Chapter 5

The Regression Analysis

5.1 Correlation matrix analysis

The analysis of a correlation matrix gives economists a concrete idea as to how to continue constructing the equations for hypothesis testing by limiting the set of independent variables that are significantly correlated with the dependent concept without incurring problems of multi-collinearity or tautology. There can be multi-collinearity because the survey data set contains more than one indicator for each variable or welfare concept group listed in primary hypotheses. Multiple indicators or similar or related concepts can be included in the equation to be tested only if they are significant and have a mutual Pearson correlation of less than 0.5.

Similarly, some indicators of independent variables on the right-hand side of a test equation may be logically and/or statistically too highly correlated with the dependent welfare concept itself. We speak of tautology when the correlation between a right-hand side and the left-hand side variables is significant and has a Pearson correlation coefficient of more than 0.5 In the regression analyses for this thesis, those variables were excluded from the set of independent explanatory concepts. The regression analysis was done both by the stepwise method and the enter method.[48] When no indicator was found to be significant for a

[48] Repeated manual elimination of the least significant indicators so as to assure the maximum level of significance and adjusted R-square and F-statistics for the external validity and internal logic of the equations.

hypothesized variable, the least insignificant indicator was retained in the final reported equation to demonstrate that the hypothesis had to be rejected.

5.2 Regression equation analysis

The linear regression model with stepwise and enter methods are used to get the best equation in both three models. The variables entered into the first draft equations are chosen from the correlation matrix. If the group of variables under the same category populate in the same equation, it can lead to tautology. Some of the variables falls under the same group are rooted in the same reason or cause then it can be tautology. But there are some variables which falls under a same category together with different root or source, for example, nutritional cost and crop diversity next year falls under the category of physical well-being but they cannot be tautology. The variables like gross income and per capita income are under the same category of economic well-being. If we put two of them in the same equation together, it can be tautology that we have to choose one of them according to the level of significant and correlation coefficient. Diversity of income source and gross income are related but it does not lead to tautology.

The regression analysis with stepwise method gives us a rough idea of building up a good equation.The results of the correlation coefficients and level of significant for each hypothesis will be reported in tables (5.1) to (5.9). Some variables that were not judged *a priori* to be significant became significant in the correlation matrix and were therefore included in the system equations.

To select the best acceptable equation for each hypothesis, four econometric criteria were used. The first is the F-statistic, which as a general rule should be greater

than or equal to 3.5 for a sample of this size. Any equation that had a lower F-statistic than that would display a probability of greater than 0.10 of being not significantly better than no equation at all. The equations presented in this remainder of this chapter all meet that criterion.

The second criterion was the adjusted R-squared, which allows the econometrician to select between equations with different numbers of explanatory variables the one that is the best explainer of the dependent concept. The term 'adjusted' means that the equation is adjusted for the degrees of freedom. In contrast to the unadjusted R-squared – which even the addition of irrelevant variables increases – the adjusted R-squared will only increase if a newly entered variable is significant. This second criterion allowed us to select among equations with acceptable F-statistics.

Once an equation is judged acceptable using the F-statistic and adjusted R-squared, hypothesis testing can begin. The third criterion is to examine whether each of the hypothesized variables is significantly different from zero, is called the Student t-statistic. For the purposes of this research we accepted as M'signficinat, any variable whose t-statistic had a probability of 0.10 or less of being zero.

The final criterion is the positive or negative sign on the regression coefficient. Even if a variable is significant, the hypothesis of its relevance must be rejected if it goes in the opposite direction of that predicted by theory and knowledge of the ecosystem. In the remainder of this chapter, an hypothehsis will only withstand rejection if it meets all four of the above creitera.

5.3 Preliminary hypothesis testing from the remaining variables in the correlation matrix.

The results of the hypotheses in the studied system are summarized into following diagrams. The letters *g* (for general), *c* (for Central Burma) and *r* (for Rakhine Staste) allow us to distinguish equation results for the combined general sample (g) from those for Bagan (c) and Kyaintali (r). The Figure (5.1) reports the synthesized conclusions from all three sets of equations (g, c, and r). It is so complex that the separate system for each eco-marketing system is also given in figures 5.2 (Bagan) and 5.3 (Kyaintali).

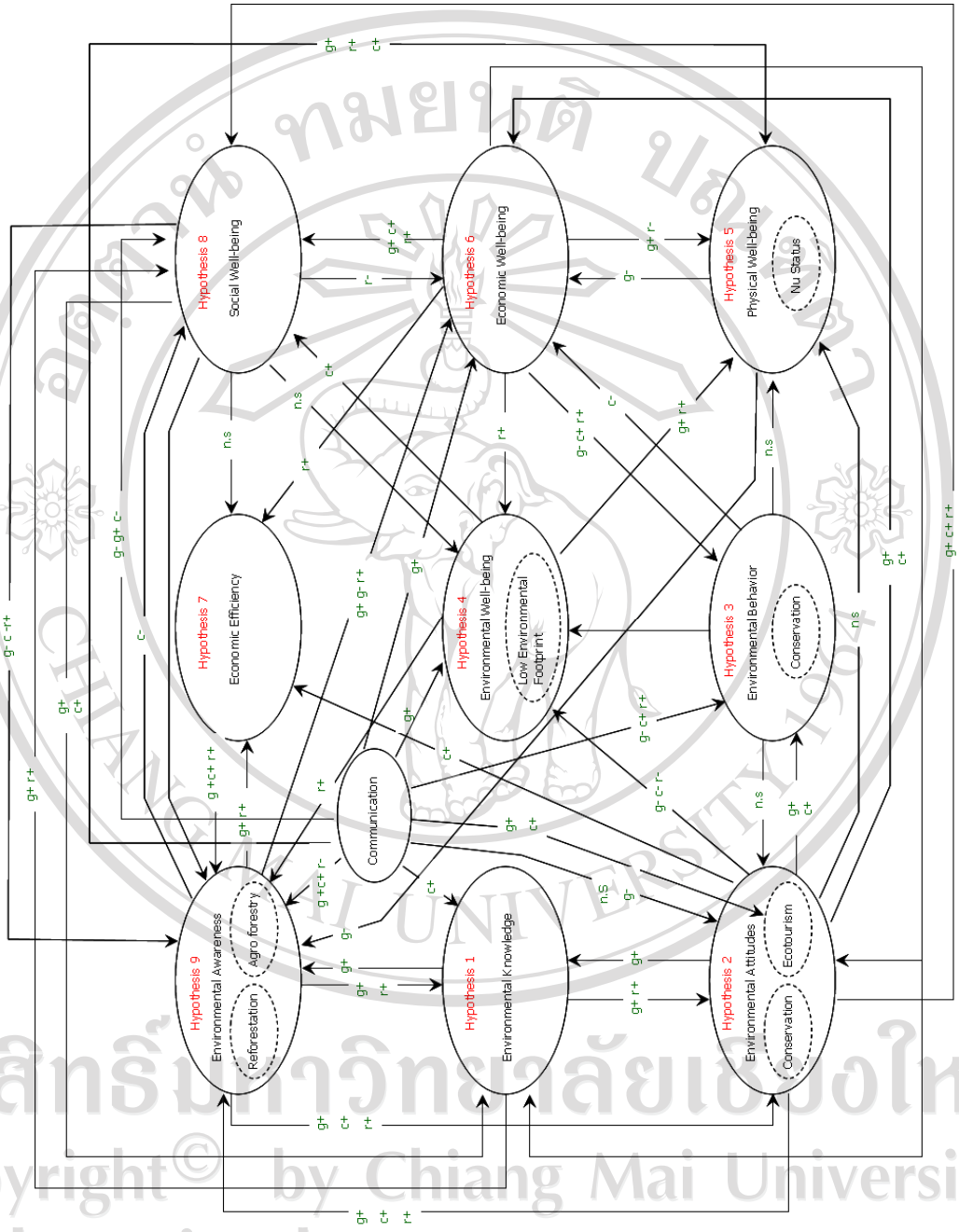

Figure 5.1 the conclusion of hypotheses testing from regression equations.

