Residents' Attitude toward Community-Based Ecotourism in Cambodia: Based on Two Cases of Yeak Laom and Chi Phat Communes

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List of Acronyms and Abbreviations

ABIC	Sample-size Adjusted Bayesian Information Criterion
AIC	Akaike Information Criterion
ALMR LR	Adjusted Voung-Lo-Mendell-Rubinb Likelihood Ratio Test
APPA	The Appreciative Participatory Planning Action
BF	Bayes Factor
BIC	Bayesian Information Criterion
BLRT	Bootstrap Likelihood Ratio Test
CARERE	Cambodian Area Regeneration and Rehabilitation Project
CAT	Community Attachment Theory
CBET	Community-Based Ecotourism
CDC	Commune Development Council
CDO	Commune Database Online
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
CR	Construct Reliability
df	Degree of Freedom
DFID	Department of International Development
DV	Dependent Variable
EFA	Exploratory Factor Analysis
EM	Model Estimated Mean
exp	Exponential
GLS	General Least Squares

ICDP	Integrated Conservation and Development Project
IDRC	International Development Research Centre of Canada
IO	International Organization
LCA	Latent Class Analysis
LPA	Latent Profile Analysis
LRT	Likelihood Ratio Test
MLR	Maximum Likelihood With Robust Standard Errors
MOT	Ministry of Tourism
NFTP	Non-Forest Timber Product
NGO	Non-Governmental Organization
NRPART	Non-Remunerative Participation
OR	Odds Ratio
PILA	Perceived Impacts of CBET on Livelihood Assets
PILO	Perceived Impacts of CBET on Livelihood Outcome
PRDC	Provincial Rural Development Committee
RMSEA	Root Mean Square Error of Approximation
RPART	Remunerative Participation
SD	Standard Deviation
SEM	Structural Equation Modeling
SET	Social Exchange Theory
SIC	Schwarz Information Criterion
SRMR	Standardized Root Mean Square Residual
SUPPORT	Support for Community-Based Ecotourism Development
SUS-TAS	Sustainable Tourism Attitude Scale

TIAS	Tourism Impact Attitude Scale
TLI	Tucker-Lewis Index
TM	Transformed Mean
TRA	Theory of Reasoned Action
UNDP	United Nation Development Program
US$	The United States Dollar
VIF	Variance Inflation Factor
VLMR LRT	Voung-Lo-Mendell-Rubinb Likelihood Ratio Test
WA	Wildlife Alliance
YLCDC	Yeak Laom Commune Development Committee
YLLCRC	Yeak Laom Lake Conservation and Recreation Committee

Chapter 1: Introduction

1.1 Background of the study

Cambodia is located in the southwestern part of the Indochina peninsula of Southeast Asia (Figure 1.1). It has approached the status of a lower middle-income country through steady economic growth that is driven by strong performances in garment manufacture, tourism, paddy and milled rice, and construction. According to the World Travel and Tourism Council, the total contribution of travel and tourism industry accounted for 29.9% of Cambodia's GDP in 2014 (WTTC, 2015). The international tourist arrivals to Cambodia have doubled from 2010 to 2014. In 2010, the number of international tourist arrivals was only 2,508,289, while in 2014 it rose to 4,502,775 (MOT, 2015). The primary tourist attractions of Cambodia are the country's historical and cultural heritages, especially Angor Wat Temples. In addition, the government has been trying to promote ecotourism as well. Since the early 1990s, throughout Cambodia community-based ecotourism (CBET) has been initiated and developed in an attempt to conserve natural resources and to improve local people's livelihoods (Bauld, 2007; Conway, 2008; Khanal & Babar, 2007; Prachvuthy, 2006; Walter & Reimer, 2012; cited in Carter, Thok, O'Rourke, & Pearce, 2015). Since then 56 ecotourism sites have been established all over Cambodia according to the Minister of Tourism (MOT) (Rann, 2013). MOT reported that 450, 000 ecotourists, accounting for 16% of the total number of tourists who visited Cambodia in 2011 (Lonn, 2014). MOT also estimated that the demand for ecotourism increased by around 10% annually (Khon, 2011). According to a recent survey of 200 tourists who visited Cambodia, 10% of the surveyed tourists evaluated ecotourism sites as one of the most important pull factors for their visits. Twenty-five percent of the surveyed tourists visited national parks and protected areas (Khon, 2011), which are the bases for CBET. Khon (2011) pointed out that tourists identified the Tonle Sap Biosphere Reserve, the Northeast Area and the Coastal Zone as the most attractive regions for visiting national parks and protected areas. Although currently the ecotourism market in Cambodia is still small, it is a potential market segment for Cambodia

Figure 1-1 Location of Cambodia
Source: Tourism of Cambodia (2015)

to diversify its tourism attractions so that the length of tourists' stay and their expenditure can be extended and increased. After the Paris Peace Agreement in 1993, Cambodia's natural resources have been increasingly depleted. Specifically, forest cover drastically decreased from 68% of the country area in 1989 to 48% in 2014 (Open Development Cambodia, 2015a). Michinaka et al. (2013) found that extensive plantation encroachment, large-scale agricultural production, and population growth were the determinants of deforestation in Cambodia. To address this issue, during the past decades community-based ecotourism (CBET) has been employed as Integrated Conservation and Development Projects (ICDPs) to conserve the environment and to improve the livelihood of local people. Recently there has been a

controversy over development approaches for the country's forest areas. The government of Cambodia has introduced development projects such as hydropower dam construction and economic land concession to the private sector. These development projects are believed to contribute to economic growth and poverty reduction at the national level. On the other hand, some academics, environmental activists, and the local people in some areas advocate for ecotourism (Hul & Peter, 2015; Khem, 2015; Kuch & Chen, 2013). The reason is that ecotourism contributes to both conserving natural resources and sustaining residents' livelihoods; As Fennell (2008) states

> Ecotourism is a sustainable, non-invasive form of nature-based tourism that focuses primarily on learning about nature first-hand, and which is ethically managed to be low impact, non-consumptive and locally oriented (control, benefits, and scale). It typically occurs in natural areas, and should contribute to the conservation of such areas (p. 24).

Taking residents' attitude into account is a moral and democratic approach to any development projects because the project significantly influences their livelihoods. In turn, as stated earlier, residents' attitude toward the project is crucial for its sustainability and success. Most scholars support this assertion; for example, Lepp (2007) stressed that residents' positive attitude indicates that tourism is suitable for the local community. In addition, it also leads to a positive behavior such as participation in tourism and conservation of the natural resources on which tourism is based. This argument is supported by Ajzen & Fischbein's (1980) Theory of Reasoned Action (TRA) which posits that the attitude influences behavioral intention, which in turn leads to particular behaviors.

1.2 Problem statement and objectives of the study

Residents' attitude toward tourism has gained much attention from tourism researchers since the late 1980s because both scholars and practitioners identified that one of the factors for the success and sustainability of tourism is residents' positive attitude (Chen & Raab, 2009; Deccio & Baloglu, 2002; Gursoy et al., 2010). This is especially true in the case of community-based

ecotourism for the following reasons. Denman (2001) defined community-based ecotourism as "a form of ecotourism where the local community has substantial control over and involvement in its development and management, and a major proportion of the benefits remain within the community" (p.2). The definition implies that the developer and manager of CBET is a local community or committee body with a "collective responsibility and approval" (p.2). Therefore, CBET requires active involvement from residents who would have a high degree of interaction with CBET visitors. As a result, the livelihoods of residents can be significantly influenced by CBET projects, while their attitudes are vital to the success and sustainability of such projects.

Particularly in Cambodia, while some CBETs are successful and sustainable, several other CBETs can hardly sustain their operations. One of the determining factors might be residents' adverse attitude or lack of participation. For example, Ven & Usami (2014) found that residents' attitude toward Koh Phdao CBET was on the lowest edge of the medium level of sustainability[1]. More importantly, they found that the CBET members' low satisfaction, undesirable attitude and resignations might impede the operation of the CBET. Additionally, it has been observed that CBETs in Cambodia might not benefit all the residents in the community. Often, the beneficiaries receive inequitable economic benefits from CBET. As an example, Prachvuthy (2006) and Lonn (2012) found that income distribution from Chambok CBET had a Gini Coefficient of 0.50 and 0.73 respectively, indicating that the income distribution was unequal. These disparities may make the residents have a negative attitude toward CBET. Therefore, it is necessary to study residents' attitude toward CBET so that it can sustainably exist in harmony with the local community. Carter et al. (2015) conducted a system review[2] of the literature on sustainable tourism in Cambodia. They found that 23% of the reviewed articles focused on ecotourism. They also revealed that in the literature there was the consensus that community participation in tourism was indispensable to assure that the local people received benefits from tourism (Bith, 2011; Conway, 2008; Dowley, 2007; Franklin

[1] For more detail, please see Ven, S., & Usami, K. (2014). The sustainability of ecotourism in Cambodia: A case of Koh Phdao and Sampin Villages. Journal of Rural Problem, 50(2), 173–178.
[2] Systematic reviews use strictly established criteria to search articles. It chooses and examines literature via systematic, clear and reproducible methods (Carter et al., 2015).

2012; Neth, 2008; Neth & Rith, 2011; Tiranutti, 2007 cited in Carter et al., 2015). Besides, the literature extensively documented the obstacles to encouraging community involvement. Nonetheless, few studies have addressed residents' attitude toward CBET. Moreover, the effect of residents' participation in ecotourism on their perceived impacts of and support for ecotourism is also little understood, although community participation is commonly used as an incentive for residents to support CBETs.

Therefore, the purpose of the dissertation is to analyze thoroughly the residents' participation, perceived impacts, and support for CBET by using the sample data collected from two CBET destinations. Doğan (1989) suggested that residents' attitude toward tourism is homogeneous at the initial stage of tourism development. At later stages, residents' reactions become heterogeneous. Therefore, the first objective of this study is to identify the clusters of residents' attitude toward CBET. Residents with similar levels of the factors of interest (i.e., residents' participation in, perceived impacts of, and support for CBET) are classified into particular groups, so the levels of the factors for each cluster are characteristics of the respective cluster. However, the results of this objective will not identify what the determinants of each cluster are. What affects the likelihood or the probability of a resident's belonging to a particular cluster? Therefore, it is needed to answer this question, so the second objective is to find the determinants of the resident clusters identified in the first objective. The second objective can provide better understanding on the reasons why residents are likely to become a member of certain clusters so that CBET developers and managers can take appropriate interventions to improve their attitude to CBET. Up to now, the relationships among the factors have not been studied, so the third objective is to discover the relationships among residents' participation in, perceived impacts of, and support for CBET. This objective will provide better understand the role of residents' participation in improving their perceived impacts of and support for CBET. The relationships among residents' participation in, perceived impacts of, and support for CBET are currently little studied in Cambodia. Similarly, Lee (2013) claimed that there were

few studies on the relationships between community participation and residents' support for sustainable tourism.

In brief, the problem statements for this dissertation can be summarized as follows:

1) Both scholars and practitioners in the tourism field claim that residents' participation and attitude are critical for sustainable and successful tourism development.
2) Particularly in Cambodia, it is observed that while some CBETs are sustainable and successful, other CBETs fail to survive. One of the determining factors of this failure may be residents' lack of participation and negative attitudes.
3) Academically, residents' attitude toward CBET and the relationship between residents' participation, their perceived impacts of, and support for CBET are currently little understood in Cambodia.

Consequently, the dissertation aims to scrutinize thoroughly residents' participation, their perceived impacts of, and support for CBET with three main objectives:

1) To determine clusters of residents' attitude to CBET.
2) To identify the determinants of the clusters of residents' attitude to CBET found in the first objective.
3) To study the relationships between residents' participation and their perceived impacts of and support for CBET.

1.3 Structure of the dissertation

The dissertation contains eight chapters. The first four chapters (Chapters 1- 4) introduce and present the lead-in materials and the setting of the core materials that are the findings of the three objectives. The core materials are located in Chapters 5, 6, and 7. These chapters deal with results and discussions along with the three objectives. The last chapter (Chapter 8) is the lead-out materials or the conclusion of the study.

Chapter 1 introduces the background of the study, the problem statement, the objectives of the study, and the structure of the dissertation.

Chapter 2 reviews the literature concerned from the viewpoints of ecotourism definition/concept, residents' participation in ecotourism, residents' attitude toward ecotourism, classification of attitude toward tourism, socio-demographic determinants of residents' attitude, and determining latent factors of residents' attitude. Based on the literature review, theoretical models and hypotheses were postulated.

Chapter 3 describes the methodology of the study, which includes study instruments, data collection methods and data analysis methods.

Chapter 4 explains the operation and management of CBETs in the study areas. In practice, background and history of CBET establishment, institutional system of operation and management, and residents' participation are items of interest.

Chapter 5 includes results and discussion of the first objective. Based on results of Confirmatory Factor Analysis (CFA) and Latent Profile Analysis (LPA), the resident clusters are determined. For each cluster, the characteristics of attitude toward CBET are summarized.

Chapter 6 includes results and discussion of the second objective. Based on results of Confirmatory Factory Analysis (CFA) and Logit regression analysis, the determinants of resident clusters from the viewpoints of socio-demographic factors and latent factors are clarified.

Chapter 7 illustrates the structure of attitude toward CBET as relationships among participation, perceived impacts and support.

Finally, Chapter 8 is devoted to addressing the conclusion of the study that includes findings, policy recommendations, limitations of the study, and suggestions for future research.

Chapter 2: Literature Review

2.1 Ecotourism

Towards the end of the 1990s, sustainable tourism development emerged explicitly as a new paradigm (Pigram, 1990; Dearden, 1991; Inskeep, 1991; Lane, 1991; Manning, 1991; Bull, 1992; D'Amore, 1992; Eber, 1992; Zurick, 1992 cited in Weaver, 2006). Sustainable development[3] is the parental paradigm of sustainable tourism development[4] (Bramwell & Lane 1993; Butler, 1998; Clarke,1997; Harrison, 1996; Stabler, 1997; Sharpley, 2000 cited in Miller & Twining-Ward, 2005). In turn, sustainable tourism development is the parental paradigm of ecotourism development (Butcher, 2008). From the late 1970s to the early 1980s, mass tourism received criticisms of its adverse impacts. Consequently, as an alternative to mass tourism, ecotourism has emerged. By the mid-1980s, ecotourism was identified as a tool to contribute to both development and conservation (Blamey, 2001). Meanwhile, non-governmental organizations (NGOs) working on conservation and community development started using ecotourism as a means of achieving both conservation and development goals, especially in rural areas of developing countries (Ghimire & Pimbert, 1997). This approach is called, Ecotourism Integrated Conservation and Development Projects (ICDPs) (Butcher, 2008; Scheyvens, 2002). Ecotourism ICDPs is an exemplary of neopopulism approach of development, which is often implemented by civil societies. The characteristics of neopopulism, advocated by Chambers (1983, 1988, 1997), include "bottom-up planning," "decentralization," and "participation". These terms, which are the attributes of ecotourism ICDP, significantly influenced developmental discourse. Neopopulism development calls for small-scale, community-oriented developmental projects such as ecotourism ICDPs, but denies large scale projects that harness nature to satisfy human progress (Butcher, 2008). Butcher

[3] Sustainable development is defined as "development that meets the needs of the present without compromising the ability of the future generations to meet their own needs" (Brundtland & WCED, 1987, p. 41)

[4] Sustainable tourism development is defined as "tourism which is developed and maintained in an area in such a manner and at such a scale that it remains viable over an indefinite period and does not degrade or alter the environment (human and physical) in which it exists to such a degree that it prohibits the successful development and well-being of other activities and processes" (Butler, 1993, p. 29).

(2008) differentiated the term “ecotourism ICDPs” from ecotourism. Both terms explain different aspects of the same phenomenon. The former designates the supply side, which are activities of the community to implement development and conservation. The latter refers to the demand side, the leisure travel market of ecotourism destinations.

2.2 Residents’ participation in ecotourism

There are numerous studies on community participation in, perceptions of, and support for ecotourism and conservation (Andereck, Valentine, Knopf, & Vogt, 2005; Pegas, Coghlan, Stronza, & Rocha, 2013; Stronza & Gordillo, 2008). In the literature, the word “community participation” commonly refers to the local people’s involvement in the development and management process of tourism, such as meetings arranged for decision-making and action planning and implementation. It is widely agreed that community participation is vital for ecotourism, theoretically. As described earlier, participation — one of the characteristics of neopopulism advocated by Chambers (1983, 1988, 1997) and one of the attributes of ecotourism ICDP — significantly influenced developmental discourse. Murphy (1985) described community participation as central to the ecotourism concept. Participation is a mechanism to assure that residents can benefit from the ecotourism (Campbell, 1999; Simmons, 1994). It is a “point of principle” and “an intrinsic aspect” of ecotourism projects (Butcher, 2008, p. 63). Community participation provides the local community “control” and “ownership” of ecotourism projects, which in turn “empower” and provide them more “self-sufficiency” (Butcher, 2008, pp. 64-65).

However, recent empirical studies found that only a few residents were involved in ecotourism and the management process or the level of community participation was low (Chengcai, Linsheng, & Shengkui, 2012; Holladay & Ormsby, 2011; Jitpakdee & Thapa, 2012; Shoo & Songorwa, 2013; Ven & Usami, 2014; H. Wang, Yang, Chen, Yang, & Li, 2010), while broad-based participation was illusive (Southgate, 2006). Furthermore, community participation was passive (Shoo & Songorwa, 2013) and declined over time (Holladay & Ormsby, 2011). It was also found that only a few residents benefited from ecotourism

(Campbell, 1999; Shoo & Songorwa, 2013), and the benefits were small (Kinnaird & O'Brien, 1996; Prachvuthy, 2006).

A moderate body of literature has investigated the effect of residents' non-remunerative participation on their attitude toward tourism (Ap, 1992; Lee, 2013; Nicholas, Thapa, & Ko, 2009). The literature regarding the relationship of community participation in tourism with residents' attitude toward tourism can be divided into two schools. On one hand, some studies found that community involvement in the decision-making and management process of tourism did not have a significant relationship with residents' attitude toward tourism, or the relationship was negative. For example, Nicholas et al. (2009) posited that involvement in the decision-making and management process was antecedents of residents' perception of and support for sustainable tourism. Unfortunately, they could not detect the significant relationships as they hypothesized. They reported that most residents (92%) were not engaged in the management or decision-making process of tourism, yet they had a strong support for it. This fact might be the reason for the lack of relationships between community participation and support. Another similar example is the study of Choi & Murray (2010) which reported that the attitude toward community participation had an adverse relationship with the positive perceived impacts of and support for tourism, but it had a positive relationship with perceived negative impacts. This finding perhaps reflects the residents' previous experiences, which might result from the circumstance in which community participation was not taken into account in tourism development during the 1980s and the early 1990s. On the other hand, several previous studies (Ap, 1992; Chiang & Huang, 2012; Lee, 2013) discovered that community participation in tourism development, management, or decision-making process positively affects residents' perception of impacts from tourism. Besides, Lankford (1994) proposed that if residents' opinions and participation are taken into account, they are likely to support tourism. This proposition is supported by Chiang & Huang (2012) and Lee (2013) who revealed that community involvement was positively related to support for tourism. The literature reviewed

in this section will be used to posit hypotheses necessary to formulate a theoretical model in the model specification[5] of Chapter 7.

