Chapter 3
Research Methodology

3.1 Selection of Targeted Population and Sample

Population is approximately 24'665 in Kyauk Tan and Baw Kone Village Tract. Only cheroot farmer and casual labor of cheroot farms are focused on for this study. Two main reasons for choosing the research site and population are ; first, casual labor from these village tracts have now gradually temporarily migrate for paid labor poppy growing in some other area. Second, the research sites are the researcher's father's native village; furthermore the language is the researcher's mother tongue. Cross questionnaires were used in order to filter the consistency. All questionnaires were translated into Myanmar. Twenty enumerators were recruited and trained to interview in the ethnic language. Since the topic is quite politically sensitive in Myanmar, questionnaires were used in a form of socio-economic survey to determine the related dominance factors. The sample size was selected using Taro Yamane's Formula,

$$n = \frac{N}{1+N(e)^2} = \frac{24665}{1+24665(0.099)^2}$$

n=102 (Where n= sample population, N= Total Population, e= error term)

Firstly, 20households quota sampling was set for each of the five different research sites. In these research villages, each village has a wealth ranking according to their local criteria. There are three stages of wealth ranking; poor as one, middle as

two and better off or wealthy household as three. The local criteria were found as followed;

Table 3.1 Wealth Ranking Criteria applied by Village Peace and Development Council

Rank One=Poor	Rank 2=Middle	Rank 3=Better off or Wealthy
Bamboo house with thatched roofing or arable land of less than 3 acres. No perishable equipment or productive assets. Not regular income or female headed households.	Wooden house with zinc roofing, own between 3 -6 acre of land. Own productive assets and earn regular income. Able to send children to boarding school and has perishable equipment for entertainment, owns jewellery.	Brick or concrete house with zinc roofing, own more than 6 acres of arable land. Own productive assets. Earn regular income. Ability to employ more labor both casual and waged. High contribution on merit and other social activities in villages. Able to send children to boarding school and college. Able to lend money to others. And have own saving and jewellery.

Secondly, random sampling was applied in the form of selecting respondents' households within all three wealth categories. To get better point of view random interviews were conducted as well as questionnaires. In depth interviews with village

heads, monks, rural health representatives, and cheroot leave brokers, cheroot cigar producers, former drug users and drug dealers were conducted randomly. Based on secondary data from village peace and development councils the household interval and percentage of National Identification Holder were calculated.

Table 3.2 Population Data Updated as of 30th April 2010 from Village Peace and Development Council.

Village Tract	Village	Popula-tion	HH	Sample HH	HH interval	ID holder	%ID holder	Without ID
Kyauk Tan	Kyauk Tan	1500	380	21	18	1185	79	315
Baw Kone	Pone Chaung	658	132	21	6	427	65	231
Baw Kone	Yoke	376	65	20	3	148	39	228
Baw Kone	Limaw	631	108	20	5	328	52	303
Baw Kone	Nan Paw Sum	483	103	20	5	259	54	224
Total	5	3648	788	102		2347		1301

3.2 Data Processing Procedure and Analysis

After data were collected, all questionnaires were checked, code and variables were calculated in the simple excel sheets prior entry to (SPSS-17) database system. To eliminate data entry errors all data files were thoroughly checked for accuracy prior to transfer to SPSS. , Absence of information, as a result of errors, refusals and misunderstanding, etc were treated as missing data and coded as 999 in data base system. Significance level α= 0. 1 with confident interval of (1-α) =0.9 was set to draw conclusion for this study.

To reveal the three causes, collected data were described and analyzed by using both descriptive and inferential statistics. The demographic data of sample households were described by descriptive statistics such as frequency, percentage and mean, etc. Prior to this the following variables were calculated as described below.

Dependency Ratio One= (M+F<17+>60)/ (M+F17-60)

Dependency Ratio Two = (M+F<17+M+F>60)/Total number of income earners

Debt to asset ratio= total debt/ total asset

Net worth= Total Asset-Total Debt

Net return per Worker = Net Income/ No. of Worker

Net Return per Acre = Net Income/ Total land Acre

Net Return per Cheroot acre=Net return /Cheroot Acre

Net Return per Poppy Acre= Net Return / Poppy Acre

The Poverty Line is a measure of the percentage of the population living below the minimum income level, as defined by the World Bank (Martin Ravallian 2010). Though there is no official poverty line for Myanmar, the local poverty line

used for this research is Z< US$1 per day (which is commonly and widely accepted poverty line for underdeveloped countries). Physical well-being was assessed by using the following formula of Gini coefficient;

$$G = \frac{1}{n}\left(n + 1 - 2\left(\frac{\sum_{i=1}^{n}(n+1-i)y_i}{\sum_{i=1}^{n} y_i}\right)\right)$$