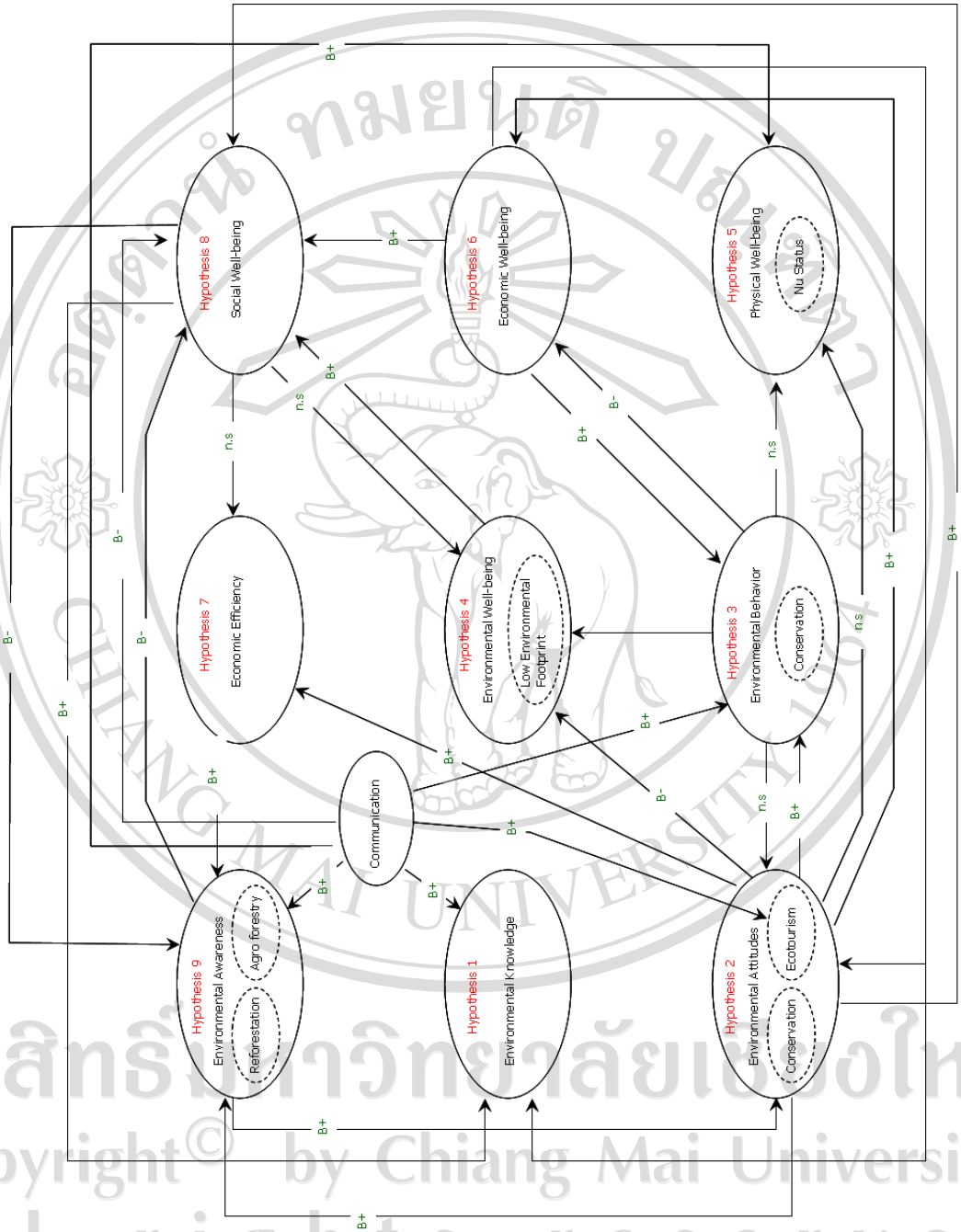

Figure 5.2 results of regression summary from equations separate for Bagan

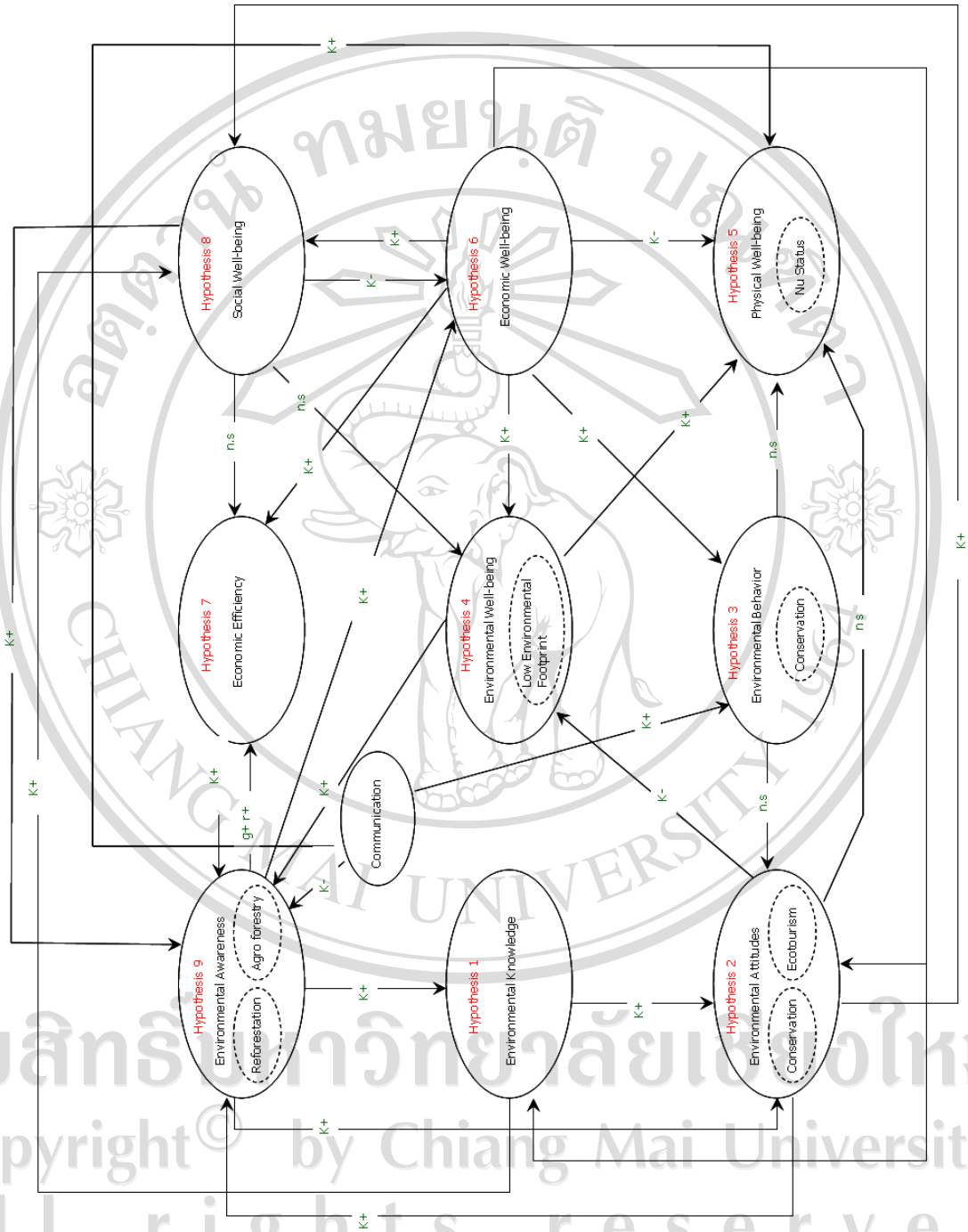

Figure 5.3 Summary of hypotheses testing in Kyaintali

5.3.1 Environmental Awareness

The first hypothesis to be tested using linear regression analysis is*: Environmental awareness is a positive function of environmental knowledge, lack of social well-being, lack of physical well-being, environmental attitudes, and other socio-economic determinants.*

Since there exists a procedure of awareness, knowledge and practice (AKP) in community management to induce people to have a behaviour change, environmental awareness is of vital importance to forest conservation. Awareness, attitude, knowledge and practice are the key factors of community development processes. There is a great role of AKP in forest conservation and community forestry since the movement of grassroots level people should be bottom-up in these processes. If the local community has awareness on the problems, there would be solutions, that come out from the people and mobilization will be faster.

5.3.1.1 Theoretical justification for the hypothesis:

The theory of behavioural change maintains that awareness helps to build up the attitude necessary for a final change in behavior. However, the equation results show the reverse for the Myanmar case: it is attitude that builds up awareness. Awareness and knowledge are not significantly related in the equations. If we had measured knowledge differently, it is possible that its observation would go up, with different ramifications. There were also so many missing responses in the survey data that there are likely biases in the computation of the knowledge index.

Awareness of the environment is usually greater where there is good income security, employment opportunities and, most important of all, media

accessible for raising awareness. Only then can the road, transportation and communication infrastructure begin to function for lubricating information exchange.

However, the direction of economic well-being, social well-being and distance to road is unexpected in the theory. The possible cause can be an uneven distribution of resources, income and opportunities to use the road among the population of these sample villages in the study.

5.3.1.2 Interpretation:

We failed to reject the first hypothesis; so the predicted impacts stand. Moreover, through the process of retroduction,[49] we also found that economic efficiency and physical malnutrition increase environmental awareness. The impacts of communication and economic well-being are ambiguous.

The results also revealed that average access to inputs, land purchase and the benefit cost ratio of investments –- variables of concern to economic well-being and efficiency –- also bring a significant and positive impact to bear on average awareness of the benefits of reforestation in the total sample equation. Average financial viability is insignificant in the total equation but has a significant and negative impact on awareness of both the benefits of reforestation and environmental destruction.

[49] Sometimes called serendipity, retroduction refers to the discovery of new results not expressed in the original hypothesis. Retroduction is thus different from either induction or deduction.

Table 5.1 the summary of hypothesis (1a).

Dependent variable	Pearson Correlations				Regressions			
Average_aware_benefits_refor	Statistic	Overall sample	Bagan	Kyaintali	Statistic	Overall	Bagan	Kyaintali
					Observations	68	81.0	96.00
					Degr. Freedom	54	76.0	90.00
					F-statistic	63.967	2.32	8.92
					Adj. R-squared	0.928	0.75	0.33
Constant (intercept)	r	-	-	-	b		1.403	0.60
	Sig.	-	-	-	Sig.		0.00	0.00
	N	-	-	-	t-stat		5.27	9.85
Average access to inputs	r	0.14	0.26	0.02	b	0.14275	0.21	
	Sig.	0.05	0.02	0.82	Sig.	0.06957	0.08	
	N	185.	86.00	99.00	t-stat	1.85149	1.78	
Average attachment land	r	-0.01	-0.10	0.19	b			0.15
	Sig.	0.89	0.35	0.07	Sig.			0.03
	N	185.	86.00	99.00	t-stat			2.20
Average attitude conservation	r	0.31	0.13	0.54	b	0.3612		0.36
	Sig.	0.00	0.23	0.00	Sig.	0.00019		0.00
	N	183.	84.00	99.00	t-stat	4.00361		4.67
Average financial liability	r	-0.11	-0.20	0.09	b		-0.16	-0.02
	Sig.	0.15	0.07	0.40	Sig.		0.30	0.80
	N	185.	86.00	99.00	t-stat		-1.05	-0.25
Average knowledge Env.	r	0.19	0.15	0.30	b		0.13	0.01
	Sig.	0.01	0.19	0.00	Sig.		0.25	0.90
	N	180.	82.00	98.00	t-stat		1.17	0.13
Average comm._ management	r	0.18	-0.35	0.32	b	0.008951	0.15	0.08
	Sig.	0.09	0.09	0.01	Sig.	0.350477	0.28	0.32
	N	90.0	24.00	66.00	t-stat	0.9418	1.08	1.00
Buy_land	r	-0.03	-0.13	0.15	b	0.1848		
	Sig.	0.67	0.23	0.15	Sig.	0.0582		
	N	184.	86.00	98.00	t-stat	1.9349		

