်မှအပြန်ဖြစ်စဉ် တလျောက် ဘုရားပုထိုးများ ရှိခိုးပူဇော်ရာတွင် သိကြားတောင်၊ တုရင်တောင်တက်သည်ကို တွင်းသင်း ရာဇဝင်သစ်တွင် အထောက်အထားရှိပါသည်။

ကံကုန်စသီသမီးကျောက်စာအရ သက်စိုးတောင်ပေါ်တွင် (ခရစ်နှစ် ၁၀၆၆) ဘုရားနှင့် ဘုရားကျွန်များအပြင် မဟာထေရ်ပါ သီတင်းသုံးနေထိုင်ပြီဟု ကောက်ချက်ချနိုင်ပါသည်။^၂ သက်စိုးတောင်ပေါ်တွင်ရှိသည့် (ခရစ်နှစ် ၁၂၁၁) ကျောက်စာတွင် အစောဆုံးရက်စွဲပါ ကျောက်စာ ဖြစ်ပါသည်။ ရက်စွဲမပါ အရေးကြီးသော ကျောက်စာတစ်ခုအကြောင်းကိုလည်း အနည်းငယ် တင်ပြလိုပါသည်။ ထိုကျောက်စာသည် အလှူရှင် ငါသုဗ္ဗေ၏ အလှူကျောက်စာ ဖြစ်ပါသည်။ ထိုကျောက်စာကို မြန်မာစာပါမောက္ခ မောင်မောင်ကြီး မြန်မာစကားပြေ အစပျိုးချိန် ရေးထားသော မြန်မာစာကို ကောင်းစွာ မရေးတတ်သော မွန်တစ်ဦးဦးက ရေးထိုးခဲ့သော မွန်စာလုံးပေါင်းနှင့် မွန်သံထွက်နေသော အဟောင်းဆုံး မြန်မာစကားပြေ အရေးအသားမျိုး ပေလော..... ဟု သုံးသပ်ထားပါသည်။ ဆရာကြီး ဒေါက်တာသန်းထွန်းမှ “လက်ရေးနှင့် စာလုံးပေါင်း တွေသည် (၁၉ ဒီဇင်ဘာ ၁၁၆၅) ပုဂံဓမ္မရံကြီးဘုရားထဲမှ အစောလတ် ကျောက်စာတွင် ကျောက်စာရေး ရက်စွဲ၊ နှစ်အမည်၊ အချိန်ကာလအတိအကျ လင်၊ ဗဟို၊ နဋီတွေ ပါပြီး စာလုံးပေါင်းပုံ အဆင့်မြင့်ကောင်းသည်။ သက်စိုးတောင် ကျောက်စာသတ်ပုံသည် ပို၍ ကြိုက်စရာကောင်းသည်” ဟု မှတ်ချက်ပြုရေးသားထား ပါသည်။

သက်စိုးတောင်သို့ သွားရောက်လေ့လာမည်ဆိုပါက လမ်းညွှန်ရပါသည်။^၃ တုရင်တောင် စွယ်တော်ဘုရား တောင်ဘက်စောင်းတန်းမှ သက်စိုးတောင်သို့ လည်းကောင်း၊ ညောင်ဦး-ကျောက်ပန်းတောင်း ကားလမ်းမှဝင်လျှင် တုရင်တောင်ဘုန်းကြီးကျောင်းကို ကျော်ပြီး ဆက်တက် သွားလျှင် နောက်ကိုက်နှစ်ရာကျော်လောက်တွင် သံပိုက်လုံးများ သွယ်တန်းထားသော

^၁ ငွေးဝေ၊ ၂၀၀၉၊ ၁၄၀
^၂ သန်းထွန်း၊ ဒေါက်တာ၊ ၂၀၀၆၊ ၇၈
^၃ နီတွတ်၊ ပါမောက္ခ ၂၀၁၂

အုတ်ရေကန် ကြီးတစ်ခုရှိသည်။ ရေကန်တွင် “ပြည်ထောင်စု မြန်မာနိုင်ငံ တော်လှန်ရေး ကောင်စီအစိုးရ၏ တောင်သူလယ်သမား၊ အလုပ်သမားလူထုအတွက် တိုးတက်ဖွံ့ဖြိုးရေး လုပ်ငန်း အကောင်အထည် ဖော်ချက်၊ ၁၃၂၅ ခု နတ်တော်လဆန်း ၈ ရက်၊ ၁၉၆၃ ခု နိုဝင်ဘာလ ၂၃ ရက်” ဟု စာတမ်းထိုးထားပါသည်။ ဧရာဝတီမြစ်ရေကို တွန်းတင်ပြီး တုရင်တောင် ပတ်ဝန်းကျင်မှ ရွာများကို ရေပေးခဲ့သည့် စီမံကိန်းရှိပါသည်။ ယခုတော့ သံပိုက်လုံးများ ပျက်စီးကုန်၍ အသုံးမပြုနိုင်တော့ပေ။ ထိုရေကန်နေရာသည် သက်စိုးတောင်ခြေပင် ဖြစ်ပါသည်။ တောင်ပေါ်လမ်းအစတွင် သက်စိုးတောင်ပေါ်ရှိ ထူးခြား သောနေရာ ငါးခုကို ဖော်ပြထားသည့် လမ်းညွှန်ဆိုင်းဘုတ်ကို တွေ့မြင်ရမည် ဖြစ်ပါသည်။ ကျောက်ရေကန်၊ ဦးပေါင်းဘုရား၊ ပေါ်တော်မူဘုရား၊ မိကျောင်းဂူ ဘုရား၊ ရှစ်ဆူတန်း ကျောက်စာရုံ စသည့် ရှေးဟောင်း အဆောက်အအုံများကိုလည်း လေ့လာနိုင်ပါသည်။