Remunerative participation is similar to residents' economic dependency on tourism (or tourism dependency), which has been investigated by many studies. That is because the level of remunerative participation may be equivalent to the level of tourism dependency. Tourism dependency has been identified by many previous studies as an antecedent of residents' attitude toward tourism. It is obvious that residents economically depending on tourism may have a positive attitude toward tourism. Previous studies from Pizam (1978) to Vesey & Dimanche (2000) support this premise (Harrill, 2004). Nonetheless, tourism dependency cannot always lead to a positive attitude toward tourism. For instance, Brunt & Courtney (1999), Pizam (1978) Williams & Lawson (2001) discovered that residents depending on tourism held both very negative and positive attitudes toward tourism. They had an adverse attitude because they had a close involvement in tourism; they thus might promptly recognize negative impacts if there are any. Similarly, Chiang & Huang (2012) could not identify a significant relationship between tourism dependency and residents' attitude toward tourism. However, they found that most residents did not depend on tourism economically. Thus, they inferred that residents who did not economically depend on tourism were not likely to be aware of other benefits of tourism. In conclusion, remunerative participation is likely to have a direct positive effect on residents' perceived impacts of and support for CBET. Similar to the literature in the paragraph above, this conclusion will be used to posit hypotheses for formulating a theoretical model in the model specification of Chapter 7.

2.3 Residents' attitude toward ecotourism

Previous studies reported that most residents of ecotourism destinations are likely to have positive perceived impacts of and/or high support for ecotourism (Campbell, 1999; Holladay & Ormsby, 2011; Lai & Nepal, 2006; Lepp, 2007; Pegas et al., 2013; Stronza & Gordillo, 2008).

[5] Model specification is the first step of Structural Equation Modelling, in which hypothesized relationships among the latent factors in the model are posited based on the findings of previous studies or any substantial theories.

The common justifications for positive perceived impacts of and strong support for ecotourism were economic benefits in term of income and/or employment (Campbell, 1999; Holladay & Ormsby, 2011; Lepp, 2007; Lindberg & Johnson, 1997; Smith & Krannich, 1998; Stronza & Gordillo, 2008). For example, Campbell (1999) found that 72% of Ostional Beach in Costa Rica supported tourism growth. Twenty percent of the residents identified monetary benefits as an explanation for their support for tourism growth, while most residents could not explain their reasons. Thus, Campbell (1999) suggested that the unjustified support for a rise in tourism implied that the community simply longed for additional economic activities. Similarly, Lepp (2007) concluded that most of the residents in Bigodi village in Uganda had positive attitudes toward tourism. One of the justifications for the lack of negative attitudes was the residents' desire for economic development. Other than economic benefits, previous studies indicated that residents perceived that ecotourism contributed to gaining new skills, leadership, self-esteem, networks of support and organizational capacity (Stronza & Gordillo, 2008). On the negative side, some residents cited unfavorable perceptions about ecotourism, which were associated with new restraint on time, decline of reciprocity and other traditional networks and conflict over profit sharing (Stronza & Gordillo, 2008). Other perceived adverse impacts included inflation (Lepp, 2007), negative impact on the nesting of species on which tourism bases and other social impacts such as drugs, disorder, crime, pollution and so on (Campbell, 1999).

Social Exchange Theory (SET)[6] has been extensively utilized to study residents' attitude toward tourism. Its basic concept is that if residents perceive that tourism has more positive impacts (benefits) than negative impacts (cost), they are inclined to support it (Allen, Hafer, Long, & Perdue, 1993; Ap, 1992; D. Gursoy et al., 2010; Dogan Gursoy & Kendall, 2006; Dogan Gursoy & Rutherford, 2004). Based on this theory, many empirical studies used residents' perception of impacts or benefits/costs of tourism as explanatory factors of support

[6] Social Exchange Theory (SET) emerged during the early 1960s and was used in the sociology by Blau (1964), Homans (1961), Thibaut & Kelley (1959). Its basic principle is that humans in society behave in a manner that maximize the likelihood of fulfilling their self-interests.

for tourism via Structural Equation Modelling (SEM)[7]. Previous studies (Choi & Murray, 2010; Dyer, Gursoy, Sharma, & Carter, 2007; Ko & Stewart, 2002; Oviedo-Garcia, Castellanos-Verdugo, & Martin-Ruiz, 2008; Vargas-Sánchez, Porras-Bueno, & Plaza-Mejía, 2011; Yoon, Gursoy, & Chen, 2001) used perceived impacts in terms of economic, cultural, social and environmental aspects as explanatory factors of support for tourism. Alternatively, other studies (Gursoy et al., 2010; Gursoy, Jurowski, & Uysal, 2002; Gursoy & Kendall, 2006; Gursoy & Rutherford, 2004; Jurowski & Gursoy, 2004; Lee, 2013; Nunkoo & Ramkissoon, 2011) used perceived benefits and costs for the same aspects. These earlier studies found that positive perceived impacts or benefits had positive effects on support for tourism. On the other hand, perceived negative impacts or costs had negative effects on support for tourism.

2.4 Classification of attitude toward tourism

Classification of attitude has been one of the approaches used to study attitude toward tourism. The development stage of tourism influences residents' attitude toward tourism (Lepp, 2007). According to Butler (1980), development stages of a tourism area include exploration, involvement, development, consolidation and stagnation. The Irridex model of Doxey (1975) is one of the best-known models of residents' attitude toward tourism. Doxey (1975) suggested that at the initial phases of tourism development, residents have positive attitudes. However, when tourism development evolves to the stagnation stage, residents' negative attitudes arise. Similar to the Irridex model, Smith & Krannich (1998) classified four rural communities into three clusters as follows: First, a tourism-saturated community is a very mature tourism destination where residents have high negative perceptions about impacts of tourism and do not want more tourists; Second, a tourism-realized community is a destination that has a moderate level of tourism development. Residents are not sure whether they want more tourists or not; and lastly, a tourism-hungry community consists of residents who desire more tourists. They may be overly optimistic about the contribution of tourism and can be tolerant of negative

[7] SEM is a multivariate statistical method that simultaneously analyzes the structural relationships, which are called structural paths, between observed variables and latent variables in the case of a measurement model and among latent variables in the case of a structural model.

impacts of tourism. Nonetheless, the Irridex model is not always valid. For instance, Horn & Simmons (2002) found that widely diverse attitudes could be found at tourism destinations at similar development stages. This was because tourism had varied levels of economic contributions to communities in different destinations (Lepp, 2007).

The above studies assumed that residents' attitude toward tourism was homogenous. Doğan (1989), nevertheless, suggested that as tourism development stages evolve, residents' attitudes become diverse. Assuming that residents' reaction is heterogeneous, many studies used cluster analysis to classify residents with respect to their attitude toward tourism. Several such studies are listed in Table 2.1. The number of clusters identified by these studies varied from three to five; the average number was four. In general, the clusters determined by these studies may be categorized into five types of clusters of residents' attitude toward tourism (Table 2.1).

The first type may be labeled as "extremely positive attitude". This type has a strong positive attitude toward tourism. Clusters of this type have the following names: Lovers (Davis, et al., 1988; Evans, 1993 cited in Williams & Lawson, 2001; Madrigal, 1995), Supporters (Weaver & Lawton, 2001), Development Supporters (Pérez & Nadal, 2005), Tourism Industry Connection (Inbakaran & Jackson, 2006), or Favorers (Presenza, Del Chiappa, & Sheehan, 2013).

The second type could be labeled "somewhat positive attitude". The general characteristic of this type is that they have a moderate positive perception of tourism. Additionally, some clusters have a relatively high involvement in and gain benefits from the tourism industry. The clusters of this type have names such as Love 'em for a Reason (Davis et al., 1988), Selfish (Evans, 1993 cited in Williams & Lawson, 2001), Enthusiast (Ryan & Montgomery, 1994), Prudent Developers (Pérez & Nadal, 2005), Alternative Developers (Pérez & Nadal 2005), High Tourism Connection (Inbakaran & Jackson, 2006), Embracers (Chen, 2011), or Activists (Presenza et al., 2013).

Table 2.1 Summary of resident clusters determined by previous studies

Authors	Number of Cluster	Extremely positive	Somewhat positive/Beneficiary	Neutral		Somewhat negative	Extremely negative
				Not taking sides	Ambivalent		
Davis et al. (1988)	5	Lovers (20%)	Love 'em for a Reason (26%)	In-Betweeners (18%)	Cautious Romantics (21%)	-	Haters (16%)
Evans (1993)	4	Lovers (20%)	Selfish (37%)	-	Controlled (32%)	-	Haters (11%)
Ryan & Montgomery (1994)	3	-	Enthusiast (22%)	Middle of-the-roaders (54.3%)	-	Somewhat irritated (23.5%)	-
Madrigal (1995)	3	Lovers (13%)	-	-	Realists (56%)	-	Haters (31%)
Fredline & Faulkner (2000)	5	Lovers (23%)	-	Ambivalent Supporters (29%)	Realists (24%)	Concerned for a Reason (9%)	Haters (15%)
Weaver & Lawton (2001)	3	Supporters (27%)	-	Neutrals (51%)	-	-	Opponents (22%)
Williams & Lawson (2001)	4	Lover (44%)	-	Innocent (20%)	Taxpayer (25%)	-	Cynic (10%)
Pérez & Nadal (2005)	5	Development Supporters (11%)	Prudent Developers (26%) Alternative Developers (18%)	-	Ambivalent and Cautious (24%)	-	Protectionists (20%)

(Continued)

Table 2.1 (Continued)

Authors	Number of Cluster	Extremely positive	Somewhat positive/Beneficiary	Neutral		Somewhat negative	Extremely negative
				Not taking sides	Ambivalent		
Inbakaran & Jackson (2006)	4	Tourism industry connection (35.9%)	High tourism connection (20%)	Neutral tourism development (18.6%)	-	-	Low tourism connection (25.5%)
Chen (2011)	3	-	Embracers (30%)	-	Realists (46%) Experiencers (24%)	-	-
Presenza et al., (2013)	4	Favorers (17.7%)	Activists (38.8%)	-	-	Disenchanted (23.6%)	Opposers (19.7%)
Average # of clusters	4						

Source: Chen (2011), Davis et al. (1988), Fredline & Faulkner (2000), Inbakaran & Jackson (2006), Madrigal (1995), Pérez & Nadal (2005), Presenza et al. (2013), Ryan & Montgomery (1994), Weaver & Lawton (2007) and Williams & Lawson (2001)

The third type is “neutral attitude”. It contains two sub-types categorized as “not taking sides” and “ambivalent”. The clusters of the former subtype are named as In-betweeners (Davis et al., 1988), Middle of-the-roaders (Ryan & Montgomery, 1994), Ambivalent Supporters (Fredline & Faulkner, 2000), Neutrals (Weaver & Lawton, 2001), Innocent (Williams & Lawson, 2001), or Neutral Tourism Development (Inbakaran & Jackson, 2006). This sub-type is likely to have neither positive nor negative attitudes. The latter sub-type contains the clusters that have name as Cautious Romantics (Davis et al., 1988), Controlled (Evans, 1993), Realists (Fredline & Faulkner, 2000; Madrigal, 1995), Taxpayer (Williams & Lawson, 2001), Ambivalent and Cautious (Pérez & Nadal 2005), Realists (Chen, 2011), or Experiencers (Chen, 2011). Overall, this type has a mixed attitude. Some clusters have both positive and negative perception about tourism.

The fourth type is “somewhat negative attitude”. In general, these clusters may have a slightly negative attitude toward tourism. The clusters of this type are labeled as Somewhat Irritated (Ryan & Montgomery, 1994), Concerned for a Reason (Fredline & Faulkner, 2000), or Disenchanted (Presenza et al., 2013).

The last type is “extremely negative attitude”. This type may have a strong negative attitude toward tourism. The clusters of this type have names such as Haters (Davis et al., 1988; Evans, 1993; Madrigal, 1995; Fredline & Faulkner, 2000), Opponents (Weaver & Lawton, 2001), Cynic (Williams & Lawson, 2001), Protectionists (Pérez & Nadal, 2005), Low Tourism Connection (Inbakaran & Jackson, 2006), or Opposers (Presenza et al., 2013).

2.5 Socio-demographic determinants of residents’ attitude toward tourism

Socio-demographic variables have been commonly used to explain residents’ attitude toward tourism and to describe the characteristics of resident clusters with regard to attitude aspects such as perceived impacts and involvement in tourism. Albeit being widely used in numerous studies, socio-demographic variables had a relatively insignificant and contradictory role in explaining the variation in residents’ attitude toward tourism (Harrill, 2004). On the other hand,

Inbakaran & Jackson (2006), in the literature review of their study, stated that significant relationships between socio-demographic variables and residents' attitude toward tourism were reported by many previous studies. The variables that were commonly used include gender, age, education, income, ethnicity, length of residences, and so on.

It has been assumed by tourism researchers that length of residence has a negative relationship with residents' attitude toward tourism (Harrill, 2004). This assumption was supported by many studies (Brunt & Courtney, 1999; Mansfeld, 1992; McCool & Martin, 1994; Ryan & Montgomery, 1994; Snaith & Haley, 1999; Stynes, Stewart, & others, 1993; Williams, McDonald, Riden, & Uysal, 1995) which found that long-term residents were more likely to have a negative or less positive attitude toward tourism than shorter-term residents were. On the contrary, Inbakaran & Jackson (2006) found a significant relationship between less negative attitude toward tourism with length of residence. Other studies (Allen et al., 1993; Liu & Var, 1986), however, did not find a significant relationship between length of residence and residents' attitude toward tourism.

Sheldon, Var, & Var (1984) conducted a study in northern Wales. They found that the natives were more prone to social and cultural impacts of tourism than the nonnatives were. However, Liu & Var (1986) found that residents with different ethnicities did not have a significant difference in attitude. Similarly, Inbakaran & Jackson (2006) also reported that ethnicity did not have a significant relationship with residents' attitude toward tourism.

Previous studies (Harrill & Potts, 2003; Mason & Cheyne, 2000) showed that women were more likely to have adverse attitudes toward tourism than men. Mason & Cheyne (2000) emphasized that women opposed tourism more than men because women residents felt that tourism causes traffic jam, noise and crime (Harrill, 2004).

Tomljenovic & Faulkner (1999) carried out a study in Australia's Gold Coast. They revealed that older and young residents generally had the same attitude toward tourism, but older residents were more tolerant of foreign tourists. They were also less worried about

negative impacts of tourism on the environment. In contrast, Cavus & Tanrisevdi's (2003) study in Kusadasi, Turkey indicated that the older a resident was, the more negative attitude toward tourism they had (Harrill, 2004).

The level of education has been reported in previous studies to have a positive relationship with residents' attitude toward tourism. For example, Inbakaran & Jackson's (2006) study in Victoria, Australia illustrated that the residents with a higher level of education had a less negative attitude toward tourism. It is in line with those of Haralambopoulos & Pizam (1996) and Hernandez, Cohen, & Garcia (1996).

Harrill (2004) conducted the literature review on residents' attitude toward tourism. He stated that income was one of the socioeconomic variables that were used as part of hypotheses regarding residents' attitude toward tourism. Similarly, in their literature review, Inbakaran & Jackson (2006) also stated that income was one of the variables that were related to a positive attitude toward tourism.

2.6 Determining latent factors of residents' attitude toward tourism

Furthermore, during the past 20 years scholars have studied the determinants of residents' attitude toward tourism using Structural Equation Modeling (SEM). The latent factors[8] that are likely to affect residents' perceived impacts or benefits and costs from tourism include residents' community attachment (Gursoy et al., 2010; Gursoy et al., 2002; Gursoy & Rutherford, 2004; Lee, 2013; Nicholas et al., 2009), community concern (Gursoy et al., 2010; Gursoy et al., 2002; Gursoy & Rutherford, 2004; Jurowski & Gursoy, 2004), ecocentric attitude (Gursoy et al., 2010; Gursoy et al., 2002; Gursoy & Kendall, 2006; Gursoy & Rutherford, 2004; Jurowski & Gursoy, 2004; Jurowski, Uysal, & Williams, 1997), emotional solidarity with tourists (Woosnam, 2012), knowledge about the industry (tourism) (Davis et al., 1988) and utilization of tourism resource base (Gursoy et al., 2010; Gursoy et al., 2002; Gursoy & Rutherford, 2004; Jurowski & Gursoy, 2004). All of these latent factors will be used in Chapter

[8] A latent factor is an abstract concept of a phenomena that cannot be observed directly. It is commonly measured by many indictors which can be observed directly.

6 as explanatory variables that determine residents' probability of being included in a particular cluster identified in Chapter 5.

Community attachment was defined as "the extent and pattern of social participation and integration into community life and sentiment or affection toward the community" (McCool & Martin, 1994, p. 30). Community Attachment Theory (CAT) states that tourism is likely to disturb the community living standard. Therefore, residents with a high level of community attachment tend to have an unfavorable attitude toward tourism (Harrill, 2004). Nevertheless, findings of the earlier studies were contradictory. Um & Crompton (1987) showed that the higher community attachment a resident had, the more negative they were about tourism. Nevertheless, Gursoy et al. (2002) and McCool & Martin (1994) did not find any association between community attachment and perceived impacts or benefits/costs and support for tourism. On the contrary, Lee (2013) and Gursoy & Rutherford (2004) concluded that community attachment positively influenced perceived economic and social benefits and support for tourism.

Gursoy et al. (2002) posited that community concern about the environment, schools, crime and so on were likely to influence perception of tourism impacts and support for tourism. Unfortunately, they did not find any significant relationship between community concern, perceived impacts and support for tourism. Conversely, Gursoy & Rutherford (2004) found that a high level of community concern might lead to the perception that tourism brings economic and cultural benefits for the community. Moreover, Gursoy et al. (2010) revealed that community concern had a positive effect on perceived cultural benefits and social cost.

Scholars have categorized the environmental attitude into two underlying motives, specifically "ecocentrism" (i.e., valuing nature for its own sake) and "anthropocentrism" (i.e., valuing nature because of material or physical benefits that it can provide for humans) (Gagnon Thompson & Barton, 1994, p. 149). Consequently, residents with ecocentrism are likely to support the protection and preservation of natural resources, whereas those with anthropocentrism tend to support the utilization of natural resources to fulfill human needs.

Gursoy et al. (2010), Gursoy et al. (2002), Gursoy & Rutherford (2004) and Jurowski et al. (1997) found that residents who had high ecocentric values were inclined to perceive impacts of tourism more unfavorably. However, Gursoy et al. (2002) and Jurowski et al. (1997) found that residents with a high ecocentric value were inclined to support tourism.

Tourism resource base has been used to refer to local tourism facilities. Depending on the real impacts of tourism on these facilities, residents who used these leisure facilities were likely to have either negative or positive attitudes toward the impacts of tourism on these facilities. Gursoy et al. (2010), Gursoy et al. (2002), Gursoy & Rutherford (2004) and Jurowski & Gursoy (2004) used utilization of tourism resource base to explain perceived benefits and costs of tourism. In accordance with Gursoy et al. (2002), Lankford (1996), O'Leary (1976) and Gursoy et al. (2010), it was indicated that residents with high usage of tourism resource base may have a negative attitude toward tourism. This was because they thought that tourism made them share their resources with visitors.

According to Woosnam (2012), emotional solidarity refers to the feeling of identification with another person that one has. This feeling helps to bridge the distance between individuals (Wallace & Wolf, 2005), which is determined by emotional closeness and degree of contact (Hammarström, 2005). Woosnam (2012) used elements of this concept to predict residents' attitude toward tourism. He found that three sub-factors of emotional solidarity had positive relationships with his modified Tourism Impact Attitude Scale (TIAS)[9]. Thus, all of these factors, reviewed in this section, will be used in Chapter 6 as explanatory variables of residents' probability of being included in a particular cluster.