Table 5.1 (Continued)

Gross_income	r Sig. N	-0.16 0.04 171.	-0.28 0.01 84.00	0.03 0.76 87.00	b Sig. t-stat	-3.32E- 0.0008 -3.5498		
Benefit_costs_of_investment	r Sig. N	-0.01 0.89 131.	-0.11 0.40 56.00	0.11 0.35 75.00	b Sig. t-stat	0.0271 0.0003 3.8068		
Distance_road	r Sig. N	-0.17 0.03 163.	-0.12 0.30 71.00	-0.12 0.27 92.00	b Sig. t-stat	-0.0635 0.0555 -1.9570		
Trips_month	r Sig. N	-0.09 0.21 177.	-0.24 0.03 79.00	0.05 0.64 98.00	b Sig. t-stat	0.0300 0.0023 3.1882		0.01 0.04 2.11
Age_head	r Sig. N	-0.10 0.17 185.	-0.20 0.06 86.00	0.00 0.98 99.00	b Sig. t-stat	-0.01 0.10 -1.67		
Yaesankwin					b Sig. t-stat	0.99 0.00 6.06		
Sisonekone					b Sig. t-stat	0.83 0.00 6.16		
Supotekone					b Sig. t-stat	0.89 0.00 6.44		
Doetan					b Sig. t-stat	0.84 0.00 5.58		
Latpantal					b Sig. t-stat	1.22 0.00 8.05		
Taungphattan					b Sig. t-stat	0.91 0.00 4.42		

Table 5.2 the summary for hypothesis 1(b).

Dependent variable = ***Average_aware_ destruction***	Pearson Correlations				Regressions			
	Statistic	Overall	Bagan	Kyaintali	*Statistic*	Overall	Bagan	Kyaintali
					Observation	142	68	82
					Degr. Freedom	132	59	71
					F-statistic	12.4	6.75	2.752
					Adj. R-squared	0.44	0.43	0.163
Constant (intercept)	*r*				*b*		-0.91	0.726
	Sig.				*Sig.*		0.00	0.001
	N				*t-stat*		-4.49	3.516
Average_behav_ footprint	*r*	-0.14	0.03	-0.029	*b*			0.330
	Sig.	0.05	0.78	0.777	*Sig.*			0.030
	N	200.	100.	100.00	*t-stat*			2.208
Average_community_ manage	*r*	-0.22	-0.22	0.184	*b*	-0.13	-0.15	0.025
	Sig.	0.00	0.04	0.066	*Sig.*	0.06	0.04	0.760
	N	197.	97.0	100.00	*t-stat*	-1.88	-2.01	0.307
Average_attitude_cons evartion	*r*	-0.12	-0.021	0.243	*b*	0.04	0.18	
	Sig.	0.1	0.83	0.015	*Sig.*	0.59	0.08	
	N	197.	97.0	100.00	*t-stat*	0.53	1.73	
Average_know_env	*r*	0.05	-0.00	0.152	*b*	0.11	0.05	0.109
	Sig.	0.43	0.94	0.132	*Sig.*	0.06	0.41	0.115
	N	192.	93.	99.000	*t-stat*	1.894	0.82	1.596
Nu_cost_d	*r*	-0.25	0.07	-0.052	*b*	0.00		
	Sig.	0.00	0.48	0.622	*Sig.*	0.00		
	N	194.	100.	94.000	*t-stat*	-2.97		
Other_income	*r*	-0.22	-0.13	0.019	*b*	-0.03	-0.03	
	Sig.	0.00	0.17	0.854	*Sig.*	0.00	0.00	
	N	200.	100.	100.00	*t-stat*	-3.68	-4.79	
Other_income_or_not	*r*	-0.17	0.02	0.004	*b*	0.21		0.153
	Sig.	0.01	0.83	0.965	*Sig.*	0.06		0.037
	N	200.	100.	100.00	*t-stat*	1.83		2.127

Table 5.2 (Continued)

Average_financial_viabil	*r*	-0.19	-0.55	-0.018	*b*	-0.17	-0.43	-0.044
	Sig.	0.00	0.00	0.855	*Sig.*	0.06	0.00	0.632
	N	199.	99.0	100.00	*t-stat*	-1.89	-4.20	-0.482
Crop_diversity_next_year	*r*	-0.14	-0.19	0.236	*b*			0.079
	Sig.	0.03	0.05	0.018	*Sig.*			0.012
	N	199.	99.0	100.00	*t-stat*			2.584
Average_access_inputs	*r*	0.20	0.11	0.122	*b*		0.04	0.165
	Sig.	0.00	0.25	0.227	*Sig.*		0.58	0.014
	N	200.	100.	100.00	*t-stat*		0.55	2.516
Attachment_to_land	*r*	0.19	0.07	0.069	*b*	0.02	0.03	
	Sig.	0.01	0.47	0.502	*Sig.*	0.05	0.03	
	N	185.	87.0	98.000	*t-stat*	2.01	2.19	
Time_road	*r*	0.58	0.23	-0.018	*b*	0.00	0.00	-0.001
	Sig.	0.00	0.03	0.863	*Sig.*	0.00	0.02	0.462
	N	176.	84.0	92.000	*t-stat*	5.57	2.41	-0.739
Distance_town	*r*	-0.32	-0.01	-0.063	*b*	-0.02		-0.068
	Sig.	0.00	0.94	0.552	*Sig.*	0.00		0.039
	N	185.	93.0	92.000	*t-stat*	-3.18		-2.101
Occup_head	*r*	-0.17	0.06	-0.101	*b*			-0.030
	Sig.	0.02	0.54	0.319	*Sig.*			0.065
	N	20	100.	100.00	*t-stat*			-1.874

5.3.2 Environmental Knowledge

Environmental knowledge was hypothesized to be determined by social well-being, economic fundamentals, financial viability and knowledge. Based on the data from the two Myanmar samples, we failed to reject second hypotheses environmental knowledge is a positive function of environmental awareness, social well-being and environmental attitudes.

Environmental knowledge is mainly depending on environmental awareness, subdivided into awareness of environmental degradation and awareness of

benefit of reforestation. This knowledge variable also base on other socio-demographic variables, age, knowledge, job, etc and location of the villages, distance to the road, transportation, communication and other economic fundamentals.

Variables like location, time taken to the road and communication infrastructures are used as indicators of the development of the village. The other socio-demographic variables are the conditions on which such development is to be built.

The correlation and tests of significant differences in means through one-way ANOVA led to the identification of the following specific variables to test the various concepts of hypothesis 1 above:

Average_know_env = *f* (+avg_attitude_conserve + avg_commu_manage + av_aware_benefit_refor – time_road –land_quality, - other_ncome_or_not/ +-village, +-occupation) (6)

A series of regression analyses led to the equation below showing that average faith in knowledge of environment is a function of average attitude towards conservation, average community management, time taken to the road, low land quality, the presence or not of other income, village and occupation. Other job, Random job and Farming are the highest. However, neither of the awareness variables; average awareness of degradation or average awareness of benefits of reforestation is significant, even at the 0.10 level. So, environmental knowledge leads to environmental attitudes but the knowledge is not explained by awareness but by the other socio-economic variables that foster development and economic welfare (other

jobs, random jobs and farmers) explained the dependent variable and have positive relation.

The adjusted R-square is very acceptable in part became the origin was forced to equal zero after repeated tests showed it to be non-significant. Except for the two awareness variables all other arguments, in the function are significant, often highly. So, we decided from the sign on land quality that those with low quality land have acquired greater environmental knowledge.

For the Bagan area, environmental degradation is more severe than in Rakhine state because of drought and semiarid climate. This makes people suffer more and pushes them to acquire more knowledge on the environment. Conversely, those who have higher economic well-being have little incentive to understand complex ecological relationships. In addition, those charged with implementing economic projects for poverty alleviation can rarely take the time to share with the entire populace crucial accurate environmental knowledge. This tends to worsen the distribution of both income and environmental knowledge.

5.3.2.1 Theoretical justification for the hypothesis:

Environmental knowledge is a basic necessity for behavior change and income. The negative relation of access to resource and economic well-being and knowledge gives a different dimension of economic relationship and environmental protection. It is the economic situation that block the availability of knowledge on environment where there is necessary for the flow of behavior change and conservation works. The economic opportunity for the participation from the local community is represented with the off-farm job opportunity in the local market.

5.3.2.2 Interpretation:

We failed to reject hypotheses (2). Environmental knowledge is in fact a positive function of environmental awareness, social well-being and environmental attitudes.

We also found by retroduction that economic well-being has a negative impact on environmental knowledge in central Myanmar, but that this effect may be offset by communication.

For central Burma, environmental degradation is more severe than in Rakhine state because of drought and semiarid climate. This makes people suffer more and pushes them to acquire more knowledge on the environment. Conversely, those who have higher economic well-being have little incentive to understand complex ecological relationships. In addition, those charged with implementing economic projects for poverty alleviation n Rakhine State can rarely take the time to share accurate environmental knowledge with the entire populace. This tends to worsen the distribution of both income and environmental knowledge.