သက်စိုးတောင်ပေါ်မှ ရရှိခဲ့သော ကျောက်များဖြင့် တည်ဆောက်ထားသော သာသနိက အဆောက်အအုံများ၊ ကျောက်စေတီ၊ ရှစ်ဆူတန်း၊ ကျောက်စာရုံရှိရာတောင်သည် ယခင်က ပုဂံတွင်ကျောက်နှင့် ဆောက်ထားသော အဆောက်အအုံများအကြောင်း ရေးသားသည့် စာများတွင် ပါဝင်ခြင်း မရှိသေးပါ။ ပညာရှင်များမှ အသိအမှတ်ပြုထားသော ကျောက်နှင့် တည်ဆောက်ထားသော အဆောက်အအုံများမှာ-

- (၁) မြကန်စာကြည့်တိုက် ရှေးအခေါ်စက္ကူတိုက် (ယခုမရှိတော့/ ၁၉၅၇ မှာ အစိုးရ လမ်းဌာနမှ ညောင်ဦး-ကျောက်ပန်းတောင်း ကားလမ်းအတွက် ဖျက်ယူ)
- (၂) ရွှေစည်းခုံဘုရား (၁၉၇၅ မြေလျင်မှာ အင်္ဂတေများ ကွာကျချိန် ကျောက်အုတ်များ ပေါ်လာ၍ ကျောက်အအုံလို့ အတည်ပြုနိုင်သည်)
- (၃) ကျောက်ဂူဥမင်
- (၄) နန်းဘုရား
- (၅) အနောက်ဖွားစောရွာ၊ ဓမ္မရာဇကစေတီကြီး အနောက်ဘက်ဗူးဝဘုရား (ခေါ်) ကျောက်အဆောက်အအုံငယ် (ယနေ့အချိန် အမြင့်ငါးပေခန့်သာကျန်ရှိ)။^၁

ကျောက်ရေကန်

ကျောက်ရေကန် (သို့မဟုတ်) နတ်ရေကန်သည် အပေါ်ဘက်အရှည် ပေ(၅၀) ပတ်လည်ခန့် ရှိပြီး ရေကန်အနက် ပေ(၃၀)ခန့်ရှိသည်။ ထိုရေကန်ကို ၂၀၀၈ ခုနှစ်တွင် တုရင်တောင်ကျောင်း ဆရာတော် ဦးနန္ဒဝံသ ဦးဆောင်ပြီး စတင်ဖော်ထုတ်ခဲ့ကြပါသည်။ စတင်ဆည်ယူစဉ်က ထိုကန်ထဲတွင် မြေကြီးများ သုံးပေ၊ လေးပေလောက် ဖုံးနေကြောင်း ဆရာတော်နှင့် ဒကာလူငယ်များ၊ ညောင်ဦး မြို့မှ လုပ်အားပေးသူများဖြင့် ဆည်ယူခဲ့ကြသည်ဟု သိရှိရပါသည်။

^၁ အောင်ကြိုင်၊ မင်းဘူး၊ ၁၉၈၅၊ ပထမအကြိမ်၊

တောင်ခြေအုတ်ရေကန်မှ မိနစ်နှစ်ဆယ်လောက်လျှောက်လျှင် သစ်ပင်အုပ်လေးကြားမှ နတ်စင်လေးတစ်ခုတွေ့ရပါမည်။ ထိုနတ်စင်အလွန်တွင် ကျောက်ရေကန်(သို့) နတ်ရေကန်ကို မြင်တွေ့ရပါမည်။ ထိုရေကန်သုံးဘက်သည် သဘာဝကျောက်သားများဖြစ်ပြီး နတ်စင်ရှိသော ဘက် အမြင့်တစ်ဝက်တွင် လူလုပ်ကျောက်အုပ်များဖြင့် နံရံပြုလုပ်ထားပါသည်။ ကန်ထဲသို့ ဆင်းရန် ထွင်းထုထားသော ကျောက်သားလှေကားထစ်၊ အနောက်ဖက်ကျောက်သားနံရံတွင် ဝင်္ကံဘာ၊ မြောက်ဖက်တွင် နဂါး၊ တောင်ဖက်တွင် ဟင်္သာဟု ယူဆနိုင်သော ကျောက်ထွင်းလက်ရာ များကို မူလအတိုင်း တွေ့ရှိရပါသည်။

ထိုကန်ကြီး၏ ထူးခြားချက်သည် အောက်ခြေတွင်လည်း ကျောက်သားဖြစ်ပြီး သဲ လုံးဝမရှိပေ။ ကန်ကြီး၏ အလယ်ဗဟိုတွင် တွင်းသေးသေးလေး တစ်ခု ထားရှိပြီး ရေမှတ်တိုင်းသော တိုင်စိုက်ရာ နေရာ၊ တွင်းနှုတ်ခမ်းတွင် အဝကျယ်အပေါက်ရှိကား ထိုမှတစ်ဆင့် အောက်ခြေ ရောက်သည်အထိ ပြန်သဏ္ဍာန် ဖြတ်သန်းသွားသော ကျောက်သား အက်ကြောင်းရှည်ကို ရေဝင်ပေါက်နှင့်ရေဝင်လမ်းကြောင်းဟု မှတ်ယူရပါသည်။