[9] Tourism Impact Attitude Scale (TIAS) was originally developed by Lankford & Howard (1994). It is identified as "a standardized measurement of residents' attitude toward tourism" (p.121). It contains 27 items, consisting of two factors that are designated as "concern for local tourism" and "personal and community benefits" (p.129).

Chapter 3: Methodology

3.1 Study instruments

Factors of interest of the study are residents' participation in, perceived impacts of, and support for CBET. Residents' participation in both remunerative and non-remunerative activities of CBET is very crucial for CBET sustainability and success. Non-remunerative participation and remunerative participation in CBET are the frequency of residents' participation in CBET. For the study, residents' attitude toward CBET is defined as a resident's subjective tendency (1) to perceive impacts of CBET on livelihood assets and to perceive impacts of CBET on livelihood outcome deriving from participation in CBET and (2) to personally support CBET. Livelihood assets consist of the five core asset categories[10] upon which livelihoods are built. Livelihood outcomes are the achievements of livelihood activities. They are in the form of more income, increased well-being, reduced vulnerability, improved food security and more sustainable use of the natural resource base (DFID, 1999). Thus, the study focuses on five factors which are remunerative participation in CBET (RPART), non-remunerative participation (NRPART), perceived impacts of CBET on livelihood assets (PILA), perceived impacts of CBET on livelihood outcome (PILO), and support for CBET (SUPPORT).

The study utilized the multi-indicator-factor approach to measuring the latent factors of interest as variables. They are higher order constructs of concepts that cannot be measured directly, so indicators or observed variables are used to measure them. As explained earlier, factors of the study are remunerative participation (RPART), non-remunerative participation (NRPART), perceived impacts on livelihood assets (PILA), perceived impacts on livelihood outcomes (PILO) and support for CBET (SUPPORT). In addition, other factors, which previous studies used as precedents of residents' attitude toward tourism, were employed in the study as explanatory factors of resident clusters in Chapter 6. They are community attachment,

[10] The five core asset categories include Human, Social, Natural, Physical and Financial Capitals (DFID, 1999)

community concern, ecocentric attitude, emotional solidarity and tourism dependency; together with them, socio-demographic factors were used.

The factors commonly used to study attitude toward tourism were residents' perceived impacts of and support for tourism. Tourism Impact Attitude Scale (TIAS) of Lankford & Howard (1994) is identified as "a standardized measurement of residents' attitude toward tourism" (p.121). This scale, containing 27 items, consisting of two factors that are designated as "concern for local tourism" and "personal and community benefits" (p.129). Over the past twenty years, many studies (Harrill & Potts, 2003; Lankford, Chen, & Chen, 1994; Lankford & Howard, 1994; Rollins, 1997) in various tourism destinations have tested its reliability and validity. However, the feasibility of its usage in a small community where tourism is in the emerging stage has not been confirmed yet (Wang & Pfister, 2008). Wang & Pfister (2008) adopted twenty items from the original TIAS. They conducted factor analysis to assess the dimensionality of this modified scale and found that it had a high reliability. Furthermore, Woosnam (2012) adopted the modified TIAS and reduced the number of indicators to seventeen. It was because, first, he did not include the redundant items to attain a parsimonious scale for his respondents. Second, he excluded the items with the lowest factor loadings from Lankford & Howard (1994). Woosnam's (2012) modified TIAS consists of two factors. Factor 1 contains nine items pertaining to residents' "support for tourism", while factor 2 comprises seven items concerning "contributions to community" (p.322).

Following the previous studies, the study adopted two common constructs of residents' attitude toward tourism. They are perceived impacts (Choi & Murray, 2010; Dyer et al., 2007; Ko & Stewart, 2002; Oviedo-Garcia et al., 2008; Vargas-Sánchez et al., 2011; Yoon et al., 2001) and support for tourism (Dyer et al., 2007; Gursoy et al., 2002; Gursoy & Kendall, 2006; Gursoy & Rutherford, 2004; Jurowski & Gursoy, 2004; Ko & Stewart, 2002; Lee, 2013; Nicholas et al., 2009; Nunkoo & Ramkissoon, 2011; Vargas-Sánchez et al., 2011; Wang & Pfister, 2008; Woosnam, 2012; Yoon et al., 2001). Perceived impacts used by other studies were based on impacts of tourism in economic, socio-cultural, and environmental aspects.

These perceived impacts are more suitable for mass tourism destinations where private businesses provide tourism products and services. Their primary objectives are economic development or profit maximization. In contrast, the study areas of interest were small-scale community-based ecotourism sites, which were operated by the local people. The primary objectives were to protect the local natural resources and to improve the local people's livelihood. Therefore, in the study, perceived impacts were measured using the livelihood analysis approach. It is widely used by non-governmental organizations mainly for the appraisal of smaller scale, more rural and community-based tourism or ecotourism projects (Mitchell & Ashley, 2010). For this reason, the study utilized the livelihood analysis approach to measure perceived impacts on livelihood assets (PILA) and perceived impacts on livelihood outcomes (PILO). Indicators of PILA and PILO were created based on the Sustainable Livelihoods Guidance Sheet of the Department for International Development (DFID, 1999). PILA and PILO can be equivalent to the above-mentioned factor 2 (i.e., the contributions to community) of the modified TIAS, which thus was not used in the study. Only factor 1 (i.e., support for tourism) of the modified TIAS, as well as its indicators, was adopted from Wang & Pfister (2008) and Woosnam (2012).

More recently, community participation (non-remunerative participation) has been used as factors of Sustainable Tourism Attitude Scale (SUS-TAS) by Choi & Sirakaya (2005) and Yu, Chancellor, & Cole (2011). Residents' participation in both remunerative and non-remunerative activities of CBET are very crucial for its sustainability and success. In the study, RPART and NRPART were measured by indicators listed in Appendix I. Regarding questions about participation, respondents were asked to subjectively evaluate the frequency of their participations in CBET on a seven-point Likert scale, where 1 denotes "never" and 7 denotes "very frequent". For example, some of the indicators include the frequency of attending CBET meetings and the frequency of providing services to tourists. Likewise, for PILA, PILO and SUPPORT, respondents were asked to respond to indicator statements on a seven-point Likert scale, on which 1 denotes "strongly disagree/extremely negative" and so 7 "strongly

agree/extremely positive". Some of their indicators, for example, were "perceived impacts of CBET on social networks and connectedness" (PILA's indicator) and "perceived impacts of CBET on sustainable use of the natural resource base" (PILO's indicator). Support for CBET was adopted from the modified TIAS of Wang & Pfister (2008) and Woosnam (2012). As an example, one of its observed indicators is "I support tourism in this community". All the indicators of PILA, PILO, and SUPPORT are presented in Appendix I.

3.2 Data collection

The study utilized the sample data collected from residents of Yeak Laom and Chi Phat communes. As explained earlier, the reason for choosing Yeak Laom and Chi Phat CBETs were that they are two of the most successful and active CBETs in Cambodia. Another reason was that the two CBETs are very different in terms of geographical location, maturity stage, and management and operation structures. Using two different sets of sample data, the results can have a relatively higher level of validity. According to Byrne (2006), testing a theoretical model by using two sample data of different populations is a common approach to cross-validate the findings. Cross-validation provides stronger evidences for making a conclusion.

More information about residents of Yeak Laom and Chi Phat commune were described in Chapter 4. The data collection methods were the same for both research sites, that is, interviews using structured questionnaires (Appendix 1). The interviews were conducted at Chi Phat CBET in May 2014 and at Yeak Laom CBET in June 2014. The questionnaire contains four parts, the first of which contains questions regarding socio-demographic characteristics of the samples. The second part comprises questions and statements related to RPART and NRPART. The third part was regarding PILA, PILO, and SUPPORT. The final part consists of questions or statements regarding other latent factors. Most questions or statements are closed-ended, accompanied by multiple-choice answers (Appendix 1).

The proportionate stratified sampling method was adopted for sampling households. The proportions of respondents in the sample strata should approximate the proportion of the

household number in the population strata respectively. The residence location (i.e., villages) was used as a criterion for stratification so that the sample were diversified across all villages in both communes. Only one individual per household was selected based on his/her consent and ability to answer the questions. The residents who were directly involved in CBET were asked to respond to the interview at the CBET workplaces such as CBET office, vending stores (at Yeak Laom CBET only), parking lots, entrance booth, and restaurant (at Chi Phat CBET only). For residents who were not directly involved in CBET, the author first asked the permission from the commune authority and the village chiefs to conducts interviews in the villages. The author and the four survey assistants (at Yeak Laom CBET) and six survey assistants (at Chi Phat CBET) went from house to house throughout the villages and asked for the residents' agreement to respond to the questionnaires. When they agreed to participate in the survey, we asked them to assign a household member who was most knowledgeable about the CBET. When the respondents could not answer certain questions, they could consult with other household members so that they could respond to all questions. Hence, incomplete questionnaires could be reduced.

3.3 Data analysis methods

The first objective of the study is to identify the clusters of residents' attitude toward CBET with regard to RPART, NRPART, PILA, PILO and SUPPORT. The data analysis method for this objective are Confirmatory Factor Analysis (CFA) and Latent Profile Analysis (LPA). CFA was used to verify the reliability and validity of factors of interest and to estimate factor scores for using as indictors of latent class variable in LPA. Most of previous studies used the conventional cluster analysis to classify residents of tourism destinations. However, the conventional cluster analysis does not have fit indices and statistical tests that researchers can use to identify the number of clusters (Bergman & Magnusson, 1997; Steinley, 2003; Wang & Wang, 2012). As a result, researchers often check the resultant tables or graphs to decide the number of clusters, which may be biased due to the researchers' subjectivity (Aldenderfer & Blashfield, 1984; Wang & Wang, 2012). In contrast, LPA has fit indices and statistical tests

that researchers can use to determine the optimal number of clusters. It provides statistics that can be used to examine the quality of cluster membership classifications. For that reason, this study used LPA to classify the sample into homogeneous groups with regard to NRPART, RPART, PILA, PILO and SUPPORT. LPA is one of the two basic types of the Finite Mixture Model, which is a type of latent variable model. Finite Mixture Model was used to categorize a heterogeneous sample into homogeneous groups or latent classes of individuals with respect to a set of indicators. Another type of Finite Mixture Model is Latent Class Analysis (LCA). Simply put, the difference between LCA and LPA is that the indicators of latent class variables are binary categorical variables in LCA, while those in LPA are continuous variables. Therefore, LPA is suitable for this study because the estimated factor scores of the factors of interest are continuous variables. More details of LPA used in this study will be presented in Chapter 5.

As descried earlier, the second objective is to find determinants of resident clusters identified for the first objective. The statistical analysis method is Logit regression using the statistical software package of STATA 13. The results of this analysis will be shown and discussed in Chapter 6. Dependent variables of the Logit regression are probabilities of residents belonging to each cluster. Independent variables include socio-demographic characteristics and determinants of residents' attitude toward tourism that have been verified by previous studies. These determinants are latent variables, so their reliability and validity need to be verified. Then, their factor scores were estimated and used as independent variables in the Logit regression, together with socio-demographic characteristics. Chapter 6 will use the same methods as those of Chapter 5 to verify the reliability and validity and to estimate the factor scores of RPART, NRPART, PILA, PILO, and SUPPORT. Chapter 6 will provide more details of the Logit regression employed.

The third objective is to discover relationships or effects of residents' remunerative and non-remunerative participations in CBET with/on perceived impacts of and support for CBET. The data analysis for the third objective is Structural Equation Modeling (SEM). SEM is a

multivariate statistical method that simultaneously analyzes the structural relationships, which are called structural paths, between observed variables and latent variables in the case of a measurement model and among latent variables in the case of a structural model. Latent variables are theoretical constructs of higher-order concepts that cannot usually be measured directly, so researchers use a group of several related observed variables to measure a latent variable. First of all, SEM requires a model specification that postulates the structural relationships among the latent factors of the study. The model specification is commonly based on the literature or any substantial theory. The detail of the model specification will be explained in Chapter 7. In a full structural model of latent variables, verifying their reliability and validity are commonly indispensable in the early stage of analysis before proceeding to a subsequent analysis stage to confirm that the observed variables are good measures for their latent variables. Therefore, the two-stage approach of SEM is commonly recommended. More details of this method will be explained in Chapter 7. The maximum likelihood with robust standard errors (MLR) estimator of Mplus 6.12 statistical software was used in both steps. MLR is robust to non-normality of the data (Wang & Wang, 2012) and is recommended for small sample size (Muthen & Asparouhov, 2002; Yuan & Bentler, 2000). Wang & Wang (2012) suggest that testing for non-normality is not necessary before using MLR estimator because it is easy to implement and works well with both normal and non-normal data. Another reason is that empirical data in social science studies are most likely to be non-normal.

Chapter 4: Operation and Management of Community-Based Ecotourism

This chapter describes the operation and management of Yeak Laom and Chi Phat CBETs, which are the sites of this study. The necessary information about the two CBETs can be used to interpret and discuss the results of analyses in Chapters 5 to 7. As explained earlier, the justification for selecting these two CBET sites was that they are two of the most successful and active CBETs in Cambodia. Another reason is that they are very different in terms of geographical location, seniority and management and operation.

4.1 Yeak Laom community-based ecotourism

4.1.1 Yeak Laom commune

Yeak Laom commune[11] is located in Ratanak Kiri province in northeast Cambodia (Figure 4.1), which has been designated by the Royal Government of Cambodia as the Ecotourism Zone. The commune comprises five villages, (i.e., Chri, Lapou, Sill, Lon, and Phnum) which were home to 534 households in 2010. Woman headed households were 39 households. According to the CDB online, the total population was 2,486 persons in 2010. The most populated village was Lapou village (695 residents), followed by Chri village (659 residents), Lon village (621 residents), Sill village (345 residents), and Phnum village 166 (residents). Eighty-one percent of the residents were indigenous people called Tompuon[12] who have a different language and traditions from Khmer people. Tompoun people believe that forest, water, and land are shelters for spirits. Residents under eighteen years old accounted for 45%. The proportion of residents aged from 18 to 60 years old was 46%. The rest (9%) were over 61 years old. In the commune the illiteracy rate was high; 67% of the population aged from 15 to 60 years old were illiterate. Eighty-six percent of the households in the commune were farm households (CDB Online,

[11] Commune is an administrative and geographical demarcation which consist of several four or five villages. The hierarchal administrative demarcations of Cambodia are province, district and commune.
[12] The majority of Cambodians have Khmer ethnicity, while Tompuon is one of the indigenous ethnic minorities who are called Khmer Leu ("upland Khmer") and live in northeastern Cambodia.

2010). They cultivated crops such as rice, cashew nuts, beans, corn and cassava. Several households still depend on traditional livelihood activities such as hunting and extracting non-timber forest products (NTFP). Rice production in the commune is wet rice cultivation which is usually carried out during the rainy season[13]. The total wet rice cultivation area was 36 ha which mainly rain fed; there was no irrigation system. The average yield was 1.5 ton/ha. The annual rice production was 54 tons in 2010. Rice production per capita was 31 kg/person.

Figure 4-1 Locations of Yeak Laom and Chi Phat CBETs
Source: Open Development Cambodia (2015b)

[13] Cambodia has only two distinct seasons, namely rainy season (June-October) and dry season (November-May).

4.1.2 The Yeak Laom Lake resort

The Yeak Laom Lake is a popular recreational resort for both local and international tourists. Recreational activities in the Yeak Laom Lake resort include swimming in the lake, having a photograph taken while wearing the Tompuon's traditional costumes, buying souvenirs, having a meal and relaxing in tourist gazeboes on the bank of the lake. As shown in Figure 4.2, it is located in the dense tropical forest that are home to abundant biodiversity (Reibe, 1999). The lake was created around 700,000 years ago by volcanic activity. It has a depth of 50 m, a diameter of 800 m and a circumference of 2.5 km. The indigenous people recognize the lake as a sacred shelter of spirits of land, water, and forest. Until 1994, the Department of Tourism and the Department of the Environment of Ratanak Kiri province managed the Yeak Laom Lake area. In order to protect the forest, in May 1995, the provincial governor designated the Yeak Laom Lake area a protected area, which covers more than 5,000 ha, within which the Yeak Laom Lake is the core zone. The core zone has an area of 300 ha.

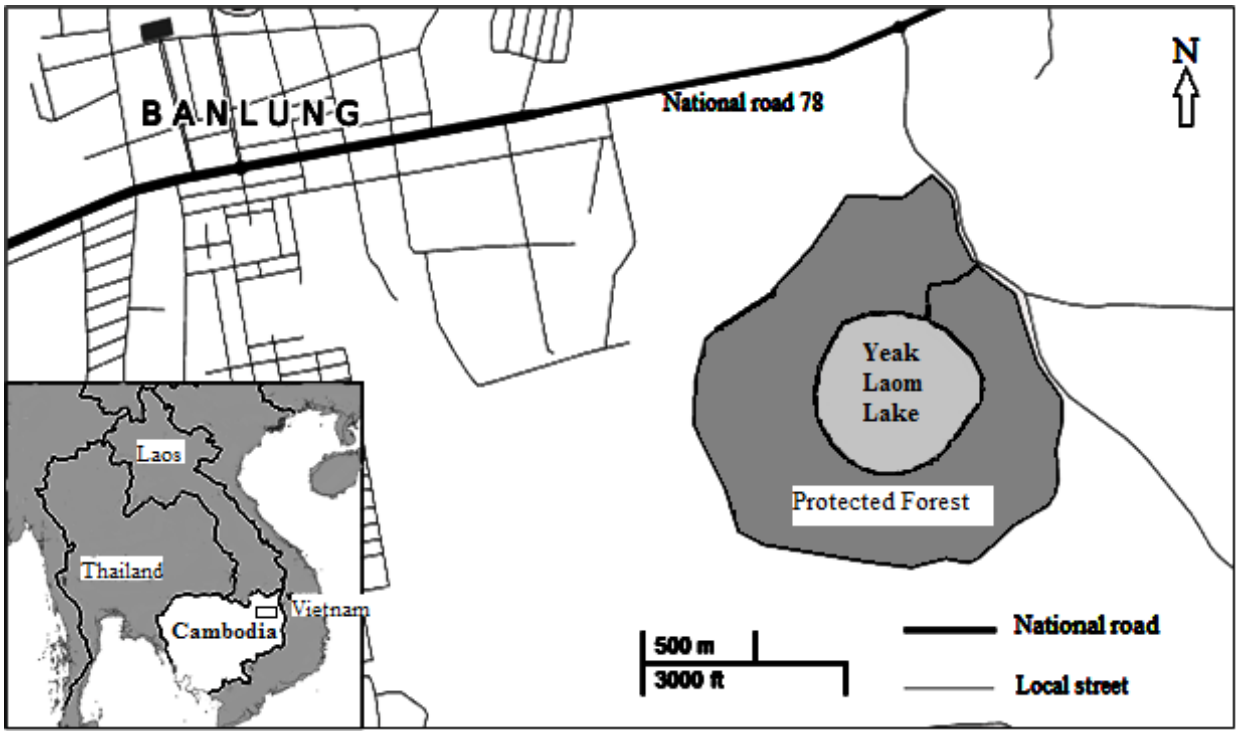

Figure 4-2 Map of Yeak Laom
Source: Author' s adoption from Google Maps (2015)

Unfortunately, before 1998, the indigenous people were not benefited from tourism in this area. Reibe (1999) pointed out that the wastes from tourism activities were pervasive in the lake; and illegal logging was out of control. Land and water of the lake were subject to exploitation by large-scale agricultural activities. For example, a huge coffee plantation nearby planned to pump the water from the lake to irrigate the farm, which would pollute water in the lake. It was also observed that the land adjacent to the protected area was considerably degraded by such agricultural activities.