Where G=Gini Coeficient, n=sample household, y_i=Total consumption per capita

Moreover, Theil Index was used to represent different subgroups for poppy and non poppy growers.

$$T = \sum_{k=1}^{m} s_k T_k + \sum_{k=1}^{m} s_k \ln \frac{\overline{x}_k}{\overline{x}}.$$

Where T=Theil Index,S_k=Per capita consumption for group k

Finally, to see further detail of the poverty headcount, depth and intensity, FGT index was calculated as below;

Poverty Incidence= Per capita consumption per day in USD < 1USD

Depth of Poverty= Σ (Poverty Line-Per capita consumption per day)/ Incidence

Poverty Severity= Σ (Poverty Line-Per capita consumption per day)/^{2}/Incidence

More Severity of Poverty= Σ (Poverty Line-Per capita consumption per day)/^{3}/Incidence

The local market exchange rate use in this study is 1000 Myanmar kyats equivalent to US$ 1. (Price of 2009)

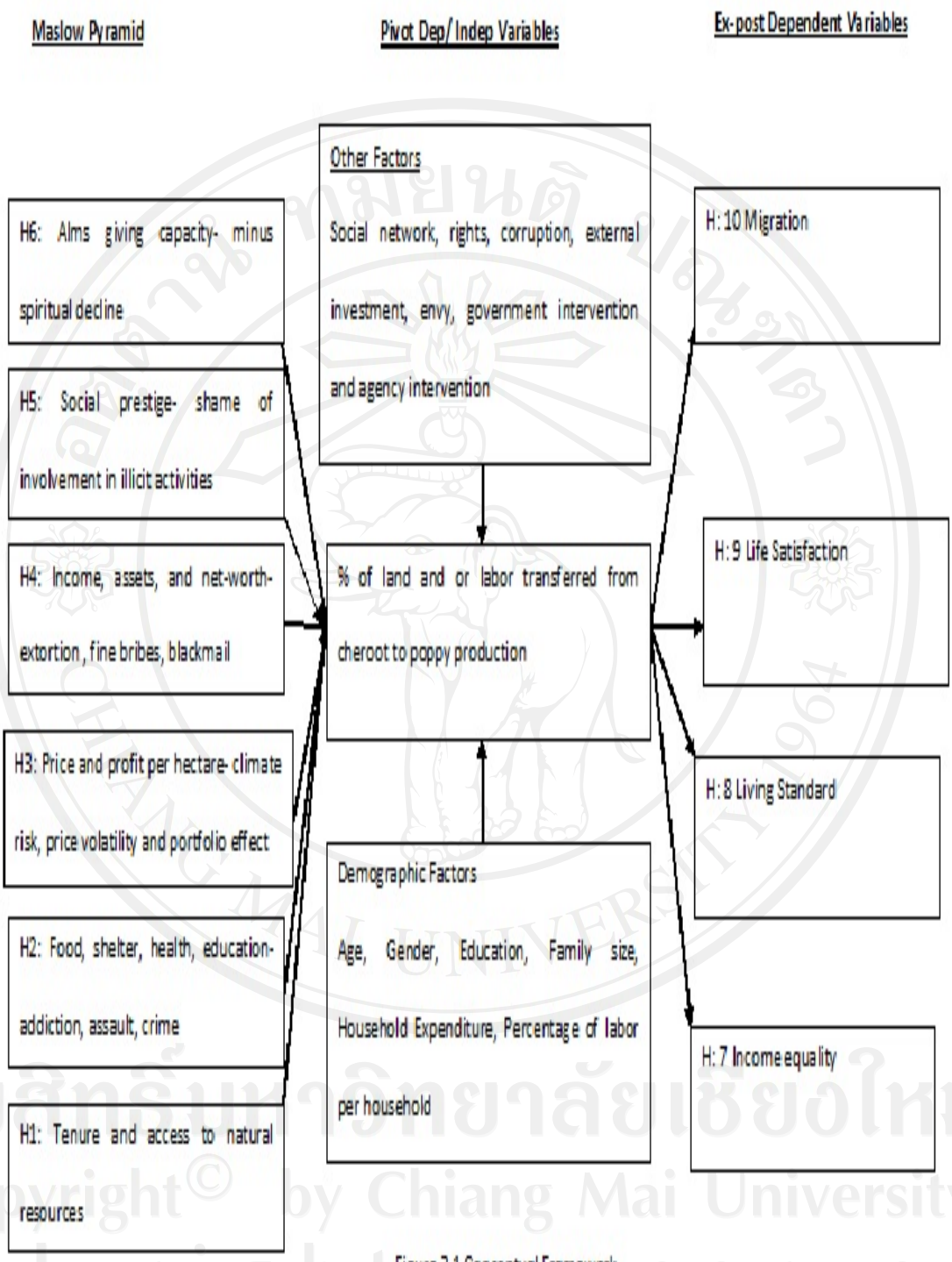

Figure 3.1 Conceptual Framework

3.3 Conceptual Framework and Hypotheses

The conceptual framework is divided into two parts the hypothesis one to six represents ex-ante of motivation to poppy production and the hypotheses seven to ten represents ex-post. Based on hierarchy of Maslow Theory of Pyramid, the ex-ante hypotheses were put in place. The ex-post are set to find the immediate cause and ex-ante to gain further detail into the underlying cause and root cause of the shift of land and or labor from cheroot to poppy farming.

The main research question, "What inspired cheroot farmers to shift land and or labor to poppies?" leads to significant sub-questions. The most important are (1) which of the economic factors is dominant? (Either wealth accumulation or lack of capability of physical needs.) (2)is it influenced by envy? (3) what is the equality of income in that specifics area looks like? To answer these questions the following hypotheses were set;

H1: Lack of access to *natural resources* (lack of access to arable land, lack land ownership) is positively correlated with the decision to transfer land and labor to poppy production.

H2: Low levels of welfare acquisition capacity, especially in terms of the basic needs spending on per capita consumption per adult equivalent are positively correlated with the decision to transfer land or labor into poppy production; but the fear of physical addiction, assault, or crime cancels out those expectations in many individuals.

H3: Price advantage, compatibility with transportation of poppy is positively correlated with motivation to shift land and or labor to poppy cultivation whilst, climate and law enforcement may cancel these out.

H4: The expectation of improving *economic standing* (income, asset to debt ratios, and net worth) is positively correlated with the decision to transfer labor into poppy production; while the fear of economic menaces (extortion, bribes, fines, arrest or blackmail) effectively cancels out those expectations.

H5: The expectation of improving *social standing* (prestige, self esteem and an envy-free mental state through higher levels of perishable and durable consumption) is positively correlated with the decision to transfer land and labor into poppy production.