Table 5.3 the summary of hypothesis 2

*Dependent variable = **Average knowledge of the environment***	Pearson Correlations				Regressions			
	Statistic	Overall	Bagan	Kyaintali	*Statistic*	Overall	Bagan	Kyaintali
					Observation	131	43	84
					Degr. Freedom	123	39	80
					F-statistic	34.14	16.2	8.09
					Adj. R-squared	0.69	0.71	0.25
Constant (intercept)	*r*	-	-	-	*b*		2.42	0.72
	Sig.	-	-	-	*Sig.*		0.00	0.00
	N	-	-	-	*t-stat*		5.67	
Average_attitude_conservation	*r*	0.47	0.51	0.47	*b*	0.29		
	Sig.	0.00	0.00	0.00	*Sig.*	0.01		
	N	190.0	91.0	99.00	*t-stat*			
Average_community_manage	*r*	0.34	0.26	0.50	*b*	0.23		0.47
	Sig.	0.00	0.01	0.00	*Sig.*	0.05		0.00
	N	190.0	91.0	99.00	*t-stat*			
Average_aware_benefits_refor	*r*	0.19	0.15	0.30	*b*	0.04		0.06
	Sig.	0.01	0.19	0.00	*Sig.*	0.74		0.67
	N	180.0	82.0	98.00	*t-stat*			
Average_aware_destruction	*r*	0.06	-0.01	0.15	*b*	0.05		0.00
	Sig.	0.44	0.94	0.13	*Sig.*	0.60		0.98
	N	192.0	93.0	99.00	*t-stat*			
Time_road	*r*	-0.13	-0.18	-0.20	*b*		-0.03	
	Sig.	0.09	0.11	0.05	*Sig.*		0.01	
	N	169.0	78.0	91.00	*t-stat*		-3.05	
Land_quality	*r*	-0.28	-0.18	-0.36	*b*	-0.22		-0.25
	Sig.	0.00	0.18	0.00	*Sig.*	0.00		0.00
	N	145.0	59.0	86.00	*t-stat*			
Other_income_or_not	*r*	-0.14	-0.07	-0.24	*b*		-0.60	
	Sig.	0.05	0.50	0.02	*Sig.*		0.02	
	N	192.0	93.0	99.00	*t-stat*		-2.66	
Benefit_costs_of_investment	*r*	0.01	-0.17	0.12	*b*		-0.13	
	Sig.	0.93	0.19	0.32	*Sig.*		0.00	
	N	140.00	65.00	75.00	*t-stat*		-6.26	
Farmer	*r*				b	0.57		
	Sig.				*Sig.*	0.00		
	N				*t-stat*			
Random job	*r*				b	0.55		
	Sig.				*Sig.*	0.02		
	N				*t-stat*			

Table 5.2 (Coninued)

Other jobs	*r* *Sig.* *N*	b *Sig.* *t-stat*	0.85 0.02		

5.3.3 Environmental Attitudes

Environmental attitudes depend positively on environmental knowledge, economic well-being, communication and environmental awareness. We have to reject the hypotheses. Economic well-being is not a significant determinant of environmental attitude and is negative in central Myanmar also communication has a negative influence on attitude towards conservation even though it improves attitude towards ecotourism.

Attitude is the prerequisite of practice or action to conserve the nature as one of the economic fundamental. What is gardening the attitude of people towards the environment? It has assumed that environmental knowledge would contribute to have a good attitude towards environment. Environmental attitude is categorized into attitude towards environment and attitude towards ecotourism which is a second step, a kind sustainable extraction from the environment. Attitude to promote environmental conservation and ecotourism is assumed as the result of the endowment in the community such as environmental knowledge, location of the villages, facility for communication with the outside world, which are also economic fundamentals and other socio-demographic intermediate variables such as job category, age of household head, education of household head etc. Average awareness of the environment, weather awareness of benefit of conservation or awareness of environmental degradation is a pushing force for moving people forward to have good attitude on the environmental conservation. It was anticipated that central Burma and

Rakhine State would have significance difference in environmental awareness but only differences among villages were found to be significant. The proposed equation is derived from correlation matrix, which helps us to take out the relevant and promising variables for the model. The stepwise analysis is done for the first time and then regression analysis is run by the method entering the equation repeatedly to get the strongest model possible taking out the insignificant variables one by one. The proposed equation in the stepwise method is as follow:

Average Attitude conservation = f (β_o + average knowledge environment – distance to road +time taken to road + average awareness benefit of reforestation + average environmental behavior – trips per month – other income or not + self cleared land + buy land + inherited land – Yaesankwin - Sisonekone –Supotekone – Doetan – Latpantal) **(7)**

The results from the regression equation with overall two hundred sample households has a large different from the separate regional equations. All the model has interception terms and significant. Rakhine (Arakhan) State has a negative interception term expressing that the attitude towards environment is negative in general. Parts of the hypotheses, time taken to road and distance of the village from road is not significant both in overall sample population and Central Burma but the model falls apart when it has been taken out.

Average environmental behaviour is not significant in the model but it is part of the hypotheses that has preserved in the model. However, the null hypotheses is accepted for the acceptable level of F-statistics and there is a significant and positive

coefficient of average knowledge towards environment and average awareness of benefit for reforestation in the equation for the sample population. The type of land ownership is significant and have positive relationship with the attitude on the conservation. It was an unexpected finding that people who own self-cleared land with lowest creditability of property right, doing shifting cultivation in other word have highest potential of having good attitude towards conservation in stead of households who owns inherited land which is a highest reliability in ownership. The significance within two region is expected but only the villages are significant and Taungphattan Village in Central Burma is not significantly different with Tahungpatlel in Rakhine State. Other villages like, Sisonekone, Yaesankwin, Supotekone, Doetan and Latpantal have significantly lower value of attitude toward conservation than Taungpatlel which is a Chin ethnic village surrounded by mountains in Rakhine State and furthest away from transportation, communication and the road infrastructure. The results from regression analysis shows that households who have trips more frequently than others and have more than one source of income than agriculture have lesser score in average attitude toward conservation.

When the regression analysis is done for separate regions, average awareness of reforestation is significant and have positive sign and having other income has negative sign. In Rakhine State, both average knowledge and average awareness of reforestation is significant and bears positive sign. For attitude toward ecotourism, it is on the other hand a test of openness of the two region hypothesizing that the place which has a good infrastructure in road, transportation and good economic

fundamentals would have more likelihood to open accept for a relatively new type of business and idea considering for both of their economy and environment.

5.3.3.1 Theoretical justification for the hypothesis:

The hypothesized dependent variables attitude toward conservation and attitude toward ecotourism are seen as new concepts for the local community even though conservation and ecotourism have been done in central Myanmar for a long time. People approve conservation more when there is more environmental degradation.

5.3.3.2 Interpretation:

We have to reject the hypothesis. Economic well-being is not a significant determinant of environmental attitudes and is even significantly negative in central Myanmar. Communication has a negative influence on attitudes towards conservation even though it improves attitude towards ecotourism.

Table 5.4 the summary for hypothesis (3a).

Dependent variable = ***Average attitude toward conservation***	Pearson Correlations				Regressions			
	Statistic	Overall	Bagan	Kyaintali	*Statistic*	Overall	Bagan	Kyaintali
					Observation	140	83	97
					d.f	125	80	95
					F-statistic	6.69	4.92	31.97
					Adj. R-squared	0.38	0.12	0.39
Constant (intercept)	*r*	-	-	-	*b*	0.39	0.81	-0.20
	Sig.	-	-	-	*Sig.*	0.01	0.00	0.10
	N	-	-	-	*t-stat*			
Average_know_env	*r*	0.47	0.51	0.47	*b*	0.28		0.32
	Sig.	0.00	0.00	0.00	*Sig.*	0.00		0.00
	N	190.00	91.00	99.00	*t-stat*			
Distance_road	*r*	-0.26	-0.12	-0.09	*b*	-0.02		
	Sig.	0.00	0.31	0.38	*Sig.*	0.54		
	N	171.00	79.00	92.00	*t-stat*			
Time_road	*r*	-0.22	0.06	-0.10	*b*	0.00	0.11	
	Sig.	0.00	0.61	0.34	*Sig.*	0.31	0.24	
	N	174.00	82.00	92.00	*t-stat*			
Average_aware_benefits_refor	*r*	0.31	0.13	0.54	*b*	0.30	0.30	0.64
	Sig.	0.00	0.23	0.00	*Sig.*	0.00	0.00	0.00
	N	183.00	84.00	99.00	*t-stat*			
Average_evn_behave	*r*	0.15	0.16	0.05	*b*	0.08		
	Sig.	0.03	0.12	0.62	*Sig.*	0.20		
	N	197.00	97.00	100.00	*t-stat*			
rips_month	*r*	-0.15	-0.03	-0.27	*b*	-0.02		
	Sig.	0.04	0.76	0.01	*Sig.*	0.01		
	N	187.00	89.00	98.00	*t-stat*			
Other_income_or_not	*r*	-0.15	-0.23	-0.21	*b*	-0.17	-0.21	
	Sig.	0.03	0.03	0.04	*Sig.*	0.04	0.06	
	N	197.00	97.00	100.00	*t-stat*			
Self_cleared_land	*r*	0.11	0.14	0.11	*b*	0.22		
	Sig.	0.12	0.18	0.27	*Sig.*	0.09		
	N	196.00	97.00	99.00	*t-stat*			
Buy_land	*r*	0.08	0.03	0.20	*b*	0.14		
	Sig.	0.26	0.76	0.05	*Sig.*	0.08		
	N	196.00	97.00	99.00	*t-stat*			
Inherit_land	*r*	0.02	0.01	-0.01	*b*	0.19		
	Sig.	0.84	0.93	0.92	*Sig.*	0.02		
	N	196.00	97.00	99.00	*t-stat*			
Yaesankwin	*r*	-0.22	.(a)	-0.25	*b*	-0.59		
	Sig.	0.00	.	0.01	*Sig.*	0.00		
	N	197.	97.0	100.00	*t-stat*			

Table 5.4 (continued)

Sisonekone	*r* *Sig.* *N*	-0.07 0.33 197.00	.(a) . 97.00	-0.01 0.92 100.00	*b* *significance* *t-stat*	-0.49 0.01		
Supotekone	*r* *Sig.* *N*	-0.06 0.42 197.00	.(a) . 97.00	0.08 0.41 100.00	*b* *significance* *t-stat*	-0.38 0.01		
Doetan	*r* *Sig.* *N*	-0.06 0.44 197.00	.(a) . 97.00	0.06 0.53 100.00	*b* *significance* *t-stat*	-0.34 0.06		
Latpantal	*r* *Sig.*	0.16 0.03	0.05 0.66	.(a) .	*b* *significance*	-0.20 0.09		

Table 5.5 the summary for hypothesis (3b).