4.1.3 Establishment of Yeak Laom Community-based Ecotourism

In order to address the above issues, in 1996 the provincial governor asked for the assistance from the International Development Research Centre of Canada (IDRC) to develop the protected area. Since then, IDRC and United Nation Development Program/the Cambodian Area Regeneration and Rehabilitation Project (UNDP/CARERE) had worked with the key persons of the Tompuon people to protect the beauty of the lake and to provide income-earning opportunities to the Tompuon people. During this period, under the management of IDRC and UNDP/CARERE, extensive infrastructure was constructed. It includes a cultural and environmental center, recreational facilities, a parking lot, stairs leading down to the bank of the lake, swimming platforms and nature trails (IDRC & UNDP/CARERE, 1999). By 1997, IDRC delegated the management responsibility to the indigenous people in order to implement the project, which was called Community-Based Natural Resource Management and Income Generation project. However, IDRC and UNDP/CARERE still provided technical support and advice. In September 1997, the indigenous people elected six Tompuon people and assigned them as members of a committee for managing the core zone of the Yeak Laom protected area. It was called the Yeak Laom Lake Conservation and Recreation Committee (YLLCRC)[14]. The mandate of the committee was two years. The goals of the committee were to protect the pristine

[14] Beside the YLLCRC, there were staff such as administrators, security, parking, handicraft and cleaning. The YLLCRC recruited the staff. The recruitment process are as follows. First of all the YLLCRC called for applications for those vacancy. If any villagers were interested in the vacancy, they contacted the YLLCRC. The YLLCRC made decision regarding the selection of the staff.

beauty of the lake and to generate income by promoting indigenous culture and traditional handicraft production. The organization structure of the committee is as shown in Figure 4.3. The YLLCRC is under the supervision of the Yeak Laom Commune Development Committee (YLCDC). Therefore, the YLLCRC has to consult the YLCDC and other community members when making any decisions (Yeak Laom Lake Committee & Keng, 2001). As a representative body of all the villagers, the YLLCRC, with the collaboration of village elders and the Provincial government set up rules and regulations regarding the use of the core zone as well as its natural resources such water, forest, bamboo, and fish. So far, IDRC and UNDP/CARERE made a substantial effort to build the management capacity of the committee and the skills of the staff including guards and entrance fee collectors (Yeak Laom Lake Committee & Keng, 2001). In August 1998, the Provincial Rural Development Committee (PRDC), as the representative of the Ratanak Kiri provincial government, officially gave a lease of the core zone to the YLLCRC. In the lease, the task and responsibility of the YLLCRC, mapping and

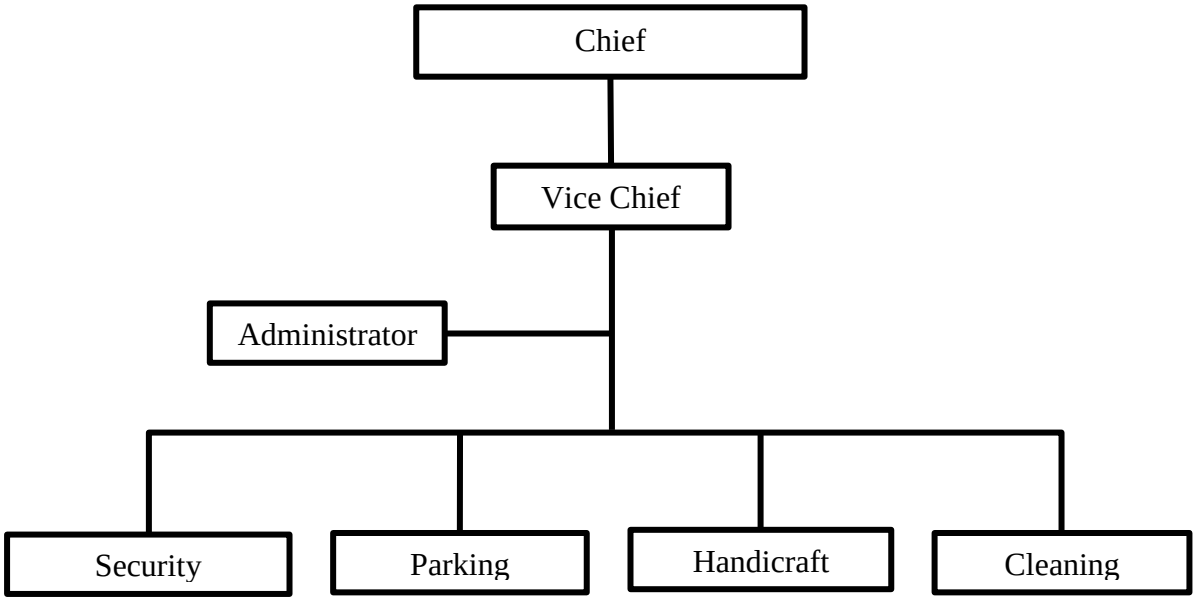

Figure 4-3 Organization structure of YLLCRC
Source: The vice chief of YLLCRC, personal communication with the author, interview, 5 June 2014, Yeak Laom, Ratanak Kiri, Cambodia.

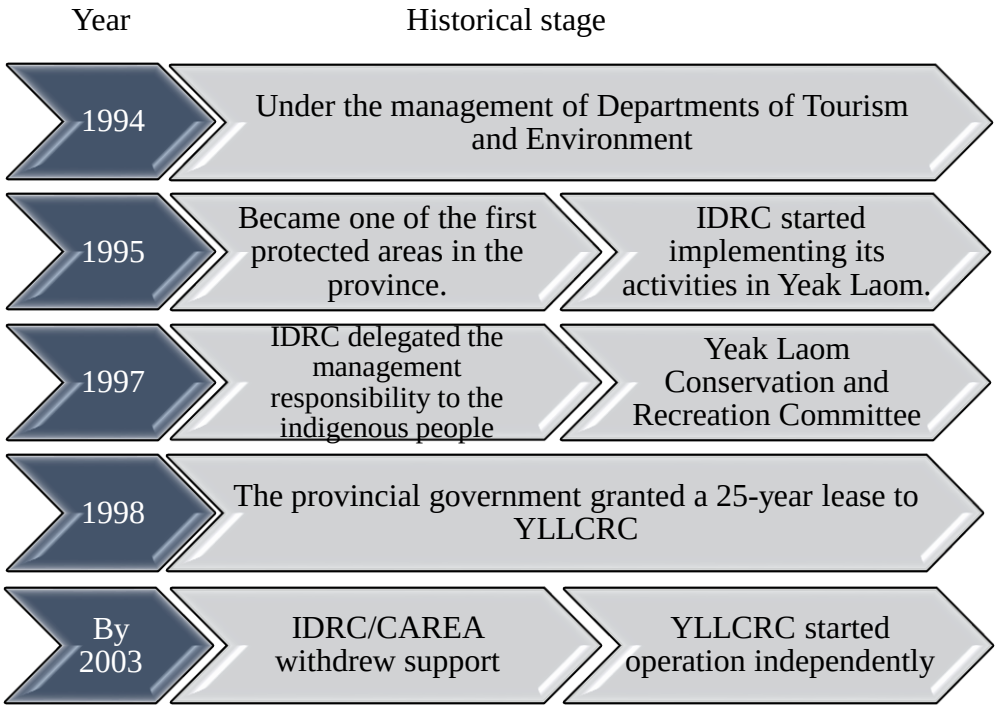

Figure 4-4 Historical stages of Yeak Laom CBET
Source: Bith (2011) and Yeak Laom Lake Committee & Keng, (2001)

designating the area and financial management[15] were determined. The lease contract stated that:

> The Yeak Laom Lake Conservation and Recreation Committee will be responsible for the management and maintenance of all infrastructures in the lake and the protection of natural resources in the Core Zone of the Yeak Laom Protected area. The Provincial Rural Development Committee will participate in the evaluation and as an agent in relation with the Committee in order to draw up regular and efficient reports between the two Committees (YLLCRC, YLCDC, PRDC, & Governor of Ratank Kiri province, 1998).

Therefore, the committee received legitimate rights to manage the core zone. According to the lease contract, the duration of the lease is 25 years, depending on the positive evaluation from a Joint Evaluation Committee, which consists of the PRDC, the Cultural, Tourism and Environment Centre and other international organizations (IOs) or non-governmental

[15] Financial management will be explained in detail in section 4.1.5

organizations (NGOs). In brief, Figure 4.4 summarized the historical stages of Yeak Laom CBET.

4.1.4 Residents' participation

At the establishment stage of Yeak Laom CBET, the local residents were actively involved in the development process. As stated earlier, they were involved in the workshops arranged to set up rules and regulations regarding the use of the core zone as well as its natural resources such as water, forest, bamboo, and fish. They were also involved in the election of the management committee of the YLLCRC. However, different from other CBETs in Cambodia, Yeak Laom CBET did not have a membership system. The members and staff of YLLCRC worked as employees for Yeak Laom CBET; and they received monthly salaries from their work for YLLCRC. There were five members of the YLLCRC management committee, two administrators, three staff of the handicrafts section, four guards, three staff of the parking lots and three cleaners (Figure 4.3). Besides the members and staff the YLLCRC, other villagers participate in remuneration activities of the CBET by providing services and selling goods to tourists visiting the lake, based on their discretion. Anybody can participate in doing business around the lake, as long as they pay the rental fee or levy to YLLCRC. There is no specific rule regarding participation. All remuneration activities in the Yeak Laom Core Zone are subject to a levy by the YLLCRC, as stated in the 1998 lease contract. Amount of levy or rental fee based on the size of the area used for doing business[16]. As stated in YLLCRC's action plan in 2002, 300 villagers (100 females) would benefit by participating in selling traditional handicrafts or tools. According to the author's observation in 2014, the remuneration activities include renting swimming gears, catering food and beverages, selling traditional handicrafts and costumes, photographing, and other petty vending.

[16] At this moment, YLLCRC are discussing about remunerative activities around the lake. Regarding the amount of levy on remunerative activities, the members of YLLCRC refused to reveal it because they are still discussing about it.

4.1.5 Financial management

The number of tourists visiting the Yeak Laom Lake increased significantly from 13,367 in 2003 to 49,151 persons in 2009 (Bith, 2011) and to around 53,000 persons in 2014[17] (Figure 4.5). Yeak Laom CBET could gain earnings via the followings: (a) YLLCRC operate/provide services such as (1) collecting entrance and parking fees, (2) hiring gazebos to tourists (3) hiring and selling swimming gears and swimwear (4) selling traditional costumes, handicrafts, and beverages (5) traditional performance, tourist guides; and (b) booth rental and levy for remuneration activities conducted by villagers in the Yeak Laom Lake area.

In 1998, Yeak Laom CBET earned a revenue of only about US$700. In 2003 when IDRC and UNDP/CARERE withdrew their support, Yeak Laom CBET earned a revenue of around US$6,700. Gaining this amount of revenue, Yeak Laom CBET, for the first time, could afford its operation costs. Moreover, since 2005, Yeak Laom CBET had gained the revenue exceeding its operation cost, which enabled Yeak Laom CBET to make profits (Bith, 2011).

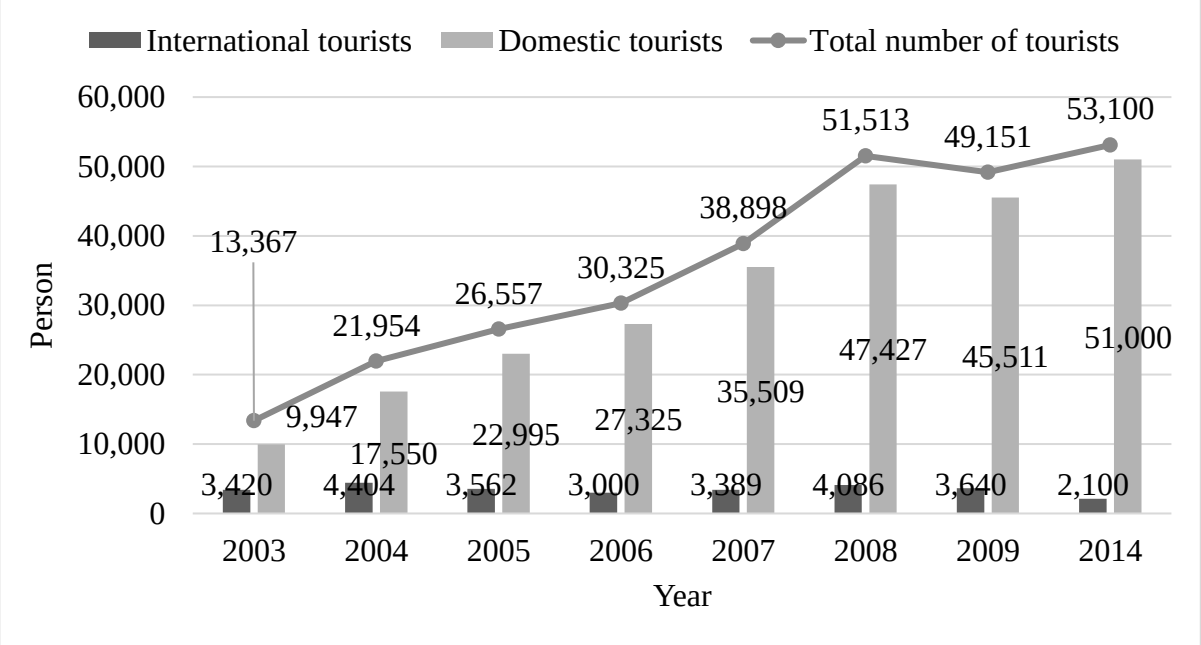

Figure 4-5 Number of tourists visiting Yeak Laom Lake
Source: Data from 2003 to 2009 was compiled from Table 3.4 of Bith (2011, p. 57) and data for 2014 was compiled from Vice chief YLLCRC interview (2015)

[17] From the vice chief of the YLLCRC, personal communication with the author via telephone, 25 March 2015.

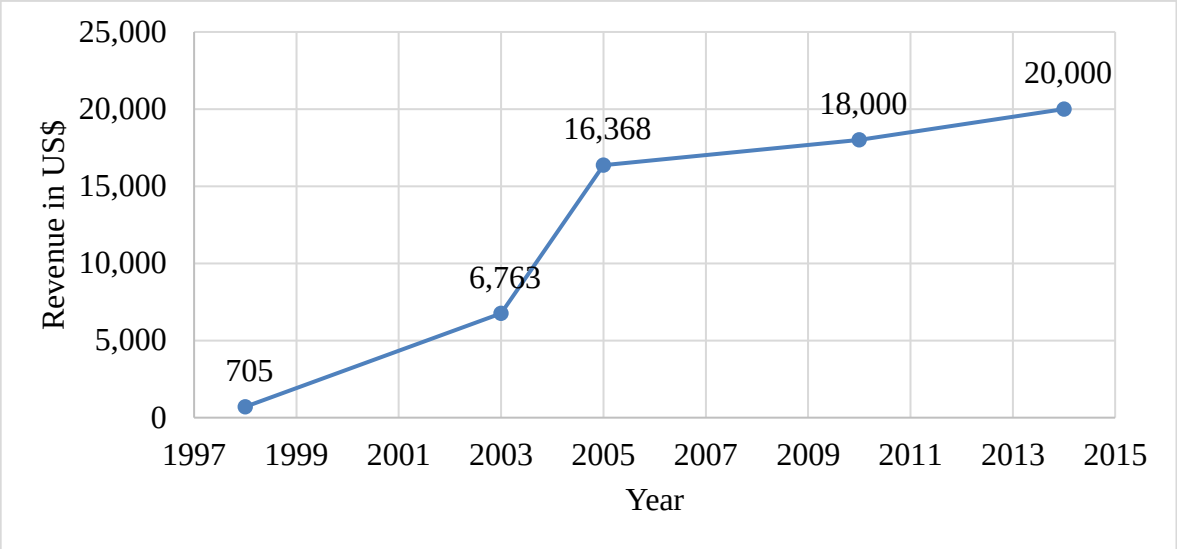

Figure 4-6 Annual revenue of Yeak Laom CBET

Source: Data for 1998, 2003 and 2005 was compiled from Bith (2011) and data for 2010 and 2014 was compiled from Vice chief YLLCRC interview (2015)

The revenue was approximately US$16,000 in 2005, US$18,000 in 2010 (Bith, 2011) and US$20,000 in 2014 (Figure 4.6).

According to the lease contract between the provincial government and the YLLCRC, YLLCRC manages the revenue as follows: (1) the YLLCRC can use the revenue to pay expenses on hiring outside advisors, staff salaries, protection and maintenance of infrastructure, and various programs for environmental, cultural, and tourist education; (2) A part of the revenue can be set aside to maintain the reserve fund, which is equal to the annual operation cost (i.e., US$5,000); (3) Another US$5,000 should be set aside as the investment fund in order to pay for the cost of constructing additional infrastructure such as nature trails through the forest, recreational sites, bridges, and so on; (4) Twenty-five percent of the remaining revenue (i.e., after subtracting the above expenditure in (1), (2) and (3)) is given to the Provincial Rural Development Committee (PRDC); and (5) Seventy-five percent of the remaining revenue is contributed to the commune development fund, which is managed by the Commune Development Committee (CDC). The commune development fund is used to implement

development activities in the commune that is decided by the provincial rural development committee.

4.2 Chi Phat community-based ecotourism

4.2.1 Chi Phat commune

Chi Phat commune is located in the Southern Cardamom Protected Forest of Koh Kong province in southwestern Cambodia (Figure 4.1). There are four villages in the commune, namely Chi Phat, Tuek Laak, Cheam Sla, and Sam Lort. According to Commune Database (CDB) online, there were about 549 households in the commune in 2010. Households headed by woman were 203 households. The total population in the commune was 2,444 persons. Chi Phat village was the most populated (806 persons), followed by Sam Lort village (754 persons), Tuek Laak village (447 persons), and Cheam Sla (437 persons). Residents under eighteen years of age accounted for 48% of the total population. The percentage of the residents aged from 18 to 60 years old was 44%. The rest (8%) were over 61 years old. The illiteracy rate of the commune was relatively lower than that of Yeak Laom commune. Illiterate residents accounted for 32% of the population aged from 15 to 60 years old. Rice farming was the main occupation of 69% of the total households, while cultivating crops and vegetable, fishing, and raising livestock were the main occupations for 13% of them. Households that still collected non-timber forest products (NTFP) were 4.1% of them. Likewise, rice cultivation in Chi Phat commune was wet rice cultivation. Chi Phat commune had a rice cultivation area of 416 ha, but only 46% of the area was cultivated. There was no irrigation system in the commune, so rice cultivation was rain fed. The average productivity was low, only 1 ton/ha. The total rice production was 190 tons in 2010. Rice production per capita was 272 kg/person. There were only 4 small-scale rice mills.