H6: The fear of *spiritual decline* (acting contrary to Buddhist principles, spiritual growth and other self-actualization) is a major deterrent to switching to poppy production; while the use of substantially higher income to give alms, gifts to the temple, charity and other good works may offset that fear.

H7: As a whole, the move by several farmers into poppy production has improved the *equality of income.*

H8: As a whole, the move by several farmers into poppy production has improved tangible *living standards.*

H9: As a whole, the move by several farmers into poppy production has improved intangible *life satisfaction.*

H10: Given the lighter workload of poppy production compared to cheroot production, most of the poppy growing households are temporary immigrants.

To answer the research questions above and to test the hypotheses, bivariate correlation matrix and linear regression analysis was employed with the assumption that data confirm to both normality and linearity.

3.4 Correlation Analysis

Firstly, to see significant correlation among the independent variables, especially to find out whether there is multicolinearity exist or not. If the Pearson Correlation Coefficient R greater than 0.5 with probability less than 0.05, then multicolinearity exist. From that the most eligible variables were selected for the regression equation. To avoid multicolinearity, “enter” or “stepwise” method was used prior to the regression analysis.

3.5 Regression Analysis

The independent variable for each equation was limited to maximum of six to have better explanation for regression analysis. Four ground rules were set so as to reject the null hypothesis;

1. F statistic less than or 3.5 with the P value greater than or equal 0.1 was regarded as non significant. If it is found to be significant then further steps were used to check.
2. The adjusted R square explains the percentage of variance that can be predicted by the independent variables. The least independent variables in the equation show the better explanation as the equation is adjusted for the degree of freedom. The adjusted R square increases if and only if the newly entered variable is significant. This allows the researcher to judge acceptable F statistic for the equation.
3. Testing the null hypothesis r=0 for no correlation, student *t test* was employed. Any independent variables having probability value of t statistic 0.10 or less than was regarded as significant

4. To decide whether to accept or reject the null hypothesis, finally the direction and the magnitude of the relationship between dependent and independent variables were checked via the sign of un-standardized coefficient and value of standardized coefficient.

Group *t test* was employed to find differentiation of means of demographic and economic variables between poppy producing households and non poppy producing households.

Cross tabulation and Chi square of contingency and goodness of fit tests were used to see whether there was significant relationship between variables.

The meaning of the star representing in the statistical tables are ; one star for 10 percent significance level , two stars as 5 percent significance level and three stars stand for one percent significance level.