Dependent variable = ***Attitude toward ecotourism***	Pearson Correlations				Regressions			
	Statistic	Overall	Bagan	Kyaintali	*Statistic*	Overall	Bagan	Kyaintali
					Observations	144.00	57.00	93.00
					Degr. Freedom	133.00	53.00	91.00
					F-statistic	6.20	11.21	11.87
					Adj. R-squared	0.28	0.42	0.19
Time_road	*r* *Sig.* *N*	-0.17 0.04 149.00	0.09 0.49 61.00	-0.16 0.13 88.00	*b* *significance* *t-stat*	0.00 0.23	0.01 0.00 3.18	
Average_aware_destruction	*r* *Sig.* *N*	-0.15 0.06 165.00	-0.14 0.23 72.00	0.02 0.86 93.00	*b* *significance* *t-stat*	0.00 0.99	0.17 0.48 0.72	0.09 0.62 0.50
Average_financial_viabil	*r* *Sig.* *N*	0.18 0.02 165.00	0.26 0.03 72.00	0.12 0.26 93.00	*b* *significance* *t-stat*	-0.02 0.90		
Educ_head	*r* *Sig.* *N*	0.28 0.00 165.00	0.41 0.00 72.00	0.15 0.16 93.00	*b* *significance* *t-stat*	0.05 0.06		0.05 0.01 2.61
Other_income_or_not	*r* *Sig.* *N*	-0.07 0.37 165.00	-0.13 0.28 72.00	-0.09 0.39 93.00	*b* *significance* *t-stat*	-0.18 0.13		
Buy_land	*r* *Sig.* *N*	0.12 0.14 164.00	0.21 0.08 72.00	0.09 0.40 92.00	*b* *significance* *t-stat*		0.71 0.01 2.62	

Table 5.5 (Continued)

Inherit_land	*r*	0.06	0.09	0.03	*b*	0.19		
	Sig.	0.43	0.44	0.78	*significance*	0.18		
	N	164.00	72.00	92.00	*t-stat*			
Enough_land	*r*	-0.12	-0.13	0.00	*b*	-0.16	-0.25	
	Sig.	0.14	0.30	0.98	*significance*	0.01	0.00	
	N	153.00	62.00	91.00	*t-stat*		-3.23	
Sisonekone	*r*	-0.03	.(a)	-0.03	*b*	-0.33		
	Sig.	0.75	.	0.81	*significance*	0.17		
	N	165.00	72.00	93.00	*t-stat*			
Supotekone	*r*	-0.04	.(a)	0.12	*b*	-0.27		
	Sig.	0.61	.	0.27	*significance*	0.10		
	N	165.00	72.00	93.00	*t-stat*			
Doetan	*r*	-0.04	.(a)	-0.31	*b*	-0.49		
	Sig.	0.65	.	0.00	*significance*	0.02		
	N	165.00	72.00	93.00	*t-stat*			

5.3.4 Environmental Behaviour

Average environmental behavior is a positive function of environmental attitudes, social well-beings, environmental foot-print, average financial viability, communication and other economic fundamentals.

5.3.4.1 Theoretical justification for the hypothesis:

It is assumed that rich people, who do not feel the pressure for survival, will have more time to invest in good practices to the environment for the sustainability. Human behavior is gardened by the attitude, awareness and knowledge. In these equations, only attitudes surpassed the other two. The underlying causes of environmental behavioral adoption are studied here because it is an irrational behavior to maximize the short-term profit among the rational consumers. It is the environmental behavior belongs to the external spectator or ethical judgment in personal choice of the moral sentiment. In Buddhism, it is the

part of long term perspective, the investment for the future with good behavior or rightful act in accessing moderately[50] (Not wasting any resources, [51] reducing consumption driven by greed and selfishness). In **The theory of Moral Sentiments**, Adam Smith (1759) stated the ethical consumption that is governed by external spectator if it is not agreeable in the social norms. If consumption of environmental services has limitation by the community rules or social consideration for the future prosperity of the community, the behavior of cutting trees or depending on the forest will have a constraint by the ethics. What kind of welfare and facility will promote the good behaviors in the community to follow the way of moderate consumption on the free environmental services is the main question of this hypothesis.

5.3.4.2 Interpretation:

We reject that hypothesis because both communication and economic well-being have an overall negative impact on environmental behavior even though they are positive in each eco-market region. This is no doubt due to complex systemic feedbacks within each region. The environmental foot print is, however, not significant.

Environmental behavior is still weak in the region. In central Myanmar, financial viability is insignificant where there is relatively high income per capita and Rakhine state where, income viability is a matter and has positive impact on the average environmental behavior.

[50] Bawzinga Sutta, preached by Buddha taught the monks not to waste materials and moderate to accept the donation from the people if it is wasteful, 500 B.C.
[51] Dhammasakya, the first summon of Buddha showing the eightfold noble path to avoid suffering to the five Vaggies, 500 B.C.

Table 5.6 the regression summary of hypothesis 4.

	Pearson Correlations				Regressions			
*Dependent variable = **Average environm behaviour***	*Statistic*	Overall	Bagan	Kyaintali	*Statistic*	Overall	Bagan	Kyaintali
					Observation	147.000	79.000	90.000
					Degr. Freedom	142.000	72.000	87.000
					F-statistic	8.398	11.011	7.981
					Adj. R-squared	0.201	0.470	0.189
	r	-	-	-	*b*	-0.469		0.684
Constant (intercept)	*Sig.*	-	-	-	*Sig.*	0.000		0.008
	N	-	-	-	*t-stat*	-6.757		2.698
	r	0.153	0.161	0.051	*b*	0.207	0.223	
Average_attitude_conservation	*Sig.*	0.032	0.115	0.616	*Sig.*	0.000	0.007	
	N	197.	97.	100.	*t-stat*	4.445	2.765	
	r	-0.225	-0.200	0.045	*b*		-0.052	
Average_aware_destruction	*Sig.*	0.001	0.046	0.655	*Sig.*		0.702	
	N	200.	100.00	100.	*t-stat*		-0.383	
	r	0.240	0.260	0.279	*b*	-0.132	-0.049	0.468
Average_financial_viabil	*Sig.*	0.001	0.009	0.005	*Sig.*	0.039	0.764	0.006
	N	199	99.	100	*t-stat*	-2.088	-0.302	2.815
	r	-0.369	-0.246	-0.322	*b*	0.041	-0.076	-0.250
Distance_road	*Sig.*	0.000	0.027	0.002	*Sig.*	0.011	0.059	0.002
	N	173.000	81.	92.	*t-stat*	2.585	-1.919	-3.168
	r	0.239	0.178	0.211	*b*		0.308	0.278
Other_income_or_not	*Sig.*	0.001	0.076	0.035	*Sig.*		0.003	0.022
	N	200. 0	100.	100.	*t-stat*		3.036	2.334
	r	0.195	0.278	0.190	*b*	-0.182	0.358	
Buy_land	*Sig.*	0.006	0.005	0.059	*Sig.*	0.000	0.011	
	N	199.	100.	99.	*t-stat*	-3.613	2.626	

Table 5.6 (Continued)

Inherit_land	*r* *Sig.* *N*	0.192 0.007 199.	0.311 0.002 100.	0.063 0.538 99.	*b* *significance* *t-stat*	-0.132 0.008 -2.702		
Other_jobs	*r* *Sig.* *N*	-0.117 0.099 200.	-0.270 0.007 100.	0.052 0.604 100.	*b* *significance* *t-stat*		-0.807 0.032 -2.181	

5.3.5 Environmental Well-being

Environmental well-being is a positive function of financial viability, average attitude towards conservation, and social well-being and communication. The attitude towards conservation has a negative impact on environmental well-being and social well-being is not significant. It is true that economic well-being increases environmental well-being in Rakhine state and communication improves environmental well-being in the total sample and central Myanmar.

5.3.5.1 Theoretical justification for the hypothesis

In this hypothesis, the dependent variable is driven from the bad behaviors in consumption. It is a composite variable of the behaviors of consuming the environmental services. If these behaviors are practiced less, there will be less environmental degradation. This will lead to the welfare of the physical environment. It is the behaviors that is governed by the moral attitude, economic pressure and the livelihood activities of local people. So, what is the most immediate welfare we have to support the local community to reduce the behavioral footprint? The equation itself is the negative of environmental behavior in the left side but the variable we used in analysis is the average environmental behavior to simplify the process. Thus, the

equation on the left side should be multiplied by negative to make sense with the equation.

(-) Average behavioral footprint = -(β_0 – attitude toward environment – source of other

income –social well-being + access to resources – communication – age of household head – gender + other socioeconomic variables) (8)

5.3.5.2 Interpretation

The hypothesis was rejected since the attitude towards conservation has a negative impact on environmental well-being, and social well-being is not significant. Still, consistent with the hypothesis, a low environmental foot-print is a positive function of conservation, social well-being, ownership of land (one form of economic welfare) and proximity to the road. Communication improves environmental well-being in the total sample and central Myanmar. Economic well-being in the off-farm income further increases environmental well-being in Rakhine state.

Why should this be, logically? If there is more than one sources of off farm income, the less behavioral foot-print would be on the environment. The further from the road, the greater foot-print would be; which means, the closer to the forest, the more people depend on the environment for food, firewood, shelter and income.

Table 5.7 the regression summary of hypothesis 5.