4.2.2 Southern Cardamom Protected Forest

Cardamom Landscape in southwestern Cambodia is the most significant forest watershed in Cambodia, providing precipitation for the whole area with 3,500 to 4,500 mm of rain annually

feeding 22 rivers and 3,145 villages. Cardamom Mountain Range is the second largest forest in Southeast Asia, one of only seven remaining elephant corridors in Asia and the only habitat in the world for Siamese crocodiles and Royal turtles. It is also one of the world' s 32 biodiversity hotspots, an important archeological corridor and the largest carbon sink in Cambodia (Gauntlett, 2013). Southern Cardamom Protected Forest is one of the conservation areas in the Cardamom Landscape. It was established in 2004 by the Sub-decree on the Establishment of Southern Cardamom Protected Forest. It covers an area of 144,275 ha which are the habitat of globally endangered wildlife including the Asian elephant, Indochinese tiger, Pileated gibbon and other species of birds (Daltry & Momberg, 2000; WildAid, 2003; cited in Sun, 2014). Since 2002, Wildlife Alliance[18], together with the governmental forest administration, has worked to conserve the natural resources and develop the communities in the area. It works to provide direct protection to forests and wildlife in the Southeast Asia tropical belt. Its mission is to eradicate deforestation, wildlife extinction, climate change and poverty with cooperation from local communities and authorities (Gauntlett, 2013; "Wildlife Alliance," 2015).

4.2.3 Establishment of Chi Phat Community-Based Ecotourism

A decade ago, Chi Phat rainforest was facing the destruction. Forest fires were uncontainable, while wildlife was being poached for the commercial trade to Thailand, Vietnam, and Phnom Penh. At that time, Wildlife Alliance named Chi Phat commune the "Circle of Death" because of its extreme condition of natural resource depletion. Wildlife Alliance arrived and started working in the Cardamoms in 2002 to cope with forest fires, forestland encroaching, slash and burn cultivation and wildlife poaching. In 2003, Wildlife Alliance found that 280 households were destroying natural resources to make a living because they were impoverished and did not have any livelihood assets (Gauntlett, 2013). After comprehensive discussion and participatory planning with the local people and authorities, Chi Phat Community-Based Ecotourism was initiated in 2007 and has been supported so far by Wildlife Alliance.

[18] Wildlife Alliance is an international nongovernmental organization based in New York, the United State.

Appreciative Participatory Planning Action (APPA)[19] method of the Mountain Institute has been used to empower the community to own, manage and run Chi Phat CBET. Meanwhile, Wildlife Alliance also provided ongoing training for the CBET members about hospitality, eco-guiding, computers, English and accounting. Wildlife Alliance also invested in infrastructure for attracting tourists, which include 200 km of forest trails and five night camps, 20 mountain bikes, eight kayaks, 13 guesthouses and 11 homestays, Visitor Center with a restaurant (Figure 4.7), a tourism booking office, an exhibition room and meeting room, retrofitting of one large boat, six medium boats and 15 rowing boats, retrofitting of the main road and establishment of a waste management service. In addition to the infrastructure construction, Wildlife Alliance technically and financially supported the local people in operating the CBET by employing two staff working to coach the community and to start-up the financial assistance for the CBET management committee (Gauntlett, 2013). Chi Phat CBET's objectives are to conserve natural resources, to preserve local culture, to improve local communities' livelihoods, to promote exchange between tourists' culture and local culture and to empower local communities to manage the CBET independently. The tourist attractions of Chi Phat CBET include wildlife, forests, bat caves, ancient burial sites, waterfalls and local Cambodian livelihoods. The primary tourism services are trekking, mountain biking, boating and kayaking, and so on.

The marketing strategy of Chi Phat CBET has been to promote the whole Southern Cardamoms as a single ecotourism destination. Cooperation with the private sector is crucial for economic viability of Chi Phat CBET, so Chi Phat CBET has been advertised in international tour guides and media such as Lonely Planet, the New York Times, the Wall Street Journal, the Sydney Morning Herald, Le Temps, Le Guide du Routard, Le Petit Futé, and so on. Besides, it has been promoted to other hotels and lodges. More importantly, Chi Phat CBET

[19] The Appreciative Participatory Planning and Action (APPA) approach has been established by The Mountain Institute, based on the knowledge and field experiences of TMI employees, NGOs, and governmental counterparts, and communities in TMI project areas through the Himalayan region (in Nepal; Sikkim, India; and TAR, Peoples Republic of China). The approach presents the basic framework for Community-based Tourism planning in a diversity of settings and with an extensive range of stakeholders.(The Mountain Institute, 2000, p. i).

has signed agreements with 10 international and five Cambodian tour operators to assign Chi Phat CBET as one of their tourist destinations (Gauntlett, 2013).

Figure 4-7 Map of Chi Phat Commune
Source: Chi Phat Adventure (2015)

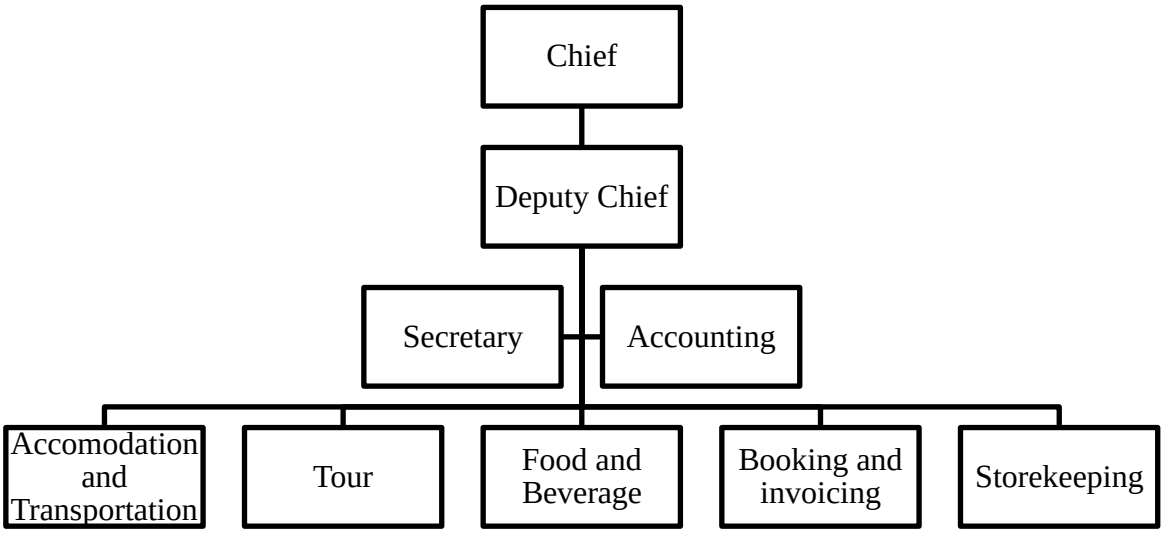

Figure 4-8 Organization structure of Chi Phat CBET
Source: Documents collected from Chi Phat CBET

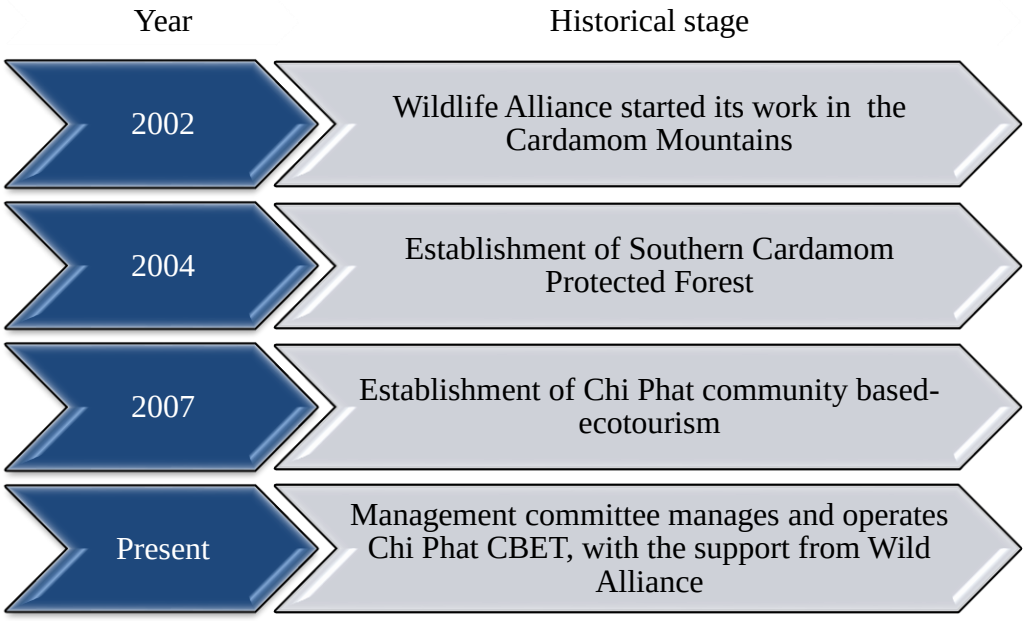

Figure 4-9 Historical stages of Chi Phat CBET
Source: Prom (2014)

Chi Phat CBET has a management committee with a mandate of three years. The management committee was elected by the local people. At the time of the survey for this study, it consisted of eleven members who had the following position: chief, deputy chief, secretary,

chief accountant, deputy accountant, guide and motor taxi team leader, mountain bike mechanic, cooking team leader, boat team leader, ranger team leader and storekeeper. The management committee manages the following sections of CBET: accommodation and transportation, tour, food and beverage, booking and invoicing and storekeeping (Figure 4.8). Figure 4.9 summarizes the historical stages of Chi Phat CBET.

4.2.4 Residents' participation

Chi Phat CBET had 167 members who were residents of the four villages in Chi Phat commune. According to the CBET chief, the CBET members comprise residents who have a relatively shorter length of residence and who were relatively younger (Prom, 2014). The CBET member were mostly from the 280 households who were hunters, wildlife traders, farmers clearing forest and loggers. Wildlife Alliance tried to include them in the membership of CBET so that they stopped the livelihood activities that harm the natural resources. There was no written rules regarding the required procedures to be a member of Chi Phat CBET. The residents who wanted to join as a member of Chi Phat CBET just requested to the management committee, who would make decision whether to provide membership to the requester or not. Being a member of Chi Phat CBET, a resident could participate in provide services to tourists brought by Chi Phat CBET. A CBET member had to provide about 20% to 30% of his or her income earned from providing service to tourists to Chi Phat CBET. Additionally a CBET member had to participate CBET meetings and other non-remunerative activities. According to the CBET chief, meetings were conducted monthly for the CBET members in order to discuss issues regarding the CBET operation and the like. All the CBET members were involved in remunerative activities of the CBET such as homestays, guesthouses, motorbike taxi services, restaurants and guides to tourists, on a rotational basis. For example, the CBET management committee created a schedule listing all homestay owners in numerical order. When tourists come to visit Chi Phat commune, the first homestay owner in the schedule was assigned to provide accommodation to the first tourist(s), the second home stay owner serve the second tourist(s) and son on.

Two hundreds and forty-five of the 280 households who previously destroyed the forests and hunted wild animals were benefited from Chi Phat CBET. A hundred households of them received direct income[20] from the CBET; 20 households of them gained indirect incomes from the CBET; 75 households of them produced vegetables, fruit and livestock; and 50 households of them were employed in the reforestation nursery[21] (Gauntlett, 2013). However, Kakda (2012) reported that Chi Phat CBET had a very weak linkage with the local agricultural production which was the primary occupation of most residents. Consequently, farmer residents who were not CBET members did not have many opportunities to sell their agricultural products to Chi Phat CBET or tourists. Non-member residents were not obliged to participate in remunerative activities of Chi Phat CBET. They were not allowed to serve tourists who booked their vacation with Chi Phat CBET. However, there were non-members of the CBET operating guesthouses and homestays independently. They did not have the obligation to pay a proportion of their income to Chi Phat CBET. These residents did not want to join the CBET because they did not wish to be controlled by Chi Phat CBET.

Figure 4.10 illustrates the supply chain of Chi Phat CBET, the CBET member participation in this supply chain based on their respective roles. As shown in Figure 4.10, most tourists visited Chi Phat commune by booking and receiving services from Chi Phat CBET that operated like a tour-operator. Chi Phat CBET, with the participation from CBET members, coordinated and arranged transportation, accommodation, food and beverage, and tour or any tourism activities for tourists. All of these services were supplied by the CBET members only. All the CBET members were the actors in the supply chain. Chi Phat CBET did not included non-member residents in its supply chain, so non-member could not serve tourists that were brought by Chi Phat CBET. Non-member could only serve few tourists who come to visit Chi Phat commune independently.

[20] As shown in the figure 4-10, local farmers can sell their crops to the CBET members and Chi Phat CBET. Therefore the income earned in this way were indirect income from CBET.

[21] Previously, the reforestation nursery were one of Chi Phat CBET activities. Tourists could buy plants from the reforestation nursery and plant them. This tourist's activities can contribute to the reforestation in the commune, while the CBET members who worked in the reforestation nursery could earn income. Unfortunately at the time of the survey the reforestation nursery no longer operated.

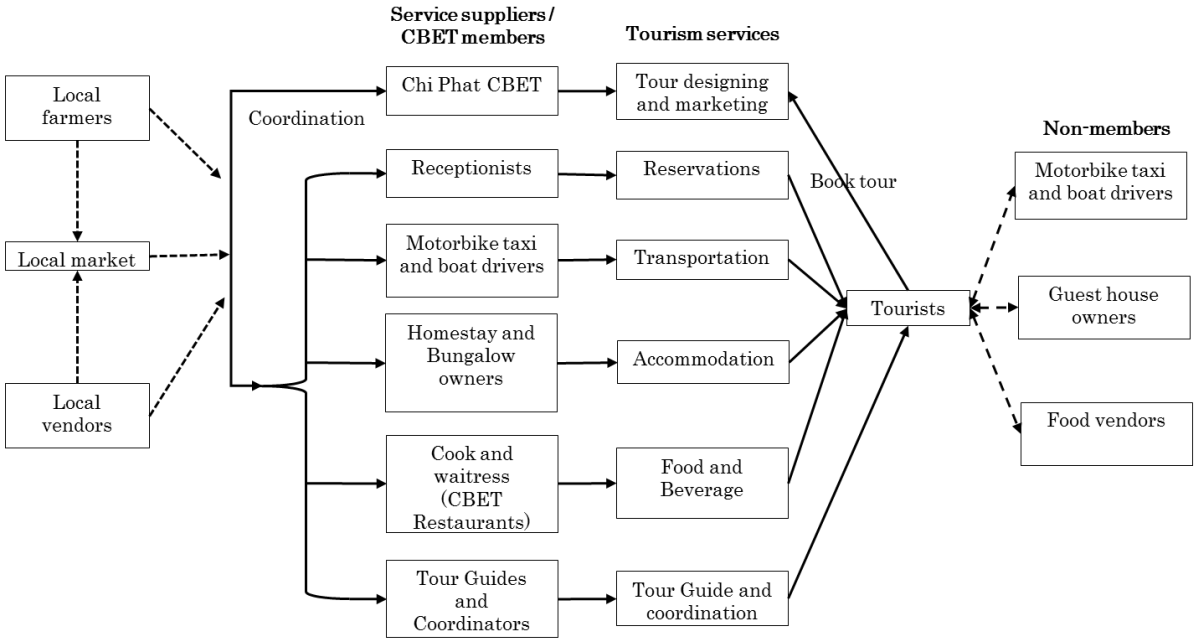

Figure 4-10 Supply chain of Chi Phat CBET

Source: Author's observation

Note: ◄- - - - - -► = Tourists directly purchase services from non-members, in turn they provide service to tourists

- - - - - - - - - -► = Flow of goods and services

4.2.5 Financial management

Figure 4.11 shows the gross revenue of Chi Phat CBET. The total gross revenue increased considerably from only US$1,256 in 2008 to around US$114,237 in 2014 (Prom, 2015). The income of the CBET members was around 75% of the total gross revenue. This was because Chi Phat CBET has a regulation that 80% of the total gross income earned by the CBET members is distributed directly to the members, while 20% is distributed to the CBET fund managed by the CBET committee. The CBET fund is constituted by the revenue from three other sources, one of which is administration fees that are additional charges to tourists. It is seven percent of total spending of each tourist. Two other sources are the equipment rental such as mountain bikes and kayaks as well as donations. The Chi Phat CBET fund is used to settle the operational cost of the CBET office, the salaries of the CBET committee members and staff,

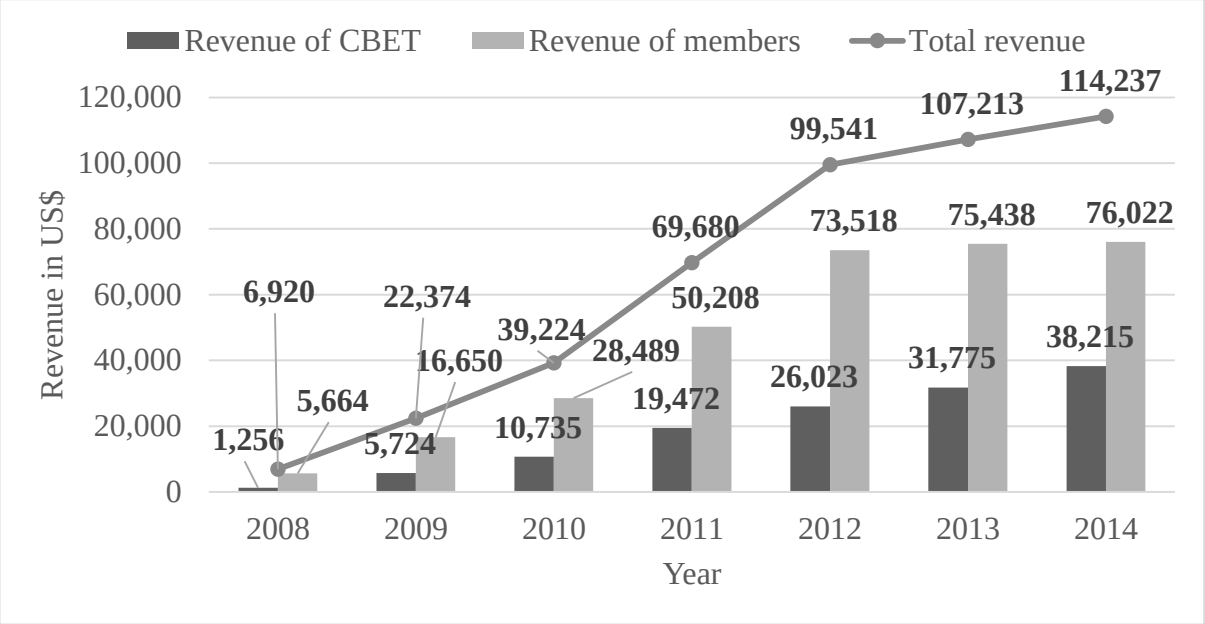

Figure 4-11 Annual revenue of Chi Phat CBET and income of its members
Source: Prom (2015). Statistics of the annual tourist number and the revenue of Chi Phat CBET

improvement of products and services, equipment maintenance, village infrastructure, education, elder support, and health care services. The increase in revenue was attributed mainly to the rise in the number of tourists visiting Chi Phat CBET. As shown in Figure 4.12, the number of tourists visiting Chi Phat CBET was only 426 persons in 2008.