ပုဂံခေတ်တွင် ရွှေစည်းခုံဘုရားကဲ့သို့ ဘုရားတည်ရာတွင် ထိုတောင်ပေါ်မှ ကျောက်သားများကို အသုံးပြုခဲ့ကြောင်း၊ အနော်ရထာမင်းသာမက ကျန်စစ်သားမင်းကပါ အသုံးပြုခဲ့သည်ဆိုသည့် မှတ်တမ်းများကို ဦးကုလား၏ မဟာရာဇဝင်စာအုပ်များတွင် ရေးသား ဖော်ပြထားကြောင်း သိရှိရပါသည်။

၂၀၁၈ ခုနှစ် ဧပြီလ ၂၇ ရက်နေ့မှ မေလ ၂၂ ရက်နေ့အထိ IRAW@Bagan ဆိုသည့် ကနေဒါ-မြန်မာသုတေသနအဖွဲ့နှင့် ရှေးဟောင်းသုတေသနဌာနတို့ ပူးပေါင်းပြီး ကျောက်ရေကန်ကို လေ့လာခဲ့ကြပါသည်။ ထိုလေ့လာချက်အရ ဝင်္ကံပါပုံသည် ရေနှင့် သက်ဆိုင်သော ဝင်္ကံပါပုံ ဖြစ်ပါသည်။ အထဲတွင် ရေလှိုင်းပုံသင်္ကေတတွေ ထုလုပ်ထားတာဖြစ်သည်ဟု ဆိုပါသည်။ ထိုအဖွဲ့သည် “ကန်၏ အနေအထား၊ ရေထွက်ပေါက်ရှိသည်ဟု ယူဆရသည့် နံရံအခြေအနေ တွေကြောင့် သက်စိုးတောင်ပေါ်မှ ရေကို ကျောက်ရေကန်မှာ စုပြီး မြကန်ထဲသို့ လွှတ်ပေးတာ ဖြစ်နိုင်သည်”ဟု သုံးသပ်ထားပါသည်။

မြကန်အတွက် တည်ဆောက်ထားသော ရေစစ်ကန်ဆိုသည်ထက် သက်စိုးတောင်ပေါ်မှာ ရှိသော သာသနိကအဆောက်အအုံများအတွက် မိုးရေကန်များလားဟုလည်း ယူဆထားကြပါ သည်။ ကျောက်ရေကန်ကို မည်သည့်ရည်ရွယ်ချက်ဖြင့် တည်ခဲ့သည်ဖြစ်စေ ပုဂံခေတ်လက်ရာ ဟု သတ်မှတ်နိုင်သော ရှေးဟောင်းအမွေအနှစ်ဖြစ်ပါသည်။

အထက်ပါကျောက်အဆောက်အအုံများစာရင်းကို မင်းဘူးအောင်ကြိုင်၏ ပုဂံခေတ် ဗိသုကာလက်ရာများမှ သိရှိရပါသည်။

ပုဂံဒေသ၏ရေအသုံးချမှု

ပုဂံဒေသသည် မြန်မာနိုင်ငံအလယ်ပိုင်း အပူပိုင်းဇုန်တွင် ပါဝင်၍ မိုးတွင်းကာလ၌ သဘာဝ မြေပြင်အနေအထားနှင့် ချောင်းများကို အသုံးချလျက် လုပ်ကန်အဆင့်ဆင့်၊ မြောင်းအသွယ်သွယ် ဖြင့် ရေသွယ်ယူခဲ့ကြပါသည်။

“ခပ်သိမ်းသော သတ္တဝါအပေါင်းတို့၌ မေတ္တာကရုဏာ ကြီးမားတော်မူသော ဗုဒ္ဓ ဘုရားသခင်ထံမှ ဗျာဒိတ်တော်ရတော်မူသော အရှင်မင်းတရားသည် သတ္တဝါအပေါင်းတို့ ငတ်မွတ်ခြင်းကင်း၍ ချမ်းသာကြွယ်ဝပေါများခြင်း အကျိုးငှာ ရေမရှိသော လယ်မြေ၊ ထွန်ယက်စိုက်ပျိုးခြင်း မရှိသော အရပ်တိုင်း၌ အတို့သခင် အရှင်မင်းတရားသည် ရေကို မြဲမြံစွာ ဆည်စေ၏။ ရေကန်ကို တူးစေ၏။ စိုက်ပျိုးရန် လယ်မြေကို ဖြစ်စေ၏” ဟု ပုဂံ တုရင်တောင်ခြေ မြကန်နှင့် အလံပုဂံကန်တို့တွင် တွေ့ရသော ကျန်စစ်မင်းကြီး၏ ကျောက်စာများအရ သာသနာ သက္ကရာဇ် ၁၆၃၀ခု၊ အေဒီ ၁၀၈၆ ခန့်တွင် ရေလှောင်တံမံများ တည်ဆောက်ခဲ့ကြောင်း သိရှိရပါသည်။