Dependent variable = ***Average_behav_footprint***	Pearson Correlations				Regressions			
	Statistic	Overall	Bagan	Kyaintali	*Statistic*	Overall	Bagan	Kyaintali
					Observation		76.00	83.00
					Degr. Freedom		70.00	79.00
					F-statistic		3.26	6.17
					Adj. R-squared		0.15	0.20
Constant (intercept)	*r*	-	-	-	*b*		-0.41	-0.36
	Sig.	-	-	-	*significance*		0.00	0.00
	N	-	-	-	*t-stat*		-3.73	-7.58
Average_attitude_consevartion	*r*	0.19	0.11	0.23	*b*	0.16	0.17	0.16
	Sig.	0.01	0.27	0.02	*significance*	0.00	0.06	0.00
	N	197.00	97.00	100.00	*t-stat*	3.34	1.92	3.18
Average_community_manage	*r*	0.11	0.01	0.18	*b*	0.02	0.07	
	Sig.	0.13	0.90	0.07	*significance*	0.70	0.38	
	N	197.00	97.00	100.00	*t-stat*	0.38	0.89	
Average_financial_viabil	*r*	-0.13	-0.18	0.01	*b*	0.03		
	Sig.	0.08	0.08	0.89	*significance*	0.59		
	N	199.00	99.00	100.00	*t-stat*	0.53		
Other_income_or_not	*r*	-0.08	-0.16	-0.12	*b*			-0.11
	Sig.	0.28	0.12	0.25	*significance*			0.03
	N	200.00	100.00	100.00	*t-stat*			-2.17
Distance_road	*r*	0.02	0.16	0.10	*b*	0.03	0.05	
	Sig.	0.81	0.16	0.33	*significance*	0.03	0.09	
	N	173.00	81.00	92.00	*t-stat*	2.22	1.70	
Phonebill	*r*	-0.19	-0.27	.(a)	*b*		0.00	
	Sig.	0.01	0.01	.	*significance*		0.09	
	N	199.00	100.00	99.00	*t-stat*		-1.71	
Buy_land	*r*	-0.18	-0.25	-0.04	*b*	-0.13	-0.13	-0.11
	Sig.	0.01	0.01	0.71	*significance*	0.01	0.15	0.04
	N	199.00	100.00	99.00	*t-stat*	-2.68	-1.45	-2.09
Inherit_land	*r*	-0.19	-0.26	-0.14	*b*	-0.11	-0.15	
	Sig.	0.01	0.01	0.17	*significance*	0.02	0.10	
	N	199.00	100.00	99.00	*t-stat*	-2.37	-1.68	
Sisonekone	*r*	-0.17	.(a)	-0.21	*b*	-0.21		-0.24
	Sig.	0.02	.	0.04	*significance*	0.02		0.00
	N	200.00	100.00	100.00	*t-stat*	-2.40		-3.47
Latpantal	*r*	0.20	0.12	.(a)	*b*	0.09		
	Sig.	0.01	0.22	.	*significance*	0.09		
	N	200.00	100.00	100.00	*t-stat*	1.71		

Table 5.7 (Continued)

Gender_hd	*r*	-0.16	-0.20	-0.03	*b*	-0.20		
	Sig.	0.02	0.05	0.77	*significance*	0.00		
	N	200.00	100.00	100.00	*t-stat*	-3.27		
Age_head	*r*	-0.12	-0.19	-0.14	*b*	-0.01		
	Sig.	0.09	0.05	0.18	*significance*	0.00		
	N	200.00	100.00	100.00	*t-stat*	-4.35		

5.3.6 Physical Well-being

Physical well-being (nutritional status) is a function of economic well-being, communication and environmental well-being. This physical well-being is connected to the environmental well-being or good condition of the environmental resources. It is related to the maintenance of environmental services that conserve the fertility of natural environment to provide the ecosystem services. We have variables that concern with nutrition of the local people which directly impact the physical well-being of people. Here, the nutritional cost or crop diversity is not used as a dependent variable because it can have a regional bias, seasonal shock or market differences. The nutritional status is taken to test the hypothesis because it is the variable calculated with the compilation of local consumption pattern and food pyramid of the sample households are used to find the coefficient of different category of food intake. Thus, it does not have a bias normalized by the number of observation and priority of food pyramid and multiplied with these coefficients for each category of food.

5.3.6.1 Theoretical justification for the hypothesis

The nutritional status is directly related to the well-being of the environment. This environmental well-being is important to maintain the habitat to be fertile, productive for the provision of food, and support with other physical requirements for the survival of human beings. Here, the hypothesis is tested only with nutritional status just emphasize the provision of food material because it is the first essential need of living and the other production from the environment are much more complicated to put into the study and there is limitation of data availability because some extractions from nature are prohibited by law and there are some illegal activities that does not have a clear-cut definition such as logging and cutting for firewood etc. This provision of food by the habitat depends on the productivity of the environment, which is indirectly related to the conservation of local environment. This is also depends on the attitude, behavior, environmental footprint, economic well-being and access to environmental resources. Facility to participate in the market such as communication, transportation and other socio-demographic variables are also important to analyze the source of nutritional well-being in the study area.

5.3.6.2 Interpretation:

We failed to reject this hypothesis because it is true for all cases. The only exceptions are communication in central Myanmar and economic well-being in Rakhine State. In contrast, environmental attitude and environmental behavior have no significant impact on nutritional status.

Table 5.8 the regression summary of hypothesis 6

*Dependent variable = **Nutritional status***	Pearson Correlations				Regressions			
	Statistic	Overall sample	Bagan	Kyaintali	*Statistic*	Overall sample	Bagan	Kyaintali
					Observations	145.00	93.00	67.00
					Degr. Freedom	136.00	87.00	59.00
					F-statistic	7.03	10.37	2.97
					Adj. R-squared	0.27	0.38	0.19
Constant (intercept)	*r*	-	-	-	*b*	19.61	9.90	18.85
	Sig.	-	-	-	*Sig.*	0.00	0.00	0.00
	N	-	-	-	*t-stat*	5.17	3.77	3.10
Average_behav_footprint	*r*	-0.05	0.06	-0.24	*b*	-8.59		-10.76
	Sig.	0.53	0.54	0.02	*Sig.*	0.01		0.03
	N	200.00	100.00	100.00	*t-stat*	-2.78		-2.16
Nu_cost_d	*r*	0.05	0.12	0.02	*b*			0.00
	Sig.	0.46	0.22	0.85	*Sig.*			0.94
	N	194.00	100.00	94.00	*t-stat*			-0.07
Average_attch_land	*r*	0.15	0.17	0.12	*b*			4.74
	Sig.	0.04	0.09	0.25	*Sig.*			0.06
	N	200.00	100.00	100.00	*t-stat*			1.90
Average_evn_behave	*r*	0.22	0.27	0.21	*b*		2.46	
	Sig.	0.00	0.01	0.03	*Sig.*		0.20	
	N	200.00	100.00	100.00	*t-stat*		1.28	
Average_financial_viabil	*r*	0.28	0.47	-0.05	*b*			-6.86
	Sig.	0.00	0.00	0.62	*Sig.*			0.03
	N	199.00	99.00	100.00	*t-stat*			-2.23
Time_road	*r*	0.14	0.18	-0.18	*b*	-0.03		
	Sig.	0.06	0.10	0.09	*Sig.*	0.46		
	N	176.00	84.00	92.00	*t-stat*	-0.74		
Distance_road	*r*	0.00	0.04	-0.22	*b*			-3.63
	Sig.	0.97	0.70	0.04	*Sig.*			0.03
	N	173.00	81.00	92.00	*t-stat*			-2.25
Phonebill	*r*	-0.12	-0.14	.(a)	*b*		-0.01	
	Sig.	0.08	0.15	.	*Sig.*		0.04	
	N	199.00	100.00	99.00	*t-stat*		-2.07	
Land_quality	*r*	-0.01	-0.07	0.06	*b*			2.83
	Sig.	0.94	0.62	0.59	*Sig.*			0.09
	N	149.00	62.00	87.00	*t-stat*			1.70

Table 5.8 (Continued)

Rent_land	*r*	-0.02	-0.01	-0.04	*b*	-5.75		
	Sig.	0.79	0.92	0.72	*significance*	0.09		
	N	199.00	100.00	99.00	*t-stat*	-1.69		
Buy_land	*r*	0.26	0.39	0.12	*b*		7.43	
	Sig.	0.00	0.00	0.24	*significance*		0.01	
	N	199.00	100.00	99.00	*t-stat*		2.80	
Crop_diversity_last_year	*r*	0.34	0.41	0.23	*b*	1.37	2.62	1.37
	Sig.	0.00	0.00	0.02	*significance*	0.02	0.00	0.20
	N	195.00	96.00	99.00	*t-stat*	2.40	3.64	1.29
Gross_income	*r*	-0.01	0.05	-0.08	*b*	0.00		0.00
	Sig.	0.89	0.61	0.47	*significance*	0.00		0.06
	N	185.00	97.00	88.00	*t-stat*	2.93		-1.96
Other_income_or_not	*r*	-0.09	-0.25	0.16	*b*	-7.74		
	Sig.	0.21	0.01	0.11	*significance*	0.00		
	N	200.00	100.00	100.00	*t-stat*	-3.61		
Net_income_over_labou_and_capital	*r*	-0.11	-0.01	-0.13	*b*	0.00		
	Sig.	0.17	0.91	0.25	*significance*	0.00		
	N	165.00	83.00	82.00	*t-stat*	-3.21		
Age_head	*r*	-0.13	-0.12	-0.13	*b*	-0.16		
	Sig.	0.07	0.25	0.19	*significance*	0.00		
	N	200.00	100.00	100.00	*t-stat*	-2.95		
Average_attitude_conservation		0.16	0.24	0.08		2.29	2.69	
		0.03	0.02	0.44		0.10	0.17	
		197.00	97.00	100.00		1.64	1.37	
Central Burma						-4.64		
						0.05		
						-2.01		

5.3.7 Economic Well-being

Economic well-being is a function of status of land ownership, social well-being, environmental awareness, environmental behavior, a low behavioral foot print and communication average behavioral foot-print and other economic fundamentals.

5.3.7.1 Theoretical justification for the hypothesis

We define economic well-being as an important pole of tri-polar axis[52] of economic development. The hypothesis proposed here is that economic well-being is one of the factor that promote the environmental quality and the welfare of local community. The economic welfare here is measured by the gross income per capita measured in nominal income per annum. Here, we tested whether the economic welfare is bring about by the welfare in the other areas such physical, social and environmental and spiritual well-being such as attitude, awareness, knowledge and behavior. Whether the market facilities, such as transportation, communication and location is important for economic welfare is also tested in the hypothesis to test the tri-polar vision of economic development.

5.3.7.2 Interpretation

We must reject this hypothesis because social well-being has a negative impact on economic well-being in Rakhine State and environmental behavior has a negative impact in central Myanmar. Furthermore, environmental awareness has

[52] Calkins P. 2007, Complementary lecture notes on microeconomic development. It says that there are five poles of tri-polar axis on the economic development. They are spiritual well-being, political stability, market efficiency, material balance that is environmental prosperity, social justice.

an ambiguous impact on the economic welo-being of the general sample. In contrast, environmental attitudes and communication increase economic well-being.