Since then the number of tourists increased sharply to 3,797 persons in 2014 (Prom, 2015). Figure 4.11 indicates that international tourists accounted for a large proportion (70%) of total number of tourists. However, the number of domestic tourists increased sharply in 2014 from only 360 persons to 1,241 persons (Prom, 2015). This rapid increase may be attributed to the very heated controversy between the local people and environmental activists and the government regarding the project of hydropower dam construction in the Areng Valley in the Central Cardamom Protected Forest. This controversy has raised the interest and awareness of the Cambodian people, especially the youth, about the importance of natural resources as well as ecotourism, which, in turn, motivates them to be more likely to visit natural areas on which ecotourism is based.

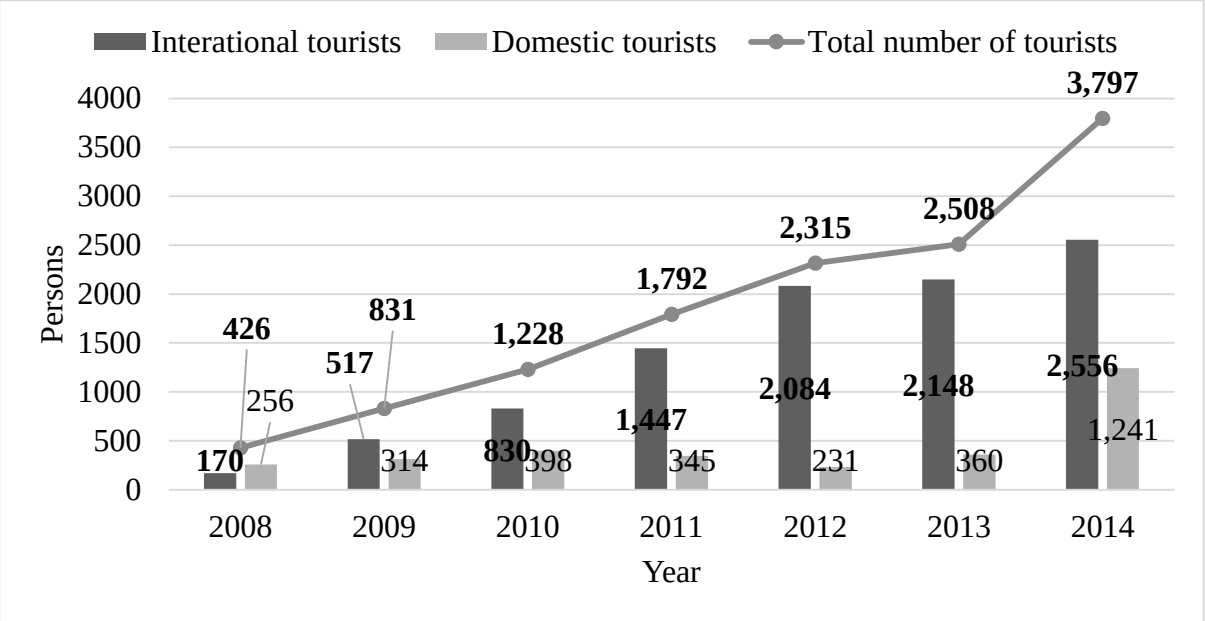

Figure 4-12 Number of tourists visiting Chi Phat CBET

Source: Prom (2015). Statistics of the annual tourist number and the revenue of Chi Phat CBET

Chapter 5: Clusters of Residents' Attitude toward Community-Based Ecotourism in Cambodia: A Latent Profile Analysis

5.1 Methodology

For the objective of this chapter, the criterion for including indicators of latent class variables[22] in Latent Profile Analysis (LPA) is that factors used to measure residents' attitude toward tourism should be included. This is because the objective of the chapter is to identify the clusters of residents' attitude toward CBET. As explained earlier, the residents' attitude toward tourism was commonly measured by three factors, PILA, PILO, and SUPPORT. Moreover, residents' participation in both remunerative and non-remunerative activities of CBET is also very crucial for its sustainability and success. Therefore, participation in remunerative activities (RPART) and participation in non-remunerative activities (NRPART) of CBET were also used in LPA. Figure 5.1 visually portrays the LPA model of this study. The data analysis methods of this objective consist of two steps including Confirmatory Factor Analysis (CFA) and Latent Profile Analysis (LPA), the details of which will be explained below in turn.

RPART, NRPART, PILA, PILO, and SUPPORT as factors were measured by sets of indicators as shown in Appendix 1, so their validity and reliability needs to be verified. Reliability is the degree to which measurement indicators produce stable and consistent results while validity refers to how well indicators measure what they are specified to measure (i.e., their latent variables). One way to test the reliability and validity is to carry out a CFA. Therefore, CFA was conducted for each factor separately. The criteria used to check the validity were that the standardized factor loadings should be above 0.5 and statistically significant at p-value < 0.05.

[22] Latent class variable is a term commonly used in LCA. Like the latent variable, it is a conceptual construct that cannot be measured directly, so researchers use a set of indictors to measure it. The difference between latent class variables and latent variables is that latent class variables are in the form of categorical variables, while latent variables are in the form of continuous variables.

Any indicators that did not meet these criteria were deleted. Construct reliability (CR)[23] was used to check the reliability; the acceptable CR is 0.60. After reliability and validity had been verified, factor scores for each factor were estimated. There are two types of factor score estimators: complex/refined and simplified/coarse factor score estimators (Grice, 2001). Simplified/coarse factor score estimator was adopted because complex/refined factor score estimator is more appropriate for Exploratory Factor Analysis (EFA), where a pool of indicators is extracted to form several sub-factors. However, the study assumes that each factor only has relationships with a particular set of indicators. Thus, complex/refined factor score estimators are not applicable. Additionally, using the simplified/coarse factor score estimators, factor score indeterminacy can be avoided. General Least Squares (GLS) estimator of EQS 6.1 was used to estimate factor scores for each factor separately. The estimated factor scores of all the factors are continuous variables, so they could be used as indicators in LPA (Figure 5. 1).

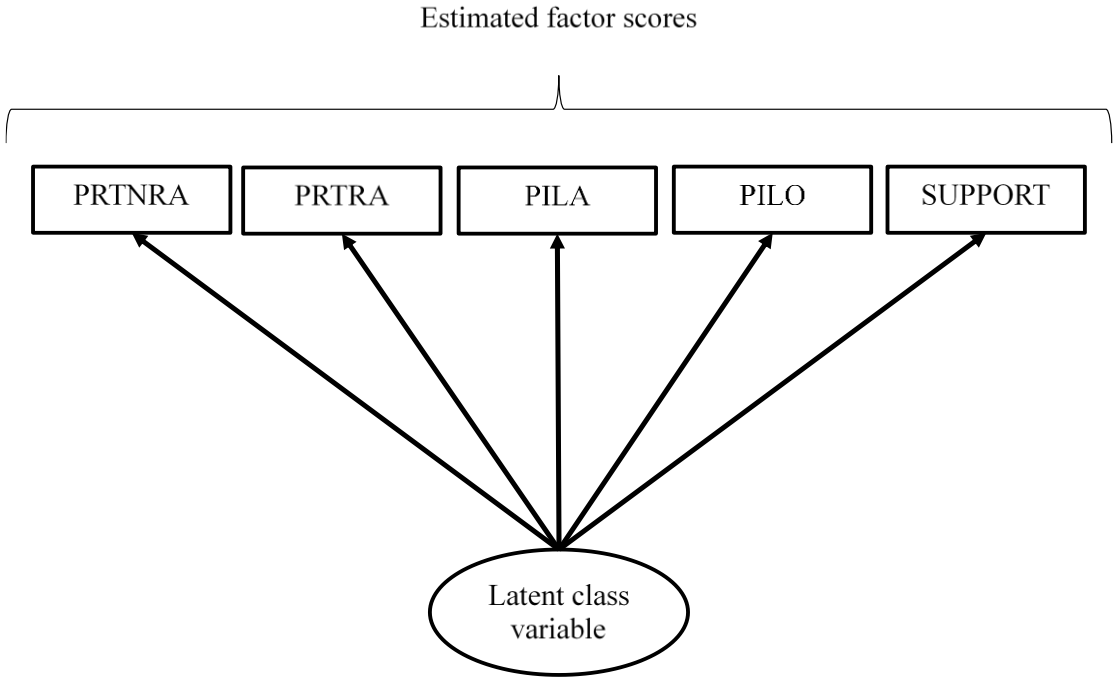

Figure 5-1 Latent Profile Analysis Model
Source: Author's idea based common graphical illustration of LPA

[23] CR = {(sum of standardized loadings)^2} / {(sum of standardized loadings)^2 + (sum of indicator measurement errors)}

Table 5.1 Specification of variance-covariance matrix

Model	Variance		Covariance	
	Within cluster	**Across cluster**	**Within cluster**	**Across cluster**
Model A	differ	equal	zero	zero
Model B	differ	equal	differ	equal
Model C	differ	equal	differ	differ
Model D	differ	differ	zero	zero
Model E	differ	differ	differ	equal
Model F	differ	differ	differ	differ

Source: adapted from Pastor, Barron, Miller, & Davis (2007)

The following steps of LPA were implemented: specifying variance-covariance matrix, determining the optimal number of clusters, examining the quality of cluster membership classification and examining cluster profiles. The specification of variance-covariance matrix of indicators can influence the formation of latent clusters (Masyn, 2013). Thus, it is recommended that researchers should compare LPA models across the full range of the specification of variance-covariance matrix. Following this recommendation, the study enumerated and compared LPA models across six different specifications of variance-covariance matrix as presented in Table 5.1.

According to the literature, the number of the residents' attitude clusters ranged from three to five (Table 2.1). Hence, LPA models with the specification of variance-covariance matrix as listed in Table 5.1 and with the numbers of clusters from one to five (i.e., thirty plausible LPA models) were enumerated and compared to find the model having the best fit with the sample data of both research sites. The fit indices used to compare the models were Information Criterion Indices including Akaike (AIC), Bayesian (BIC) and Sample-Size Adjusted BIC (ABIC). As a rule of thumb, a model that has smaller values of AIC, BIC and ABIC has a better fit. Additionally, Voung-Lo-Mendell-Rubinb likelihood ratio (VLMR LR) test, adjusted LMR LR (ALMR LR) test, and bootstrap likelihood ratio test (BLRT) were also implemented to compare a k-cluster model with a (k-1)-cluster model. VLMR LR, ALMR LR,

and BLRT are significance tests. A significant p-value (i.e., $p < 0.05$) indicates that the k-cluster model fits the sample data better than the (k-1)-cluster model does.

Furthermore, Bayes Factor (BF) (Equation 5.1) was used to compare two competing models. For example, models A and B are two competing models. The value of $BF_{A,B}$ between 1 and 3 indicates a weak evidence that Model A is better than Model B. $BF_{A,B}$ between 3 and 10 indicates a moderate evidence that Model A is better than Model B. BF higher than 10 indicates strong evidence (Masyn, 2013).

Equation 5.1

$$BF_{A,B} = \exp [SIC_A - SIC_B],$$

where SIC is the Schwarz Information Criterion (Schwarz, 1978), given by

Equation 5.2

$$SIC = -0.5\ BIC$$

The quality of cluster membership classification was checked by examining entropy, posterior probability and cluster proportions. Entropy is a measure of the overall quality of classification. Its value ranges from zero to one. The higher the value is, the better the quality of classification. Posterior probability is the probability for a respondent to be classified into a specific cluster. Its value ranges from zero to one. The higher the posterior probability for a cluster is, the higher the quality of classification. Moreover, the sizes of clusters were also examined. Small clusters that account for less than five percent of the sample are considered spurious clusters, which may be caused by extracting too many clusters (Hipp & Bauer, 2006 cited in Merz & Roesch, 2011). Therefore, a model with spurious clusters does not have a good quality of classification.

LPA produced the model-estimated means of RPART, NRPART, PILA, PILO, and SUPPORT. Equation 5.3 was used to transform the model-estimated means to mean scores in the original scale of the corresponding indicators, the seven-point Likert scale[24]. The transformed means (TM) are more informative for interpreting the cluster profiles. The mean scores in the original scale can indicate the clusters' levels of respective variables (i.e., RPART, NRPART, PILA, PILO, and SUPPORT).

Equation 5.3

$$TM = \left(\frac{(\mathrm{Z} - \min[\mathrm{Z}])}{(\max[\mathrm{Z}] - \min[\mathrm{Z}])} \times (\max[\mathrm{X}] - \min[\mathrm{X}])\right) + \min[\mathrm{X}],$$

where TM is transformed mean in the original scale of the corresponding indicators; Z is the model estimated mean; max [Z] is the maximum score of Z; min [Z] is the minimum score of Z; max [X] is the maximum score of the corresponding indicators (i.e., 7); and min [X] is the minimum score of the corresponding indicators (i.e., 1).

5.2 Results of Yeak Laom community-based ecotourism

At Yeak Laom CBET, the sample size was 209 persons, with an average age of 35 years old. On average, they had completed fifth grade of school education. Their average length of residence in Yeak Laom commune was 20 years. They had an average annual income of US$ 1,122. The sample had a high percentage of females, 61%. The proportion of Toumpoun ethnicity was 56%. Farmers accounted for 67% of the sample. Nineteen of 21 indigenous people, who were the staff and the management committee members of the CBET, were interviewed.

5.2.1 Results of Confirmatory Factor Analysis (CFA)

As stated earlier, CFA was conducted to test whether the indicators are good measures of the latent factors. In other words, the reliability and validity of each factor should be verified.

[24] The explanation of the seven-point Likert scale used in this study is presented on the page 27.

Table 5.2 Results of Confirmatory Factor Analysis (Yeak Laom CBET)

Factor and Indicator	Standardized factor Loading	t-value
Non-remunerative Participation in CBET (NRPART factor)	0.86[a]	
Frequency of participation in CBET meeting.	0.79	12.52
Frequency of participation in CBET training.	0.92	12.43
Frequency of patrolling forest.	0.65	6.60
Frequency of providing any ideas or discussing in CBET meeting.	0.77	8.40
Remunerative Participation in CBET (RPART factor)	0.81[a]	
Frequency of providing service to tourists.	0.63	7.56
Frequency of selling goods to tourists.	0.94	12.80
Frequency of selling goods to CBET.	0.41[b]	4.84
Frequency of working for CBET.	0.82	13.00
Perceived impacts on livelihood assets (PILA factor)	0.92[a]	
Impacts on the residents' leadership skills.	0.61	8.00
Impacts on the residents' networks and connectedness.	0.67	5.64
Impacts on trust among the residents.	0.77	7.71
Impacts on the residents' ability to work together.	0.82	6.77
Impacts on the residents' membership in formalized groups.	0.61	7.00
Impacts on the residents' adherence to common rules, norms and sanctions.	0.77	7.40
Impacts on the residents' mutual reciprocity and exchanges.	0.77	7.82
Impacts on the natural resources.	0.81	8.96
Impacts on the access to natural resources.	0.83	9.55
Impacts on transportation in the commune.	0.67	7.47
Impacts on the roads in the commune.	0.64	8.07
Impacts on the residents' houses.	0.51	5.85
Perceived impacts on livelihood outcomes (PILO factor)	0.76[a]	
Impacts on access to public services.	0.47[b]	4.52
Impacts on maintenance of local culture.	0.40[b]	3.26
Impacts on sustainable use of the natural resource base.	0.44[b]	3.60
Impacts on access to sufficient quantities of appropriate food.	0.86	8.17
Impacts on the ability to obtain appropriate, necessary food.	0.85	8.00
Impacts on the residents' capacity to cope with natural disasters.	0.45[b]	4.54
Support for community-based ecotourism (SUPPORT factor)	0.86 [a]	
I want to see tourism remain important.	0.60	3.36
I believe tourism should be actively encouraged.	0.84	4.82
This community should remain a tourist destination.	0.77	5.66
The tourism sector will continue to play a major role.	0.90	5.92
The positive benefits of tourism outweigh negative impacts.	0.54	3.15

Source: Author's analysis using data of author's survey (2014)

Note [a]: Composite Reliability (CR)

[b]: smaller than the cut-off value

Table 5.2 presents the results of confirmatory factor analysis using the sample data of Yeak Laom CBET. Almost all factors had convergent validity because all of the salient indicators were statistically significant at p-value < 0.05. In addition, most of the indicators had standardized factor loadings greater than 0.5. However, five indicators had the standardized factor loadings below 0.5, but greater than 0.4. They were one indicator of participation in remunerative activities and four indicators of perceived impacts on livelihood outcomes. Nevertheless, these indicators were retained so that the content validity[25] of the factors could be maintained. All of the factors had construct reliability (CR) higher than 0.7, indicating that they had acceptable reliability.

5.2.2 Results of Latent Profile Analysis (LPA)

Using the estimated factor scores as indicators of the latent class variable, LPA models across the full range of the specification of variance-covariance matrix (Table 5.1) were enumerated and tested using MPlus 6.12 software. Unfortunately, the models that had model estimation processes terminated normally were only one-cluster model A, two-cluster model A, three-cluster model A, four-cluster model A, one-cluster model B, two-cluster model B, three-cluster model B, and four-cluster model B. The five-cluster Model A, the five-cluster Model B, and all the Models C, D, E and F did not converge or were not well identified.

Optimal number of clusters

Table 5.3 shows the values of Akaike (AIC), Bayesian (BIC), sample-size adjusted BIC, and the p-values of VLMR LR test, adjusted LMR LR test and BLRT of models with estimations processes that terminated normally. Among the models in both Model A and Model B, the models with the smallest AIC, BIC and ABIC were the four-cluster Model A and the four-cluster Model B. Moreover, the p-values of VLMR LR and ALMR LR tests were statistically significant at 1% significant level. Unfortunately, the p-values of BLRTs may not be trustworthy because the bootstrap processes did not converge. According to the fit indices, the

[25] Content validity refers to whether indicators are representative of the concept of their factor.

Table 5.3 Fit statistics of LPA Models normally terminated (Yeak Laom CBET)

Model	AIC	BIC	ABIC	VLMR LRT P-value	ALMR LRT P-value	BLRT P-value
One-cluster Model A	2813	2846	2815	-	-	-
Two-cluster Model A	2503	2556	2506	0.3043	0.3115	0.0000
Three-cluster Model A	2329	2402	2333	0.0448	0.0492	0.0000
Four-cluster Model A[a]	2170	2263	2175	0.0002	0.0003	0.0000[b]
One-cluster Model B	2752	2819	2755	-	-	-
Two-cluster Model B	2449	2535	2453	0.3055	0.3128	0.0000
Three-cluster Model B	2282	2389	2288	0.011	0.011	0.0000
Four-cluster Model B[a]	2149	2276	2156	0.0001	0.0002	0.0000[b]

Source: Author's analysis using data of author's survey (2014)
Note [a]: The best fitted models
[b]: P-value may not be trustworthy because the bootstrap was not converged

four-cluster Model A and the four-cluster Model B had the best fit. Therefore, they were selected for examining the quality of classification.

Quality of classification

According to Table 5.4, the entropy and the posterior probability of both the four-cluster Model A and the four-cluster Model B were very high, indicative of good qualities of both overall and cluster-specific classifications. Also, Table 5.5 indicates that both of the remaining models did not contain a spurious cluster because the smallest clusters were at least six percent of the sample. Based on the entropy, the posterior probability and the cluster proportion, both the four-cluster Model A and the four-cluster Model B had similar good qualities of classifications. However, the quality of classification cannot be used to decide which model is better.