ရေအသုံးချမှုဆိုင်ရာ အထောက်အထားများ

စိုက်ပျိုးရေးအတွက် ဆည်၊ တာတံမံများ ဆောက်လုပ်သည်ထက် နေ့စဉ်သောက်သုံးရေ အတွက် တစ်နှစ်ပတ်လုံး သိုလှောင်ထိန်းသိမ်းထားနိုင်ရန် ရေကန်များကို တူးဖော် တည်ဆောက်ခဲ့ကြဟန် ရှိပါသည်။^၁ ဧရာဝတီမြစ်နှင့် ဝေးကွာသော ကျေးရွာများသည် နေ့စဉ်သောက်သုံးရေအတွက် သိုလှောင်ထိန်းသိမ်းနိုင်မည့် ရေကန်များ တည်ဆောက်ရန် လိုအပ်မည်ဖြစ်သည်။ ပုဂံဒေသရှိ များပြားလှသော ဗုဒ္ဓစာပေသင်ကြားရာ ကျောင်းတိုက်ကြီးများ အတွက် သောက်ရေ၊ သုံးရေ ရရှိနိုင်ရန်လည်း လိုအပ်မည် ဖြစ်သည်။ သောက်သုံးရေအတွက် ကျေးရွာအနီးတွင် ရေကန်များ တည်ဆောက်သည့် ဓလေ့ကို အညာဒေသအချို့တွင် ယနေ့တိုင် တွေ့မြင်နိုင်ပါသည်။

တုရင်တောင်ခြေရှိ မြကန်၊ အလံပုဂံကန်၊ ညောင်လက်ဖက်ကန်၊ ကန်သစ်ကန်၊ အလယ်ကန်တို့သည် တံမံတုတ်ထားသော ရေလှောင်ကန်များ ဖြစ်ပါသည်။ ကန်ပေါင်ရိုးကို မြေသားဖြင့် သာမက အုတ်၊ ကျောက်တို့ဖြင့် အခိုင်အခံကာရံထားသော အထောက်အထား များကို တွေ့ရှိရသည်။ လေးကိုင်း သဏ္ဍာန်တည်ဆောက်ထားပြီး ရေလျှံပေါက်(ရေပိုလွှဲ) စနစ်ပါရှိသည်။^၂

ရေစစ်ကန်ပါသော ရေလှောင်ကန်များတွင် မိုးသည်းထန်စဉ်ကာလအတွင်း စီးဝင်လာသော ရေအတွင်းအနည်အနှစ်နှင့် အမှိုက်သရိုက်များ ပါဝင်လာနိုင်သဖြင့် အနည်းငယ် အနည်ထိုင်

^၁ ကုလား၊ ဦး၊ ၂၀၀၆၊ ၉၆၊ ၁၆၅။
^၂ နီတွက်၊ ပါမောက္ခ၊ ၂၀၁၂။

ကျန်ရစ်စေရန် ဖြစ်သည်။ ရေစစ်ကန်အတွင်း အနည်ထိုင်ပြီးသောအခါ ပင်မရေလှောင်ကန် အတွင်းသို့ သီးသန့်ပြုလုပ်ထားသည့် ရေပြွန်ပေါက်မှတစ်ဆင့် ပင်မရေလှောင်ကန်အတွင်း သတ်မှတ်ပမာဏ ထက်ကျော်လွန်သော ရေကို ရေလျှံပေါက် သို့မဟုတ် ရေပိုလွှဲမှတစ်ဆင့် အခြားရေကန် သို့မဟုတ် ချောင်းအတွင်းသို့ ထုတ်လွှတ်ပေးခြင်းဖြင့် ရေပိုများ အလဟဿ မဖြစ်နိုင်တော့ပေ။ ရေစစ်ကန်ပါသော ရေကန်များမှာ လေးမျက်နှာကန် (မင်းနန်သူလေးထောင့်ကန်)၊ သူဌေးကန်၊ ဖွားစောကန် (အနောက်ဖွားစော)၊ ဇေယျသွပ်ကန် (အရှေ့ဖွားစော)၊ ဆည်ကန် (ပျောက်ဆိပ်ပင်)နှင့် ကန်ဇွန်အိုကန် (အရှေ့ဖွားစောတောင်ဘက်ရှိ ဘုန်းကြီးကျောင်းအတွင်း) တို့ ဖြစ်ပါသည်။

အုတ်ရေကန်ကို ဘုရားကျောင်းတိုက်များ၏ ပရိဝုဏ်အတွင်း၌ တွေ့ရလေ့ရှိသည်။ သံဃာတော်များအတွက် သောက်သုံးရေ၊ ချိုးရေတို့အတွက် ဖြစ်သည်။ ကန်အတွင်း အဆင်းအတက် လွယ်ကူစေရန် အုတ်လှေကားတန်း အဆင့်ဆင့်ဖြင့် တည်ဆောက်ပြီး အပေါ်ကန်အဝကျယ်၍ ကြမ်းပြင်မှာ တဖြည်းဖြည်းကျဉ်းသွားသည့် ဇလားပုံသဏ္ဍာန်ရှိသည်။ လက်ရှိအနေဖြင့် အုတ်ရေတွင်းများကို ဆင်ဖြူရှင်ကျောင်းတိုက်၊ ဆုတောင်းပြည့် ကျောင်းတိုက်အနီး၊ လေးမျက်နှာကျောင်းတိုက်အနီး၊ ပုဂံမြို့ရိုး(ကျုံးအနီး)၊ ထီးလိုမင်းလိုဘုရား တောင်ဘက်၊ မြင်းကပါရွာ အရှေ့တောင်ဘက်တို့တွင် တွေ့နိုင်ပါသည်။