We should note, however, that the number of valid sample observations for gross income per capita was low in central Myanmar. There are also some people living under a complete barter economy without having nominal income in both areas. Having enough land is needed for economic well-being in central Myanmar, while it is the related concept of average attachment to land that has positive impact on economic well-being in Rakhine state.

Table 5.9 the regression summary of hypothesis 7.

	Pearson Correlations				Regressions			
Dependent variable = ***Gross income per capita***	*Statistic*	Overall sample	Bagan	Kyaintali	*Statistic*	Overall sample	Bagan	Kyaintali
					Observation	122.0	26.00	86.00
					Degr. Freedom	107.0	22.00	80.00
					F-statistic	8.90	18.74	4.68
					Adj. R-squared	0.49	0.73	0.20
Constant (intercept)	*r*	-	-	-	*b*	268595.	133798.	97007.76
	Sig.	-	-	-	*Sig.*	0.00	0.05	0.02
	N	-	-	-	*t-stat*	3.53	2.12	2.43
Average_community_manage	*r*	0.22	0.23	0.09	*b*			-11621.18
	Sig.	0.00	0.03	0.41	*Sig.*			0.74
	N	183.00	95.00	88.00	*t-stat*			-0.33
Average_attch_land	*r*	0.25	0.34	0.28	*b*	93954.88		85432.46
	Sig.	0.00	0.00	0.01	*Sig.*	0.01		0.01
	N	185.00	97.00	88.00	*t-stat*	2.86		2.88
Average_aware_benefits_refor	*r*	-0.15	-0.26	0.08	*b*	-57461.3		
	Sig.	0.06	0.02	0.47	*Sig.*	0.05		
	N	171.00	84.00	87.00	*t-stat*	-2.02		
Average_evn_behave	*r*	0.13	0.16	-0.02	*b*		-223625.	
	Sig.	0.08	0.12	0.87	*Sig.*		0.00	
	N	185.00	97.00	88.00	*t-stat*		-4.56	

Table 5.9 (Continued)

Rice_cons_d	*r*	-0.12	-0.12	-0.13	*b*			11287.88
	Sig.	0.09	0.25	0.22	*Sig.*			0.07
	N	184.00	97.00	87.00	*t-stat*			1.86
Educ_head	*r*	0.14	0.21	0.06	*b*	19551.8		
	Sig.	0.07	0.04	0.58	*Sig.*	0.00		
	N	185.00	97.00	88.00	*t-stat*	3.04		
Phonecalls	*r*	0.16	0.16	.(a)	*b*	47761.1		
	Sig.	0.03	0.12	.	*Sig.*	0.00		
	N	184.00	97.00	87.00	*t-stat*	3.44		
Average_access_inputs	*r*	0.02	0.03	0.10	*b*	57984.1		
	Sig.	0.79	0.75	0.38	*Sig.*	0.01		
	N	185.00	97.00	88.00	*t-stat*	2.53		
Average_attitude_conservation	*r*	0.11	-0.01	0.26	*b*	55304.6		65289.09
	Sig.	0.13	0.89	0.01	*Sig.*	0.05		0.04
	N	183.00	95.00	88.00	*t-stat*	2.00		2.04
Average_aware_destruction	*r*	0.06	0.28	0.23	*b*	82567.9		101168.5
	Sig.	0.45	0.01	0.03	*Sig.*	0.01		0.03
	N	185.00	97.00	88.00	*t-stat*	2.56		2.15
Enough_land	*r*	0.29	0.47	0.16	*b*		75357.4	
	Sig.	0.00	0.00	0.14	*Sig.*		0.01	
	N	174.00	88.00	86.00	*t-stat*		2.99	
Distance_road	*r*	-0.04	0.27	-0.11	*b*	27299.3	48209.4	
	Sig.	0.59	0.02	0.34	*Sig.*	0.01	0.00	
	N	165.00	80.00	85.00	*t-stat*	2.52	3.70	
Hh_size	*r*	-0.07	-0.11	-0.21	*b*	-24911.4		-44156.71
	Sig.	0.35	0.30	0.05	*Sig.*	0.00		0.01
	N	185.00	97.00	88.00	*t-stat*	-4.10		-2.62
Gender_hd	*r*	0.06	0.12	0.03	*b*		136328.	
	Sig.	0.40	0.26	0.79	*Sig.*		0.04	
	N	185.00	97.00	88.00	*t-stat*		2.19	
Nutritional_Status					*b*	-398.45		
					Sig.	0.75		
					t-stat	-0.32		
Benefit_costs_of_investment					*b*	6692.34		
					Sig.	0.00		
					t-stat	4.50		

Table 5.9 (Continued)

Yaesankwin					*b* *significance* *t-stat*	-214279. 0.00 -4.09		
Sisonekone					*b* *significance* *t-stat*	-311407.14 0.00 -6.09		
Supotekone					*b* *significance* *t-stat*	-254838.27 0.00 -5.90		
Doetan					*b* *significance* *t-stat*	-254290.65 0.00 -5.13		

5.3.8 Economic efficiency or technical efficiency

Technical efficiency is a positive function of environmental awareness, communication and environmental behavior. The general population except in the case of environmental behavior, which is significant only in central Myanmar also, communication reduces economic efficiency in Rakhine State.

5.3.8.1 Theoretical justification for the hypothesis

Technical efficiency is measured as a variable that is related to the use of technology to improve the productivity that enhances economic well-being. It is a kind of market efficiency that facilitate technology available to people to access for the economic improvement. The technology improvement can achieve from the environmental endowment, which promise the return for the investment. The myth of putting attitude, awareness, knowledge and behavior here in this equation is that

people who want to conserve the environment and moderate the extraction will try to seek for the technology as a substitute to maximize the profit instead of surfing the consumption from the environment. Here, the underlying philosophy is that people will try to seek for a substitute for environmental degradation if they are aware of it to maintain their property[53] profitable. To search for technology assistance, there are causes of making people to seek for a refuge than extracting from the environment. They are awareness, attitude, knowledge, behavior, environmental well-being, economic well-being and social adherence, which stimulate or induce behavior change in the community. Last but not least there should be information, communication and transportation for the new technology to spread from one location to another.

5.3.8.2 Interpretation:

We rejected the hypothesis. The equation does hold for the general population except in the case of environmental behavior, which is significant only in central Myanmar. But communication reduces economic efficiency in Rakhine State. By retroduction, we also find that environmental attitudes reduce economic efficiency in central Myanmar, and economic well-being increases economic efficiency in Rakhine State.

[53] Xenophon B.C. (430-354), a Greek philosopher who is contemporary with Socrates defined the property. He especially discussed about private property. The definition of a property is that it should be profitable. If it is not profitable or a loss to keep something, it is not a property. So, the myth is that people will try to make profitable from their ownership rather than a loss. Here, the use of land and forest should be profitable for a community to produce. If it degrade, it will not be profitable that people will seek for a way for environmental well-being.

Table 5.10 the regression summary of hypothesis 8

Dependent variable = ***Average access inputs***	Pearson Correlations				Regressions			
	Statistic	Bagan	Bagan	Kyaintali	*Statistic*	Overall sample	Central Burma	Rakine State
					Observation	110.00	72.00	74.00
					Degr. Freedom	98.00	62.00	65.00
					F-statistic	4.27	9.18	2.91
					Adj. R-squared	0.26	0.53	0.19
Constant (intercept)	*r*	-	-	-	*b*	44.18		-0.96
	Sig.	-	-	-	*significance*	0.00		0.00
	N	-	-	-	*t-stat*	5.76		-3.25
Average_behav_footprint	*r*	-0.05	0.09	-0.19	*b*	1.54	0.52	-0.45
	Sig.	0.53	0.37	0.06	*significance*	0.63	0.05	0.09
	N	200.	100.	100.	*t-stat*	0.49	2.04	-1.73
Average_attch_land	*r*	-0.11	-0.20	-0.08	*b*			
	Sig.	0.14	0.04	0.44	*significance*			
	N	200.	100.	100.00	*t-stat*			
Average_attitude_conservation	*r*	-0.08	-0.09	0.03	*b*		-0.39	0.05
	Sig.	0.29	0.37	0.79	*significance*		0.01	0.71
	N	197.00	97.00	100.00	*t-stat*		-2.69	0.37
Average_attitude_ecotour	*r*	-0.02	-0.01	-0.07	*b*	1.08		
	Sig.	0.78	0.93	0.54	*significance*	0.32		
	N	165.00	72.00	93.00	*t-stat*	1.01		
Average_evn_behave	*r*	-0.09	-0.02	-0.10	*b*		0.23	
	Sig.	0.18	0.81	0.33	*significance*		0.08	
	N	200.00	100.00	100.00	*t-stat*		1.76	
Average_financial_viabil	*r*	-0.11	-0.25	0.03	*b*			
	Sig.	0.11	0.01	0.75	*significance*			
	N	199.00	99.00	100.00	*t-stat*			
Average_aware_destruction	*r*	0.20	0.12	0.12	*b*	4.13		0.37
	Sig.	0.00	0.25	0.23	*significance*	0.03		0.08
	N	200.00	100.00	100.00	*t-stat*	2.14		1.77
Average_aware_benefits_refor	*r*	0.14	0.26	0.02	*b*			
	Sig.	0.05	0.02	0.82	*significance*			
	N	185.00	86.00	99.00	*t-stat*			
Average_know_env	*r*	-0.01	-0.03	0.01	*b*		0.09	
	Sig.	0.90	0.76	0.95	*significance*		0.40	
	N	192.00	93.00	99.00	*t-stat*		0.84	
Attitude_community_management	*r*	0.02	-0.09	0.18	*b*		0.04	0.17
	Sig.	0.84	0.69	0.16	*significance*		0.70	0.28
	N	90.00	24.00	66.00	*t-stat*		0.38	1.08
Rent_land	*r*	-0.12	-0.17	-0.11	*b*			-0.48
	Sig.	0.08	0.08	0.26	*significance*			0.05
	N	199.00	100.00	99.00	*t-stat*			-1.99
Crop_diversity_last_year	*r*	-0.27	-0.37	-0.10	*b*		-0.21	
	Sig.	0.00	0.00	0.32	*significance*		0.00	
	N	195.00	96.00	99.00	*t-stat*		-4.61	