Thus, Bayes Factor (BF) (Equation 5. 1) was calculated to compare the four-cluster Model A with the four-cluster Model B. The value of $BF_{A,B}$ was 675.86, indicating that the four-cluster Model A was much better fit than the four-cluster Model B. Moreover, the four-cluster Model A had a higher BIC than that of the four-cluster Model B. Simulation studies found that BIC performs the best (Nylund, 2004; Nylund, Asparouhov, & Muthen, 2007 cited

in Wang & Wang, 2012). Thus, the four-cluster Model A was selected as the final model.

Table 5.4 Quality of cluster membership classification (Yeak Laom CBET)

Model	Entropy	Posterior probability			
		C1	C2	C3	C4
Four-cluster Model A	0.984	0.991	0.984	0.999	1.000
Four-cluster Model B	0.984	0.975	1.000	0.996	1.000

Source: Author's analysis using data of author's survey (2014)

Table 5.5 Cluster size

Model		Cluster			
		C1	C2	C3	C4
Four-cluster Model A	n	144	30	23	12
	%	69	14	11	6
Four-cluster Model B	n	33	23	12	141
	%	15	11	6	68

Source: Author's analysis using data of author's survey (2014)

Cluster profiles

The residents of Yeak Laom CBET can be classified into four clusters with regard to RPART, NRPART, PILA, PILO, and SUPPORT. Table 5.6 presents model estimated means (EM), standard deviations (SD), and transformed means (TM) of the five latent factors for each cluster. As an alternative, Figure 5.2 graphically illustrates the cluster profile plot. Cluster 1, the largest cluster, contains 69% of the sample. Table 5.6 shows that they had the second highest SUPPORT (TM = 6.95) and the most positive PILA (TM = 6.75) and PILO (TM = 6.49). Regarding participation, this cluster had very low RPART (TM = 1.54) and NRPART (TM = 1.82). Table 5.7 demonstrates that this cluster had a high proportion of females (65%). The members of this cluster had an average age in the mid-30s. About 54% of them were indigenous people. They had a relatively low education level (fifth grade) and low average annual income (US$983). The majority of this cluster was made up of farmers (70%). They had lived in Yeak

Table 5.6 Cluster profile (Yeak Laom CBET)

Cluster		NRPART	RPART	PILA	PILO	SUPPORT
C1	EM	1.89	1.16	5.47	8.14	8.04
	SD	1.43	0.61	0.26	1.25	0.07
	TM	1.82	1.54	6.75	6.49	6.95
C2	EM	3.50	4.35	5.26	7.41	8.06
	SD	1.82	0.74	0.46	1.90	0.00
	TM	3.38	5.81	6.39	5.84	7.00
C3	EM	1.86	1.17	3.23	6.80	7.99
	SD	1.36	0.57	0.56	1.91	0.14
	TM	1.80	1.57	2.86	5.30	6.80
C4	EM	1.65	1.43	4.57	6.75	6.97
	SD	0.80	0.91	0.76	1.74	0.31
	TM	1.60	1.91	5.19	5.25	3.61

Source: Author's analysis using data of author's survey (2014)

Note EM: model estimated mean

SD: standard deviation

TM: transformed mean

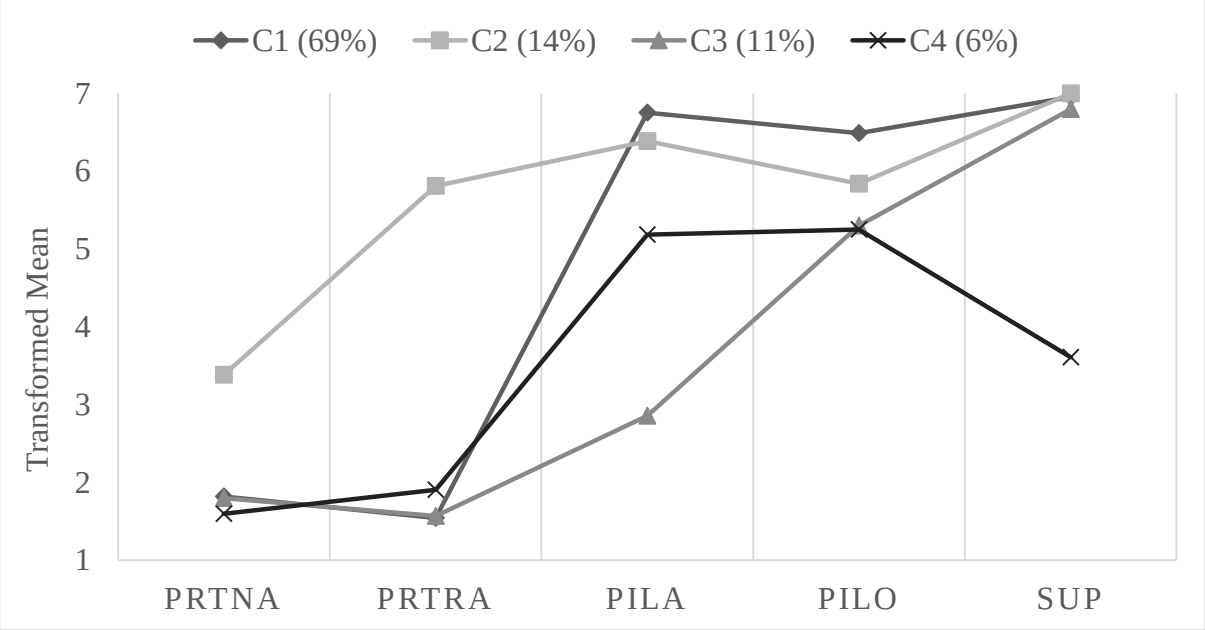

Figure 5-2 Cluster profile plot (Yeak Laom CBET)

Source: Author's analysis using data of author's survey (2014)

Table 5.7 Socio-demographic characteristics of clusters (Yeak Laom CBET)

Variable	Clusters				χ^2 test and F test
	C1	C2	C3	C4	
Gender (% females)	65	53	48	58	χ^2=3.56, df=3,p= 0.31
Age (average year)	36	32	37	32	F=1.07, df=3,p=0.36
Ethnicity (% Toumpoun)	54	66	56	58	χ^2=0.39, df=3,p= 0.94
Education (average grade)	5	7	5	6	F=3.54, df=3,p=0.02**
Occupation (% farmers)	70	47	74	58	χ^2=7.08, df=3,p= 0.06
Income (average US$/year)	983	1894	899	1300	F=5.42, df=3,p=0.00*
CBET member [a] (%)	8	23	0	8	χ^2=10.03,df=3,p=0.01**
Length of residence (average year)	20	19	26	18	F=1.02, df=3, p=0.38

Source: Author's analysis using data of author's survey (2014)

Note *: statistically significant at p-value < 0.01

**: statistically significant at p-value < 0.05

a: CBET member here refer to the members of management committee and the CBET staff because Yeak Laom CBET did not have membership system.

Laom commune for 20 years on average. Only eight percent of them were the members of the CBET management committee or CBET staff.

Cluster 2 was the second largest at 14% of the sample. Similar to Cluster 1, they had the highest SUPPORT (TM = 7.00). However, they had somewhat less positive PILA (TM = 6.39) and PILO (TM = 5.84) than Cluster 1, but higher than Clusters 3 and 4. What made this cluster much different from other clusters was that they had relatively higher levels of RPART (TM = 5.81) and NRPART (TM =3.38). This finding indicates that the members of this cluster sometimes engaged in non-remunerative activities and quite often participated in remunerative activities. About half (53%) of this cluster were females. The average age of this cluster was 32 years old. This cluster had a high proportion (66%) of indigenous people. They had the highest education (seventh grade) and the highest average annual income (US$1,894). This cluster had a relatively smaller percentage (47%) of farmers. This cluster had the highest proportion of the residents who officially worked for Yeak Laom CBET (23%). The members of this cluster had lived in the commune for 19 years on average.

Cluster 3 constituted 11% of the sample. This cluster had a strong SUPPORT (TM = 6.80) like Clusters 1 and 2. They nonetheless had the second lowest positive PILO (TM = 5.30) and the lowest PILA (TM = 2.86), which can be considered as somewhat negative perception. Similar to Cluster 1 and Cluster 4, this cluster had low levels of RPART (TM = 1.80) and NRPART (TM = 1.57). This cluster had a relatively low percentage of females (48%). The members of this cluster had an average age of 37 years old, which was the oldest. Fifty-six percent of them were indigenous people. They had a relatively low level of education (fifth grade). The majority of them were farmers (74%). They had the lowest average annual income (US$ 899). None of them officially worked for Yeak Laom CBET. The members of this cluster had the longest average length of residence in the commune, 26 years.

Cluster 4 comprised only six percent of the sample, the smallest cluster. They had the lowest SUPPORT (TM = 3.61) which indicates that they were slightly opposed to CBET. They had the lowest positive PILO (TM = 5.25), but they had a higher positive PILA (TM = 5.19) than Cluster 3. They also had low levels of RPART (TM = 1.91) and NRPART (TM = 1.60). This cluster also had a comparatively large percentage (58%) of females. Their average age was 32 years old. Fifty-eight percent of them were indigenous people. Their average education was sixth grade. Fifty-eight percent of them were farmers. This cluster had the second highest average annual income (US$1,300). Only one individual officially worked for the CBET. They had the shortest average length of residence, 18 years.

As presented in Table 5.7, the four clusters had similar socio-demographic characteristics with respect to gender, age, ethnicity, occupation, and length of residence. The four clusters had statistically significant differences with regard to only education, average annual income, and CBET membership.

5.3 Results of Chi Phat Community-Based Ecotourism

The number of the respondents interviewed at Chi Phat commune was 200 residents. They had an average age of 39 years old. Typically, they had completed fourth grade. Their average

length of residence in Chi Phat commune was 24 years. They had an average annual income of US$679. There was a high percentage of female respondents, 64%. Farmers accounted for 68% of the respondents. Forty-six percent of the respondents had CBET memberships.

5.3.1 Results of Confirmatory Factor Analysis (CFA)

Table 5.8 presents the result of CFA for Chi Phat CBET. The table indicates that the standardized factor loadings of all remaining indicators were statistically significant at p-value < 0.05. Most standardized factor loadings were greater than 0.6. Only four of them were below 0.5, but they were kept to retain the content validity of the factors. Regarding the reliability, all composite reliabilities (CR) were greater than 0.70. Therefore, all the factors had acceptable validity and reliability.

5.3.2 Results of Latent Profile Analysis (LPA)

Using the estimated factor scores as indicators of the latent class variable, LPA models across the full range of the specification of variance-covariance matrix (Table 5.1) were enumerated and tested using MPlus 6.12 software package. Unfortunately, only the models in Model A with the numbers of clusters from one to four had a model estimation processes that terminated normally. All the Models B, C, D, E and F did not converge or were not well identified.

Optimal number of clusters

The fit statistics for LPA models that normally terminated in Mplus 6.12 statistical software package are presented in Table 5.9. The table illustrates that the four-cluster Model A had the smallest AIC, BIC and ABIC, which are 2,875, 2,967 and 2,879 respectively, whereas those of other models were greater than 3,000. It is an indication that four-cluster Model A had a better fit. Furthermore, the p-value of VLMR LRT, ALMR LRT and BLRT were statistically significant at the 5% significance level, suggesting that the four-cluster Model A is better than the three-cluster Model A. Meanwhile, the VLMR LRT, ALMR LRT and BLRT of the two-cluster and the three-cluster Model A were not significant, meaning that they had a relatively poorer fit than their preceding models. Therefore, the four-cluster Model A was selected to

Table 5.8 Results of Confirmatory Factor Analysis (Chi Phat CBET)

Factor and Indicator	Standardized factor loading	t-value
Non-remunerative Participation in CBET (NRPART factor)	0.84[a]	
Frequency of participation in CBET meeting.	0.83	13.38
Frequency of participation in CBET training.	0.77	9.25
Frequency of providing any ideas or discussing in CBET meeting.	0.79	8.26
Remunerative Participation in CBET (RPART factor)	0.70[a]	
Frequency of providing service to tourists.	0.40	3.90
Frequency of selling goods to tourists.	0.86	5.26
Frequency of working for CBET.	0.67	4.05
Perceived impacts on livelihood assets (PILA factor)	0.93[a]	
Impacts on residents' livelihood skills.	0.73	7.14
Impacts on residents' education.	0.61	7.33
Impacts on residents' leadership potential.	0.73	9.37
Impacts on networks and connectedness.	0.83	9.75
Impacts on trust among the residents.	0.76	9.72
Impacts on the residents' ability to work together.	0.87	11.50
Impacts on the residents' membership in formalized groups.	0.64	10.35
Impacts on adherence to common rules, norms and sanctions.	0.65	6.01
Impacts on the residents' mutual reciprocity and exchanges.	0.72	7.36
Impacts on transportation.	0.80	8.82
Impact on roads.	0.73	8.83
Impacts on residents' shelters.	0.70	8.84
Because of CBET, the residents' income increases.	0.55	4.92
Perceived impacts on livelihood outcomes (PILO factor)	0.76[a]	
Impacts on the community access to public services.	0.40	4.84
Impacts on maintenance of local culture.	0.38	3.76
Impacts on more sustainable use of the natural resource base.	0.44	3.34
Impacts on the access to sufficient quantities of appropriate food.	0.92	14.60
Impacts on the ability to obtain appropriate and necessary food.	0.87	12.62
Support for community-based ecotourism (SUPPORT factor)	0.91[a]	
I support tourism in this community.	0.80	6.02
The NGO partner should continue its support for tourism.	0.72	6.66
I want to see tourism remain important to this community.	0.63	3.10
I believe tourism should be actively encouraged.	0.69	4.34
This community should remain a tourist destination.	0.84	4.70
The tourism sector will continue to play a major role.	0.83	5.16
I support the growth of tourism in the community.	0.73	5.44
The positive benefits of tourism outweigh negative impacts.	0.72	5.26

Source: Author's analysis using data of author's survey (2014)

Note [a]: Composite Reliability (CR)

verify the quality of cluster membership classification.

Table 5.9 Fit statistics of LPA Models normally terminated (Chi Phat CBET)

Model	AIC	BIC	ABIC	VLMR LRT P-value	ALMR LRT P-value	BLRT P-value
One-cluster Model A	3405	3438	3406	-	-	-
Two-cluster Model A	3178	3231	3180	0.1472	0.1534	0.0000
Three-cluster Model A	3018	3091	3021	0.1341	0.1403	0.0000
Four-cluster Model A[a]	2875	2967	2879	0.0243	0.027	0.0000

Source: Author's analysis using data of author's survey (2014)
Note [a]: The best-fitted model

Quality of classification

The quality of cluster membership of classification was shown in Table 5.10 (a) and Table 5.10 (b). Table 5.10 (a) demonstrates that entropy had a value of 0.98, which is an indication of a very good quality of overall classification. The posterior probability of Clusters 1, 2, 3, and 4 were 0.99, 1.00, 0.97, and 0.99 respectively. These values are suggestive of good quality of classification for each cluster. Meanwhile, Table 5.10 (b) proves that there is no spurious cluster because the smallest cluster (i.e., Cluster 2) was six percent of the sample. Hence, the four-cluster Model A was the best-fit model and selected as the final model for Chi Phat CBET.

Table 5.10 Quality of cluster membership classification (Chi Phat CBET)
(a) Quality of cluster membership classification

Model	Entropy	Posterior probability			
		C1	C2	C3	C4
Four-cluster Model A	0.98	0.99	1.00	0.97	0.99
(b) Cluster proportion					
Four-cluster Model A	n	138	12	17	33
	%	69	6	9	17

Source: Author's analysis using data of author's survey (2014)

Cluster profiles

The result shows that the residents of Chi Phat CBET could be classified into four clusters with regard to the RPART, NRPART, PILA, PILO, and SUPPORT. Table 5.11 presents the model estimated means (EM), standard deviations (SD) and transformed means (TM) of the five latent factors for each cluster. Visually, Figure 5.3 depicts the TMs of the five latent factors for each cluster.

Cluster 1, the largest cluster, contains 69% of the sample. This cluster had very low RPART (TM = 1.98) and NRPART (TM =1.14). However, this cluster had the most positive PILA (TM = 5.83); it also had positive PILO (TM = 5.64). The members of this cluster had the third strongest SUPPORT (TM = 6.52). According to Table 5.12, most members of this cluster were female, accounting for 60%. They had an average age of 39 years old. They had the second lowest level of education, which was fourth grade. This cluster had a low proportion of farmers

Table 5.11 Cluster profile (Chi Phat CBET)

Cluster		NRPART	RPART	PILA	PILO	SUPPORT
C1	EM	2.146	1.277	5.238	6.305	7.745
	SD	1.20	0.23	0.68	1.37	0.58
	TM	1.98	1.14	5.83	5.64	6.52
C2	EM	4.82	6.66	4.59	6.25	8.18
	SD	1.92	0.85	1.43	1.87	0.21
	TM	4.44	6.22	5.10	5.59	6.88
C3	EM	3.04	3.20	5.19	6.34	7.89
	SD	1.63	0.58	0.63	0.94	0.42
	TM	2.80	2.95	5.77	5.67	6.64
C4	EM	1.22	1.17	2.35	2.57	5.46
	SD	0.31	0.05	1.24	1.68	2.04
	TM	1.13	1.04	2.61	2.30	4.60

Source: Author's analysis using data of author's survey (2014)

Note EM: model estimated mean

SD: standard deviation

TM: transformed mean

at 26%. Their average annual income was US$698. This cluster was comprised of a relatively high proportion of CBET members (48%). On average, the members of this cluster had lived in Chi Phat commune for 25 years.