ပုဂံမြို့ရိုးသည် မညီမညာသော စတုဂံပုံရှိပြီး အရှေ့အနောက် အကွာအဝေးသည် တောင်မြောက် အကွာအဝေးထက် ပိုရှည်သည်။ မူလကမြို့ရိုးပတ်လည်တွင် ရေကျုံးရှိခဲ့ပြီး ယခုအခါ ရေကျုံးမှာ ခန်းခြောက်နေပါသည်။ မူလရေကျုံးသည် ရေကိုကြာရှည်စွာ ထိန်းသိမ်း နိုင်ရန်နှင့် ကျုံးဘေးမြေသား တိုက်စားမှုမရှိစေရန် အုတ်ဖြင့်ကာရံထားသည်။ ကျုံးအတွင်းသို့ ရေသွင်းမှုအနေဖြင့် ဧရာဝတီမြစ်မှ ရေကို တူးမြောင်းဖောက်လုပ် သွင်းခဲ့ကြောင်း တုရင်တောင်ခြေမှ အခြေပြုသည့် ရေလာရိုးများမှတစ်ဆင့် အဆင့်ဆင့်စီးဝင်လာသည့် လမ်းကြောင်းများမှလည်း ရေဝင်ရောက်နိုင်သည်ဟု အချို့သုတေသီတို့က ယူဆကြပါသည်။

ပုဂံဒေသ ရေအရင်းအမြစ်အတွက် အဓိကကျသော ချောင်းများဖြစ်သည့် ရွှေချောင်း (ဝက်ကြီးအင်းချောင်း)၊ မြင်းကပါချောင်း၊ ရေအိုးခင်ချောင်း (ကြောင်နံ့သာချောင်း)တို့သည် တုရင်တောင်မှ အစပြုကြပြီး ဧရာဝတီမြစ်အတွင်းသို့ စီးဝင်ကြသည်။ ဧရာဝတီမြစ်အတွင်း စီးဝင်သောနေရာတွင် ရေလှောင်အင်းများကို တွေ့ရှိရသည်။ ပုဂံဒေသရေလှောင်အင်းများ အဖြစ် ဝက်ကြီးအင်း၊ မြင်းကပါအင်း၊ လောကနန္ဒာအင်းတို့ကို တွေ့ရသည်။

ရေအရင်းအမြစ်

ပုဂံလွင်ပြင်နယ်နိမိတ်ကို အရှေ့ဘက်တွင် အင်တိုင်းချောင်း၊ မြောက်ဘက်နှင့် အနောက်ဘက် တို့တွင် ဧရာဝတီမြစ်၊ တောင်ဘက်တွင် နလဲတောချောင်း နှင့် အရှေ့တောင်ဘက်တွင် တုရင်တောင်တန်းတို့က သဘာဝနယ်နိမိတ်သဖွယ် ကာရံတည်ရှိနေသည်။^၁ ယင်းတို့အကြား တွင် ဝက်ကြီးအင်း ချောင်း၊ မြင်းကပါချောင်း၊ ရေအိုးစင်ချောင်းနှင့် ယင်းတို့၏ ချောင်းလက်တက်များသည် တုရင်တောင် ပတ်ဝန်းကျင် ဆင်ခြေလျှောမှ ဧရာဝတီမြစ်ဘက် အနိမ့်ပိုင်းအထိ စီးဆင်းလျက်ရှိသည်။ အဆိုပါ ချောင်း၊ မြောင်းနှင့် လက်တက်တို့သည် ပုဂံဒေသ၏ ရေအရင်းအမြစ်များပင် ဖြစ်သည်။

တုရင်တောင်တန်းသည် ပုဂံဒေသရေ အရင်းအမြစ်အတွက် အဓိကကျသော အခန်းကဏ္ဍမှ ပါဝင်သည်။ တုရင်တောင်၏ အရှေ့တောင်ဘက် ဇီးအိုကျေးရွာ ဒေသတစ်ဝိုက်ရှိ ကုန်းမြေမြင့် များမှ စတင်စီးဆင်းခဲ့သည့် ချောင်းရေများသည် တုရင်တောင်တစ်ဆင့် ဧရာဝတီမြစ်ထဲသို့ စီးဝင်သည်။ ပုဂံမြို့ဟောင်းတောင်ဘက်ရှိ နလဲတောချောင်း၊ ရေအိုးစင်ချောင်းနှင့် အရှေ့ဘက်ရှိ ဝက်ကြီးချောင်းတို့သည် ၎င်းဒေသမှ အစပြုခဲ့ကြသည်။ တုရင်တောင်၏ အနောက်ဘက်တွင် နလဲတောချောင်းရေနှင့် တုရင်တောင်၏ တောင်ကျရေတို့ကို တမံတုတ်ပြီး တည်ဆောက် ထားသော မြကန်ရှိပါသည်။ မြကန်ရေလှောင်ကန်သည် ပုဂံဒေသ ရေအရင်းအမြစ်အတွက် များစွာ အထောက်အကူပြုလိမ့်မည်ဟု ပညာရှင်များက ယူဆကြသည်။ တုရင်တောင်၏ တောင်ဘက်ရှိ သက်စိုးတောင်ပေါ်ရှိ ကျောက်ရေကန်မှ ရေပြည့်လျှံလာပါက အပြင်ကန်၏ မြောက်ဘက်ခြမ်းတွင်ရှိသော နဂါးရုံ ဗုဒ္ဓဆင်းတုတော်၏ ဦးခေါင်းထက်မှတစ်ဆင့် မြကန် ရေလှောင်ကန်ထဲသို့ ဝင်ရောက်နိုင်ကြောင်းနှင့် သန့်စင်သောရေကို မြကန်မှတစ်ဆင့် ပုဂံဒေသအား ရေပေးဝေခြင်းဖြင့် ရေဖြန့်ဝေစနစ်တစ်ခု ဖြစ်နိုင်ကြောင်း သုံးသပ်ကြပါသည်။