Table 5.10 (Continued)

percent_specialisation	*r*	-0.05	0.01	-0.15	*b*			-0.17
	Sig.	0.55	0.92	0.17	*significance*			0.14
	N	154.00	66.00	88.00	*t-stat*			-1.49
Gross_income	*r*	-0.03	0.00	0.08	*b*			0.00
	Sig.	0.66	0.97	0.46	*significance*			0.34
	N	185.00	97.00	88.00	*t-stat*			0.96
Distance_town	*r*	-0.12	-0.07	0.03	*b*		-0.01	
	Sig.	0.10	0.50	0.79	*significance*		0.03	
	N	185.00	93.00	92.00	*t-stat*		-2.21	
Time_road	*r*	0.13	-0.17	0.23	*b*	-0.12		0.01
	Sig.	0.10	0.13	0.03	*significance*	0.01		0.01
	N	176.00	84.00	92.00	*t-stat*	-2.65		2.68
Trips_month	*r*	-0.10	0.05	-0.21	*b*		0.05	
	Sig.	0.16	0.63	0.04	*significance*		0.03	
	N	190.00	92.00	98.00	*t-stat*		2.27	
Phonebill	*r*	-0.06	-0.05	.(a)	*b*		0.00	
	Sig.	0.42	0.65	.	*significance*		0.08	
	N	199.00	100.00	99.00	*t-stat*		1.79	
Hh_size	*r*	-0.06	-0.10	0.12	*b*		0.05	
	Sig.	0.44	0.32	0.24	*significance*		0.07	
	N	200.00	100.00	100.00	*t-stat*		1.84	
Age_head	*r*	-0.03	-0.10	0.15	*b*	-0.11		
	Sig.	0.70	0.32	0.14	*significance*	0.06		
	N	200.00	100.00	100.00	*t-stat*	-1.91		
Educ_head	*r*	-0.19	-0.26	-0.14	*b*	-1.17		-0.07
	Sig.	0.01	0.01	0.16	*significance*	0.00		0.03
	N	200.00	100.00	100.00	*t-stat*	-2.89		-2.29
Yaesankwin					*b*	-21.72		
					significance	0.00		
					t-stat	-3.79		
Sisonekone					*b*	-23.81		
					significance	0.00		
					t-stat	-4.30		
Supotekone					*b*	-21.12		
					significance	0.00		
					t-stat	-3.86		
Doetan					*b*	-22.15		
					significance	0.00		
					t-stat	-3.99		
Latpantal					*b*	-25.14		
					significance	0.00		
					t-stat	-4.19		
Taungphattan					*b*	-27.32		
					significance	0.00		
					t-stat	-4.38		

5.3.9 Social Well-being

Social well-being is a positive function of environmental attitudes, environmental knowledge and economic well-being. We failed to reject this hypothesis because all the proposed variables were significant.

5.3.9.1 Theoretical justification for the hypothesis

Average community management is a variable that create a society a condition to participate in a development planning or environmental conservation to protect the property of a community. The trust, participation and social adherence in the society is measure in ordinal scores and computed as a composite variable of all these social norms and trust in the community. This spiritual well-being will bring about a balance economic development. If there is social adherence in the community, it is easy to implement a better plan for the community for any long-term planning and it is the empowerment of people, which maintain the sustainability of any project.

The ethical definition in each society differs from one to another but it is the social well-being, which maintains the social norms, discipline or customs. There are rules and local norms already in the society to follow to preserve the habitat or share the environmental resources but it is the social adherence or moral sentiment that ensures the practice. The spiritual well-being or the social adherence is the main axis of tri-polar view of economic development.

5.3.9.2 Interpretation

We failed to reject this hypothesis because all significant variables have the signs predicted by the hypothesis. However, through retroduction, we find

that communication has an ambiguous impact on social well-being in the general population and a negative impact in central Myanmar, where environmental awareness and environmental behavior further reduce social well-being. It should be stressed that Central Myanmar had a fairly low number of observations on community management. Even though the department of forestry has been implementing community conservation policy for about three decades, most local people did not feel they understood it well enough to answer questions.

Table 5.11 summary of regression analysis and correlation matrices for hypothesis 9

Dependent variable = ***Average_community_manage***	Pearson Correlations				Regressions			
	Statistic	Overall sample	Bagan	Kyaintali	*Statistic*	Overall sample	Central Burma	Rakine State
					Observations	133.00	44.00	80.00
					Degr. Freedom	126.00	32.00	72.00
					F-statistic	27.30	5.53	15.86
					Adj. R-squared	0.58	0.55	0.60
Constant (intercept)	*r*	-	-	-	*b*		-1.96	
	Sig.	-	-	-	*significance*		0.00	
	N	-	-	-	*t-stat*		-3.83	
Time_road	*r*	-0.24	0.01	-0.19	*b*	0.00		
	Sig.	0.00	0.90	0.08	*significance*	0.02		
	N	174.0	82.0	92.00	*t-stat*	-2.35		
Average_attitude_consevartion	*r*	0.44	0.31	0.54	*b*	0.23	0.72	0.22
	Sig.	0.00	0.00	0.00	*significance*	0.02	0.00	0.02
	N	195.00	95.00	100.00	*t-stat*	2.38	4.64	2.44
Average_attitude_ecotour	*r*	0.08	0.08	0.21	*b*	0.15	0.19	0.17
	Sig.	0.29	0.52	0.04	*significance*	0.03	0.04	0.01
	N	165.00	72.00	93.00	*t-stat*	2.25	2.20	2.50
Gross_income	*r*	0.21	0.16	0.12	*b*	0.00		
	Sig.	0.01	0.11	0.27	*significance*	0.20		
	N	183.00	95.00	88.00	*t-stat*	1.27		
Distance_road	*r*	-0.25	0.01	-0.15	*b*		0.04	
	Sig.	0.00	0.97	0.15	*significance*		0.37	
	N	171.00	79.00	92.00	*t-stat*		0.92	

Table 5.11 (Continued)

Average_behav_footprint	*r*	0.11	0.01	0.18	*b*		-0.58	
	Sig.	0.13	0.90	0.07	*significance*		0.08	
	N	197.00	97.00	100.00	*t-stat*		-1.82	
Average_attch_land	*r*	0.05	0.30	-0.14	*b*		1.42	-0.23
	Sig.	0.50	0.00	0.16	*significance*		0.00	0.01
	N	197.00	97.00	100.00	*t-stat*		3.90	-2.59
Average_evn_behave	*r*	0.20	0.15	0.19	*b*		-0.42	
	Sig.	0.01	0.15	0.06	*significance*		0.01	
	N	197.	97.00	100.00	*t-stat*		-2.79	
Average_financial_viabil	*r*	0.19	0.23	0.19	*b*	0.24		0.27
	Sig.	0.01	0.03	0.06	*significance*	0.03		0.03
	N	197.00	97.00	100.00	*t-stat*	2.18		2.25
Average_aware_destruction	*r*	-0.22	-0.22	0.18	*b*		-0.42	0.06
	Sig.	0.00	0.04	0.07	*significance*		0.02	0.62
	N	197.00	97.00	100.00	*t-stat*		-2.46	0.49
Average_aware_benefits_refor	*r*	0.20	0.09	0.37	*b*			
	Sig.	0.01	0.42	0.00	*significance*			
	N	185.00	86.00	99.00	*t-stat*			
Average_know_env	*r*	0.34	0.26	0.50	*b*	0.21		0.24
	Sig.	0.00	0.01	0.00	*significance*	0.00		0.00
	N	190.00	91.00	99.00	*t-stat*	2.90		2.94
Rent_land	*r*	0.05	0.08	0.07	*b*			0.30
	Sig.	0.45	0.44	0.48	*significance*			0.05
	N	196.00	97.00	99.00	*t-stat*			1.96
Enough_land	*r*	-0.01	0.25	-0.24	*b*		-0.29	
	Sig.	0.93	0.02	0.02	*significance*		0.02	
Crop_diversity_last_year	*r*	0.15	0.20	0.00	*b*			
	Sig.	0.04	0.05	0.97	*significance*			
	N	192.00	93.00	99.00	*t-stat*			
percent_specialisation	*r*	-0.05	-0.11	0.07	*b*			0.07
	Sig.	0.55	0.40	0.50	*significance*			0.40
	N	151.0	63.0	88.00	*t-stat*			0.85
Net_income_over_labou_and_capital	*r*	0.20	0.14	0.20	*b*		0.00	
	Sig.	0.01	0.20	0.08	*significance*		0.03	
	N	163.00	81.00	82.00	*t-stat*		2.29	
Benefit_costs_of_investment	*r*	0.08	0.14	0.20	*b*			
	Sig.	0.33	0.27	0.09	*significance*			
	N	141.00	65.00	76.00	*t-stat*			

Table 5.11 (Continued)

Distance_town	*r* *Sig.* *N*	-0.02 0.82	-0.20 0.06	0.09 0.38	*b* *significance* *t-stat*	0.02 0.00 3.09		
Time_town	*r* *Sig.* *N*	-0.03 0.66 179.	-0.07 0.53 87.0	0.00 0.99 92.0	*b* *significance* *t-stat*		0.19 0.01 2.96	
Tripcost	*r* *Sig.* *N*	-0.20 0.01 187.	-0.31 0.00 88.0	0.04 0.69 99.0	*b* *significance* *t-stat*		0.00 0.00 -5.24	
Age_head	*r* *Sig.* *N*	0.12 0.09 197.	0.09 0.36 97.0	0.06 0.58 100.	*b* *significance* *t-stat*		0.02 0.01 2.89	
Educ_head	*r* *Sig.* *N*	0.13 0.06 197.	0.19 0.07 97.0	0.11 0.27 100.	*b* *significance* *t-stat*			