ရေစီးဆင်းပုံအဆင့်ဆင့်

ပုဂံဒေသ၏ ကောင်းကင်ဓါတ်ပုံကို အခြေခံကာ ပုဂံဒေသတစ်ဝိုက်ရှိ ရေဆင်းများနှင့် စီးဆင်းမှု ဦးတည်ချက်ကို လေ့လာခဲ့ပါသည်။ တွေ့ရှိမှုများကို အခြေခံကာ ရေလမ်းကြောင်းများ၊ ရေလာရိုးများ တည်ရှိနေမှုကို ခန့်မှန်းသိရှိနိုင်သည်။^၂ အလံပုဂံကန်အတွင်းသို့ မြကန် ရေလှောင်ကန်၏ အောက်ဘက်မှ စတင်ဖြစ်ပေါ်ခဲ့သည့် ရေလာရိုးအတိုင်း ရေဝင်ရောက် နိုင်သည့်အပြင် တုရင်တောင် အရှေ့ဘက်ရှိ ကန်သစ်ကန်၏ မြောက်ဘက်ရေလာရိုးအတိုင်း လည်း ရေဝင်ရောက်နိုင်သည်။

^၁ လှသမိန်၊ ၁၉၉၉၊ ၂၉
^၂ မြန်မာ့အလင်းသတင်းစာ၊ ၂၀၂၁၊ ၂၀

အလံပုဂံကန်၏ အရှေ့တောင်ဘက်ရှိ ရေလာရိုးနေရာအား စမ်းသပ်တူးဖော်လေ့လာမှု အရ မြောက်ပေခန့်အနက်တွင် သဲကြမ်းအလွှာများကို တွေ့ရှိရပြီး ရေစိမ့်ထွက်နိုင်သော အနေအထားကို တွေ့ရှိရသည်။ တုရင်တောင်နှင့် မလှမ်းမကမ်းတွင်ရှိပြီး ရေအောင်း အလွှာတိမ်သောနေရာကို ရွေးချယ်ကာ ရေကန်တည်ဆောက်နိုင်မှု အတတ်မှာ ထူးခြားသည်။ အလံပုဂံကန်ထဲသို့ ဝင်ရောက်သော ရေလာရိုးမှတစ်ဆင့် လမ်းလွဲကာ မြောက်ဘက်ရှိ သန့်စင်ကြယ်ကျေးရွာတောင်ဘက် တောင်ကျောင်း ကန်အတွင်းသို့လည်းကောင်း၊ တောင်ဘက်မှ တစ်ဆင့် ဇေယျသွပ်ကန်အတွင်းသို့ လည်းကောင်း ရေဝင်ရောက်နိုင်သည်။ အလံပုဂံကန် အနောက်ဘက်မှတစ်ဆင့် ဒေသအခေါ်ပိုက်ကိုက်ကုန်း နေရာတွင် လမ်းလွဲကာ အနောက်ဘက်ရှိ အလယ်ကန်အတွင်းသို့ လည်းကောင်း၊ အနောက်မြောက်ဘက်ရှိ မင်းနန်သူလေးထောင့်ကန် အတွင်းသို့ လည်းကောင်း ရေဝင်ရောက်နိုင်သည်။ ချောင်းများ၊ ကန်များအတွင်းသို့ သွယ်ယူ သော မြောင်းရိုးများ၏ ပုံသဏ္ဍာန်မှာ ယနေ့အခါတွင် လှည်းလမ်း၊ လူသွားလမ်းများအဖြစ် ရှိနေတတ်သည်။

မင်းနန်သူ လေးထောင့်ကန်အတွင်းသို့ စီးဝင်လာသောရေများသည် ရေစစ်ကန်မှ တစ်ဆင့် ပင်မအုတ်ရေကန်အတွင်းသို့ ဝင်ရောက်သည်။ သိုလှောင်ပမာဏကျော်လွန်သော ရေများသည် ပင်မကန်၏ အနောက်တောင်ထောင့်ရှိ ရေလျှံပေါက်မှတစ်ဆင့် ရိုး/မြောင်း အတိုင်း ညောင်လက်ဖက်ကန် အတွင်းသို့ ဝင်ရောက်နိုင်သည်။ ရေလာရိုးအားပိတ်ကာ ယာမြေအတွင်း ရေသွယ်ယူမှုများကြောင့်လည်း အချို့နေရာများတွင် ရေလမ်းပြောင်းလဲမှု ရှိသည်။ လွန်ခဲ့သောနှစ်ပေါင်း ၃၀ခန့်က ညောင်လက်ဖက်ကန်၏ အနောက်မြောက်ထောင့် နေရာ တာပေါင်ကျိုးပေါက်ခဲ့ပြီး ပြန်လည်ပြုပြင်ခဲ့သည်ဟု ဆိုသည်။ ၎င်းကန်ထဲတွင် ယခင်က စပါးစိုက်ပျိုးရန် စီမံကိန်းတစ်ခု ဆောင်ရွက်ခဲ့ဖူးသည်ဟုလည်း ဒေသခံများ ပြောစကားအရ သိရပါသည်။ ညောင်လက်ဖက်ကန်၏ အနောက်တောင်ဘက်တွင် ရေလျှံပေါက်တစ်ခုရှိသည်။ ၎င်းရေလျှံပေါက်မှတစ်ဆင့် ရေလာရိုး၊ လှည်းလမ်းအတိုင်း စီးဆင်းကာ ရွာဟောင်းကြီးဘုရား အနီးရှိ ရွှေထီးကန်အတွင်းသို့ ဝင်ရောက်နိုင်သည်။ ၎င်းကန်အနီးတွင် လွန်ခဲ့သောနှစ်ပေါင်း ၃၀ ကျော်ခန့်က ပုဂံ-ညောင်ဦး နှစ်လမ်းသွား ကတ္တရာလမ်း တည်ဆောက်ခဲ့ရာ ၎င်းကန်မှတစ်ဆင့် ပုဂံကျုံးထဲသို့ စီးဆင်းနိုင်သည့် ရေလမ်း အထောက်အထားများစွာ ပျက်စီးခဲ့ပြီး အထောက်အထား အနည်းငယ်သာ ကျန်ရှိသည်။

မြကန်ရေလှောင်ကန်တည်ရှိသည့် ကွန်တိုအမြင့် (၁၅၀-၁၄၀) မီတာရှိပြီး ၎င်းမှတစ်ဆင့် လျှံကျသောရေပိုသည် အလံပုဂံ(၁၃၀-၁၂၀)မီတာသို့ လည်းကောင်း၊ ထိုမှတစ်ဆင့် အလယ်ကန် (၁၀၀)မီတာ၊ ညောင်လက်ဖက်ကန်(၇၅) မီတာ၊ ထိုမှတစ်ဆင့် ပုဂံမြို့ရိုး

ပတ်လည်ရှိ ကျုံး (၆၆) မိတာထဲသို့ အဆင့်ဆင့်ဝင်ရောက်နိုင်သည်။ ကျုံးရေနှင့် သောက်သုံးရေအတွက် လိုအပ်ချက်ကို တာတမံ၊ ရေလှောင်ကန်များမှတစ်ဆင့် သွင်းယူသော အထောက်အထားဖြစ်ပါသည်။

ပုဂံခေတ်ဦးမင်းတို့၏ ပုဂံလွင်ပြင်နယ်နိမိတ်အတွင်း ရေအသုံးချစီမံခန့်ခွဲမှု အတတ်ပညာ အတွေ့အကြုံဖြင့် အနော်ရထာမင်းသည် ကျောက်ဆည်လယ်တွင်း၊ ကိုးခရိုင်အတွင်း ဆည်မြောင်း၊ ရေကန်၊ တာတမံများ စီရင်ခဲ့နိုင်ခြင်းဖြစ်ကြောင်း ယူဆနိုင်ပါသည်။^၁ ရှေးဟောင်းသမိုင်းနှင့် ရှေးဟောင်းသုတေသနတို့သည် ရှေးခေတ်လူနေမှုဘဝ အလုံးစုံကို သဲလွန်စ ဖော်ထုတ်သော လုပ်ငန်းသည် မြန်မာနှင့်မြန်မာ့သမိုင်း၏ ဂုဏ်ရောင်ကို တောက်ပြောင် စေပါသည်။ ခေတ်သစ်လူနေမှုစနစ် ဖွံ့ဖြိုးတိုးတက်လာချိန်တွင် ရှေးခေတ်လူနေမှုစနစ် အထောက်အထားများကို မပျောက်ပျက်ရအောင် ထိန်းသိမ်းရန်ခဲယဉ်းလာသည်မှာ ဓမ္မတာဟု ဆိုရမည်။

ခြုံငုံသုံးသပ်ချက်

သက်စိုးတောင်ကျောက်ရေကန်သည် ရေအသုံးချမှုအတွက် သီးသန့်တည်ခဲ့သော ရေကန် အဖြစ်သော်လည်းကောင်း၊ သာသနိက အဆောက်အအုံများ ဆောက်လုပ်ရန် အတွက် တူးယူရာမှ ဖြစ်ပေါ်လာသော ရေကန်အဖြစ်သော်လည်းကောင်း သတ်မှတ်ကြသော်လည်း သက်စိုးတောင်ပေါ်တွင် လူနေထိုင်ခဲ့သော အထောက်အထားနှင့် ယဉ်ကျေးမှုအဆင့်အတန်း မြင့်မားခဲ့သော လူမျိုးများ နေထိုင်ခဲ့သော အထောက်အထားများ တွေ့ရခြင်းဖြင့် ယင်း သက်စိုးတောင်ပေါ်တွင် ဉာဏ်ရည်မြင့်မားသော လူမျိုးများနေထိုင်ခဲ့သည့် အထောက်အထား များဟု ကောက်ချက်ချနိုင်ပါသည်။

နိဂုံး

မြန်မာတို့၏ ပုဂံဒေသတွင် ဘက်ပေါင်းစုံ ပေါင်းစည်းထားသော လူမှုဂေဟ သမိုင်းကြောင်း ဖြစ်သော လူနေထိုင်မှုပုံစံ၊ စိုက်ပျိုးရေး၊ ဓလေ့စရိုက်များနှင့် ရေအရင်းအမြစ် အသုံးချမှု များအား ပြန်လည်ဖော်ထုတ်ရန် အဓိကတင်ပြထားပါသည်။ ၎င်းကျောက်ရေကန်အား နတ်ရေကန်ဟု ခေါ်ဆိုမှုအရ ၎င်းရေကန်ကြီးသည် ကနဦးရေစုဆောင်း သိုလှောင်ပြီးနောက် ပုဂံလွင်ပြင်တစ်လျှောက်ရှိ ရေလှောင်ကန်များ၊ တူးမြောင်းများနှင့် ဆက်သွယ်၍ ရေပြန်လည် ဖြန့်ဝေရုံသာမကဘဲ ထွင်းထုထားသော ရုပ်လုံးကြွများသည်လည်း ကန်ရေအား “ဒုမင်္ဂီလ” သန့်ရှင်းစင်ကြယ်မှုသဘောဆောင်၍ ဖြန့်ဝေခြင်းဖြင့် ပုဂံမြို့အနီးတဝိုက် ၎င်းကန်ရေရှိရာ နေရာဒေသများ သာယာစည်ပင်ဖွံ့ဖြိုးအောင် ပြုလုပ်စီမံထားသည်ဟု မှတ်ယူရပါသည်။

^၁ မြန်မာ့အလင်းသတင်းစာ၊ ၂၀၂၁၊ ၂၀

ကျေးဇူးတင်လွှာ

သမဝါယမနှင့်စီမံခန့်ခွဲမှုပညာတက္ကသိုလ် (စစ်ကိုင်း)၊ တက္ကသိုလ် ၁၀-နှစ်ပြည့် အထိမ်းအမှတ် စာတမ်းဖတ်ပွဲတွင် “သက်စိုးတောင်ပေါ်မှ ရှေးဟောင်း ကျောက်ရေကန်နှင့် ပုဂံဒေသ ရေအသုံးချမှု လေ့လာချက်” စာတမ်းဖတ်ကြားနိုင်ရန် ခွင့်ပြုပေးပါသော ပါမောက္ခချုပ်၊ ဒေါက်တာမိုးမိုးရီအား အထူးကျေးဇူးတင်ရှိပါသည်။ ဒုတိယပါမောက္ခချုပ်(စီမံ) ဦးဝင်းနိုင်ထွန်း၊ သမဝါယမနှင့်စီမံခန့်ခွဲမှုပညာတက္ကသိုလ် (စစ်ကိုင်း)အား ကျေးဇူးတင်ရှိပါ သည်။ ၁၉၉၆ မှ ၂၀၀၃ ခုနှစ်အထိ သမိုင်းဘာသာရပ်အား သင်ကြားပြသပေးခဲ့သော ဆရာ၊ဆရာမများ အားလုံးကိုလည်းကောင်း၊ အကောင်းဆုံး စာတမ်းတစ်စောင် ဖြစ်အောင် သဘာပတိအဖြစ် ဆောင်ရွက်ပေးပြီး ဖတ်ကြားစိစစ် ဖြည့်စွက်ပေးပါသော ဒေါ်အေးစိုးဝင်း၊ တွဲဖက်ပါမောက္ခ၊ ဌာနမှူး၊ မြန်မာစာဌာန၊ သမဝါယမနှင့်စီမံခန့်ခွဲမှုပညာတက္ကသိုလ်(စစ်ကိုင်း) နှင့် လိုအပ်ချက်များ ကူညီဆောင်ရွက်ပေးပါသော ဒေါ်နီလာမြင့် (ကျောင်းအုပ်ကြီး) နှင့် ယွန်းပညာကောလိပ်(ပုဂံ)မှ ညီအစ်ကို၊ မောင်နှမများအား ကျေးဇူးတင်ရှိပါ သည်။

ကျမ်းကိုးစာရင်း

- သန်းထွန်း၊ ဒေါက်တာ၊ ၂၀၀၆၊ တစ်နေ့တစ်လံပုဂံဘယ်ပြေးမလဲ (ပထမအကြိမ်)၊ သီရိဆွေ ပုံနှိပ်တိုက်၊ ရန်ကုန်မြို့။
- ဗိုကော၊ ဦး၊ ၂၀၁၅၊ ပုဂံသုတေသနလမ်းညွှန် (ဒုတိယအကြိမ်)၊ မုံရွေးပုံနှိပ်တိုက်၊ ရန်ကုန်မြို့။
- အောင်ကြိုင်၊ မင်းဘူး၊ ၁၉၈၅၊ ပုဂံခေတ် ဗိသုကာလက်ရာများ (ပထမအကြိမ်)၊ စာပေဗိမာန် ပုံနှိပ်တိုက်၊ ရန်ကုန်မြို့။
- ကျော်စောအောင်(သမိုင်းသုသေတန)၊ ၂၀၀၄၊ ပုဂံမြတ်စွယ်လေးဆူသမိုင်း၊ ယုံကြည်ချက်စာပေ၊ ရန်ကုန်မြို့။
- ကုလား၊ ဦး၊ ၂၀၀၆၊ မဟာရာဇဝင်ကြီး(ပထမတွဲ)၊ ရာပြည့်စာအုပ်တိုက်၊ ရန်ကုန်မြို့။
- နီတွတ်၊ ပါမောက္ခ၊ ၁၄ ဇွန် ၂၀၁၂၊ တုရင်သက်ခိုင်၊ ရန်ကုန်မြို့။
- ဌေးဝေ၊ ၂၀၀၉၊ ပျူမြို့ပြယဉ်ကျေးမှုသမိုင်း၊ ထွန်းဖောင်ဒေးရှင်းဘဏ် စာပေကော်မတီ၊ ရန်ကုန်မြို့။
- လှသမိန်၊ ၁၉၉၉၊ ပုဂံမြင်ကွင်းကျယ်၊ ပတ္တမြားငမောက် စာအုပ်ထုတ်ဝေရေးတိုက်၊ ရန်ကုန်မြို့။
- ရှေးဟောင်းသုတေသနနှင့် အမျိုးသားပြတိုက်ဦးစီးဌာန၊ ၂၈ အောက်တိုဘာ ၂၀၂၁ ထုတ်ဝေခဲ့သော မြန်မာ့အလင်း သတင်းစာ ဆောင်းပါး။