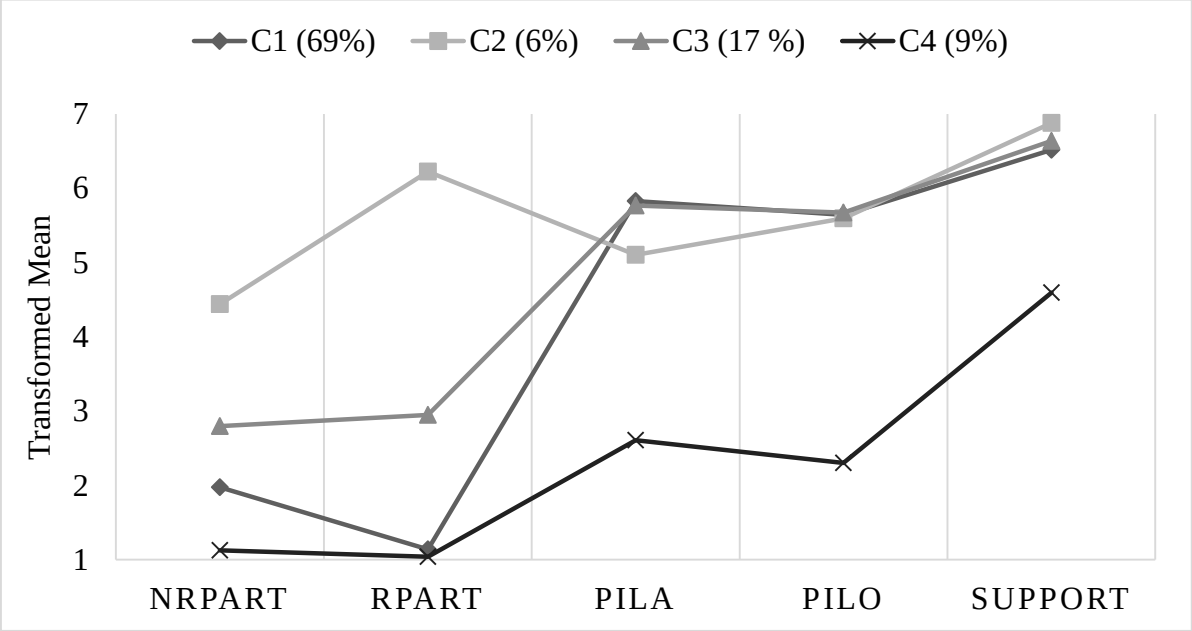

Figure 5-3 Cluster profile plot (Chi Phat CBET)
Source: Author's analysis using data of author's survey (2014)

Table 5.12 Socio-demographic characteristics of clusters (Chi Phat CBET)

Variable	Cluster				χ^2 test and F test
	C1	C2	C3	C4	
Gender (% females)	60	66	76	70	$\chi^2 = 2.50$, df=3, p = 0.475
Age (average, year)	39	31	38	41	F = 1.41, df = 3, p = 0.24
Education (average, grade)	4	7	3	5	F = 2.74, df = 3, p = 0.04*
Occupation (% farmers)	26	67	29	45	$\chi^2 = 11.64$, df=3, p = 0.00*
Income (average US$ per year)	698	1317	196	612	F = 3.87, df = 3, p = 0.01*
CBET member (%)	48	67	6	52	$\chi^2 = 13.66$, df=3, p = 0.00*
Length of residence (average, year)	25	23	20	25	F = 0.95, df = 3, p = 0.41

Source: Author's analysis using data of author's survey (2014)
Note *: statistically significant at p-value < 0.01
**: statistically significant at p-value < 0.05

Cluster 2, the smallest cluster, accounted for only six percent of the sample size. Noticeably, this cluster had the highest RPART (TM = 4.44) and NRPART (TM = 6.22), the strongest SUPPORT (TM = 6.88), a similar level of PILO (TM =5.59) to that of Cluster 1, and the third least positive PILA (TM = 5.10). This cluster also had a high percentage of female residents at 66%. The members of this cluster had an average age of 31 years old. They had the highest level of education, which was seventh grade. Farmers constituted about 67% of this cluster. This cluster had the highest average annual income (US$1,317) and the highest proportion of CBET members at 67%. They had lived in Chi Phat commune for 23 years on average.

Cluster 3 made up of 17% of the sample. This cluster had a relatively higher RPART (TM = 2.8) and NRPART (TM = 2.95), very similar levels of PILA, PILO, and SUPPORT to those of Cluster 1. This cluster had the second most positive PILA (TM = 5.77), positive PILO (TM = 5.67), and the second strongest SUPPORT (TM= 6.64). This cluster had the highest proportion of females at 76% and the lowest level of education, which was only third grade. Twenty-nine percent of them were farmers. The members of this cluster were 38 years old on average, had the lowest level of average annual income (US$196), and had the shortest length of residence in Chi Phat commune, 20 years. Only six percent of them were CBET members.

Finally, Cluster 4 presented nine percent of the sample. This cluster had the lowest RPART (TM = 1.13), NRPART (TM = 1.04), negative PILA (TM = 2.61), negative PILO (TM = 2.30), and the weakest SUPPORT (TM = 4.60). This cluster had the highest percentage of females (70%), were the oldest (41 years old on average), and had a relatively higher level of education (fifth grade). Farmers accounted for 45% of this cluster. This cluster had an average annual income of US$612 and the longest length of residence in Chi Phat commune. About half of them had CBET memberships.

According to Table 5.12, the four clusters did not have significant differences with respect to gender, age, and length of residence. They were significantly different with regard to education, occupation (farmer), annual income, and CBET membership.

5.4 Discussion

5.4.1 Cluster labeling

According to Table 5.6, the level of SUPPORT within each resident cluster in Yeak Laom CBET were very homogenous, because standard deviations of SUPPORT in all clusters had the smallest values, compared to other factors. The standard deviations[26] of SUPPORT of Cluster 1, 2, 3, and 4 were 0.07, 0.00, 0.14, and 0.31 respectively. Similarly, each resident cluster of Chi Phat CBET were also homogenous with respect to SUPPORT within each cluster (Table 5.11) except Cluster 4. The standard deviations of SUPPORT of Cluster 1, 2, 3, and 4 were 0.58, 0.21, 0.42, and 2.04 respectively. Cluster 4 in both Yeak Laom and Chi Phat CBETs were relative heterogeneous. Therefore, each cluster but Cluster 4 can be defined or labeled using the degree of support for CBET as the main attribute.

Cluster 1 of both Yeak Laom and Chi Phat CBETs may be defined as "Absolute Supporter" because they had high positive PILA and PILO as well as strong SUPPORT, although they were rarely or never involved in CBET activities (Table 5.13). The Absolute Supporter may represent the typical residents' attitude toward CBET in Yeak Laom and Chi Phat communes because of its prevalent proportion (Masyn, 2013). Compared with previous studies, the Absolute Supporter can be included in the first type of residents' attitude clusters that have extremely positive attitudes toward tourism (Table 2.1). This cluster is also similar to the proportion of the residents in Ostional Beach, Costa Rica, who supported an increase in tourism without any justifications (Campbell, 1999). There are many reasons for absolute support, some of which may be Yea/Nay-saying culture or social desirability attitudes and the like. In other cases, residents support tourism because they simply desire any additional economic opportunities, but not tourism per se (Campbell, 1999; Lepp, 2007).

[26] Standard Deviation can only explains the level of homogeneity within each cluster. It does not explain the homogeneity level of SUPPORT across clusters.

Table 5.13 Cluster labeling

Yeak Laom CBET	Chi Phat CBET	Main attributes	Cluster Labels
Cluster 1 (69%)	Cluster 1 (69%)	➢ Low RPART and NRPART ➢ High positive PILO and PILA ➢ Strong SUPPORT	Absolute Supporter
Cluster 2 (14%)	Cluster 2 (6%)	➢ Relatively high RPART and NRPART ➢ High positive PILO and PILA ➢ Strong SUPPORT	Regular Beneficiary Supporter
-	Cluster 3 (17%)	➢ Moderate RPART and NRPART ➢ High positive PILO and PILA ➢ Strong SUPPORT	Occasional Beneficiary Supporter
Cluster 3 (11%)	Cluster 4 (9%)	➢ Low RPART and NRPART ➢ Moderately negative PILO and/or PILA ➢ Somewhat SUPPORT	Concerned Supporter
Cluster 4 (6%)	-	➢ Low RPART and NRPART ➢ Moderately positive PILO and/or PILA ➢ Somewhat SUPPORT	Ambivalent

Source: Author's analysis using data of author's survey (2014)

Cluster 2 of Yeak Laom and Chi Phat CBETs and Cluster 3 of Chi Phat CBET can be called "Beneficiary Supporter" because the members of these clusters had relatively higher RPART and NRPART. Moreover, these clusters had the largest proportion of the CBET members, except Cluster 3 of Chi Phat CBET. The Beneficiary Supporter at Chi Phat CBET consisted of two sub-clusters that can be named as Regular Beneficiary Supporter for C2 and Occasional Beneficiary Supporter for C3. The Regular Beneficiary Supporter was likely to be

the members of the CBET management committee and other members who were regularly involved in Chi Phat CBET. The Occasional Beneficiary Supporters were the CBET members who were only involved in CBET occasionally on a rotational basis. The Beneficiary Supporter may be classified into the second type of residents' attitude clusters (Table 2.1) that has moderate positive attitudes toward tourism and gains relatively higher benefits from it.

Cluster 3 of Yeak Laom CBET and Cluster 4 of Chi Phat CBET can be designated as "Concerned Supporter" because although the members of these clusters supported CBET, they were concerned that CBET had somewhat negative impacts on livelihood assets and/or livelihood outcome. These clusters may be classified into the ambivalent subtype of the third type of residents' attitude (Table 2.1) that has both positive and negative attitudes toward tourism.

Lastly, Cluster 4 of Yeak Laom CBET can be named "Ambivalent". The reason is that they perceived moderate positive PILA and PILO, but they slightly opposed CBET. It possibly means that they were unsure whether to support CBET or not. This cluster may exemplify the typical residents' attitude toward tourism because its proportion was less than 10% (Masyn, 2013). Another reason is that while Clusters 1, 2, and 3 had high SUPPORT, this cluster somewhat opposed to CBET. This cluster may be included in the ambivalent subtype of the third type of residents' attitude clusters (Table 2.1) like Concerned Supporter. Chi Phat CBET did not have this type of residents' attitude toward CBET.

5.4.2 Non-remunerative participation in Community-Based Ecotourism

The finding pointed out that only a small number of residents in both Yeak Laom and Chi Phat commune had a relatively high level of non-remunerative participation, but most residents rarely or never took part in the non-remunerative activities of CBET. This finding supports the findings of Chengcai et al. (2012), Holladay & Ormsby (2011), Jitpakdee & Thapa (2012), Shoo & Songorwa (2013), Ven & Usami (2014), and Wang et al. (2010). It was apparent that first, the characteristic of Yeak Laom CBET was conceivably the reason why only a few residents

had relatively high involvement in CBET. That is, Yeak Laom CBET had very few official members[27], comprising of only 21 indigenous people. The number of the official members of Yeak Laom CBET was relatively small, compared to those of other CBETs in Cambodia. For instance, Chambok, Chi Phat, and Koh Phdao CBETs had 350, 167, and 48 members respectively. Nevertheless, a CBET that has too many members may face difficulties associated with inadequate opportunities for all the members to join in both remunerative and non-remunerative activities because many CBETs are commonly small scale. This situation may lead to a similar problem of illusive broad-based participation pointed out by Southgate (2006). Illusive broad participation might also exist in Chi Phat CBET. Chi Phat CBET relatively had much more members than Yeak Laom CBET, but few Chi Phat CBET members had high NRPART. As shown in Table 5.12, around 48% of the Absolute Supporter, the biggest cluster, was CBET members.

Second, it can be speculated that the reason why most residents rarely or never participated might be due to lack of willingness. According to the members of the CBET management committee, whenever there were meetings, both CBET members and non-members were invited. However, when asked to rate their frequency of participation in CBET activities during the author's survey, many residents said they sometimes, rarely, or never participated. This situation indicates that the residents were perhaps unwilling to engage in non-remunerative activities, such as meetings or training, which may be time consuming. Moreover, most residents may have primary occupations unrelated to tourism; even members of the CBET were farmers. Therefore, they might prefer to spend their time on their primary livelihood activities rather than participating in the non-remunerative activities of CBET. However, there was also the possibility of an ineffectiveness of CBET in organizing NRPART efficiently. The justification in this paragraph is simply a speculation that needs further rigorous investigation and should be considered with caution.

[27] Yeak Laom CBET did not have a membership system. "Official members" is used refers to the members of the management committee and its staff. The residents who provide services and sell goods to tourists were not members of Yeak Laom CBET.

5.4.3 Remunerative participation in Community-Based Ecotourism

Likewise, most residents had a low level of remunerative participation; only a small number of residents had relatively a high level of remunerative participation. Yeak Laom CBET's practice concerning participation in remunerative activities was also different from other CBETs in Cambodia. CBETs elsewhere in Cambodia such as Chambok, Chi Phat, and Koh Phdao CBET allowed only their members to provide services and sell goods to tourists, who visits their CBETs, on a rotational basis (Reimer & Walter, 2013; Steck, 2013; Ven, 2013). In contrast, Yeak Laom CBET allowed any residents to provide services or sell goods to tourists visiting Yeak Laom Lake by renting a vending booth from the management committee. Yeak Laom CBET had about 10 vending booths on the lakeside. Whether to partake in remunerative activities or not depends on the residents' abilities and discretion. Apparently, only a few better-off residents were likely to join in these remunerative activities, especially lucrative business such as catering food and beverages. On the contrary, Chi Phat CBET strictly allowed only its members to provide services to tourists that were brought by Chit Phat CBET or its partners. However, according to the interview with the manager of Wildlife Alliance during the author's survey, Chi Phat CBET faced inadequate remunerative opportunities for its members. Subsequently, Chi Phat CBET was trying to create more employment and income-earning opportunities for local people by attracting more tourists and was planning to build a new restaurant and other new services.

However, Table 5.12 shows that at Chi Phat CBET, only 67% of Cluster 2 (the Regular Beneficiary Supporter) and six percent of Cluster 3 (Occupational Beneficiary Supporter) were CBET members, so several residents who were not CBET members also served tourists independently by running guesthouses, providing transportation, or other services. As a result, sometimes conflicts and competitions occurred between these residents and Chi Phat CBET. For example, a resident who was not a CBET member complained that he bought a motor tricycle called "tuk tuk" to serve tourists, but the CBET did not allow him to provide his service to tourists in the commune. This kind of conflict made several residents have negative attitudes

toward CBET and it might make them unfriendly to tourists. Why did not those residents join CBET to gain a permission to serve tourists in the commune? Some of the reasons might be that a CBET member has to pay a proportion[28] of his/her little income earning from providing services to tourists to the CBET and has to join any non-remunerative activities of the CBET. On the CBET side, allowing additional residents to join remunerative activities of the CBET would reduce the current members' income. This kind of conflicts should be solved in a meeting where all residents would be allowed to attend so that a consensus by all residents can be obtained. The findings imply that CBET may not be able to provide opportunities to every resident to join in its remunerative activities, given its small scale. Apparently, the more people are included in remunerative activities of CBET, the fewer benefits each member of CBET is likely to receive.

5.4.4 Perceived impacts of and support for Community-Based Ecotourism

The finding suggests that the residents in the communes are likely to have somewhat diverse perceived impacts of and level of support for CBET. Most residents are likely to have positive perceived impacts of and strong support for CBET. This finding is similar to those of Campbell (1999), Holladay & Ormsby (2011), Lai & Nepal (2006), Lepp (2007), Pegas et al. (2013), and Stronza & Gordillo (2008). Only a small percentage of the residents have negative perceived impacts of and slightly oppose CBET. The previous studies that used statistical methods (i.e., cluster analysis) to classify residents found that these clusters with low involvement in tourism usually also did not have a positive attitude toward tourism, for instance, these clusters called Low tourism connection (Inbakaran & Jackson, 2006), Innocents (William & Lawson, 2001), Opponents (Weaver & Lawton, 2001) and Opposers (Presenza, et al., 2013). In contrast, this study found that most residents have positive perceived impacts and strong support for CBET despite of little involvement. According to previous studies, one of the justifications for the lack of negative attitudes toward and low support for tourism may be that the residents have a strong

[28] The members of Chi Phat CBET paid around 20% to 30% of their income earned from providing services to tourist to Chi Phat CBET.

desire for additional economic development (Campbell, 1999; Lepp, 2007; Lindberg & Johnson, 1997; Smith & Krannich, 1998). Most Yeak Laom residents, especially the Absolute Supporter, may believe in the phenomenon that economists called trickle-down effects. Particularly, they probably conceive that CBET in their commune directly benefits a group of residents (i.e., the Beneficiary Supporter) and eventually it somehow has indirect positive effects on other residents' livelihoods as well.

Similar to the study area of Lepp (2007), Yeak Laom and Chi Phat communes can be considered tourism-hungry communities, which was defined by Smith & Krannich (1998), for the following reasons. First, most residents of Yeak Laom and Chi Phat CBETs had very positive perceived impacts (i.e., Clusters 1, 2, and 4 of Yeak Laom CBET and Clusters 1, 2, and 3 of Chi Phat CBET) and strong support for CBET (Clusters 1, 2, and 3 of Yeak Laom and Chi Phat CBETs) as shown in Table 5.14.

Second, Cluster 1 of Yeak Laom and Chi Phat CBETs and Cluster 3 of Chi Phat CBET were apparently over-optimistic about the positive impacts of CBET. They had higher positive perception than that of Cluster 2 of both research sites, the majority of whom were CBET members and more involved in CBET's activities. Therefore, Cluster 2's perceptions may be more accurate. Lastly, Cluster 3 of Yeak Laom CBET and Cluster 4 of Chi Phat CBET may be tolerant of the negative impacts of CBET. Although they think that the CBET had negative impacts on their livelihood assets, they still believed that it had somewhat positive impacts on their livelihood outcomes and therefore demonstrated support for CBET.

Table 5.14 Characteristics of tourism-hungry community

Characteristics of tourism-hungry community	**Yeak Laom CBET**	**Chi Phat CBET**
Positive perceptions	C1, C2, C4	C1, C2, C3
High support	C1, C2, C3	C1, C2, C3
Over optimistic	C1	C1, C3
Tolerant with negative impacts	C3	C4

Source: Author's analysis using data of author's survey (2014)

5.5 Summary

Latent Profile Analysis (LPA) was implemented to classified residents of both Yeak Laom and Chi Phat communes in terms of the attitude toward CBET. RPART, NRPART, PILA, PILO, and SUPPORT. As aspects of attitude toward CBET they were measured by sets of indicators, so their validity and reliability was verified via Confirmatory Factory Analysis (CFA). Then the factor scores were estimated and employed as indicators of latent class variable in LPA. The main points discovered and discussed can be summarized as follow:

- First, the residents of CBET sites can be classified into four clusters. The Absolute Supporter (69% of both the samples) has high positive perceived impacts and strong support for CBET, but little involvement. Likewise, the Beneficiary Supporter (14% and 23% of the residents in Yeak Laom and Chi Phat communes respectively) has high positive perceived impacts, strong support for CBET and a comparatively higher level of participation in CBET. The Concerned Supporter (11% and 9% of the residents in Yeak Laom and Chi Phat communes respectively) has strong support for CBET, but is concerned that CBET may have somewhat negative impacts on livelihood assets and/or outcomes. The Ambivalent (6% of the residents in Yeak Laom commune)[29] may have an uncertain attitude toward CBET.
- Second, the results show that only a few residents in both research sites had a relatively high level of participation, but most residents rarely or never took part in non-remunerative activities of CBET.
- However, most residents had high positive perceived impacts of and strong support for CBET. A possible explanation for this finding is that most residents may desire additional economic opportunities. Another reason may be that the residents believe that CBETs have a trickle-down effect. Based on the cluster

[29] The Ambivalent were only found at Yeak Laom CBET.

profiles, both Yeak Laom and Chi Phat CBETs can be considered as tourism-hungry communities.

Chapter 6: Determinants of Clusters of Residents' Attitude toward CBET in Cambodia: A Logit Regression Analysis

6.1 Methodology

As described earlier, the analysis methods of this chapter is Logit regression. The dependent variables (DV) of Logit regressions are the resident clusters (C_i), each of which is a binary categorical variable. For example, if a respondent belongs to Cluster X, the $C_i = 1$; otherwise $C_i = 0$. The independent variables (IV) are socio-demographic variables and the latent factors. The overall Logit regression equation is presented in Equation 6.1:

:

Equation 6.1

$$\text{Logit}[P(C_i = 1)] = \alpha + \sum_{j=1}^{n} \beta_j x_j + \sum_{k=1}^{n} \beta_k f_k + \varepsilon_i,$$

where Logit is the logistic transformation; P is probability; C_i are Cluster 1, 2, 3, and 4 that can take the value of 1 if a resident is a member of a particular cluster and zero for otherwise; x are socio-demographic variables which are gender, age, education, occupation (farmers), CBET membership, length of residence, annual income, ethnicity, CBET knowledge, and environmental knowledge. f are latent factors, namely community attachment, community concern, concern about livelihood activities, ecocentric attitude, emotional solidarity, and natural resource dependency.

According to Harrill (2004) and Inbakaran & Jackson (2006), the socio-demographic variables are likely to be the determinants of resident clusters. These socio-demographic variables include gender, age, education, occupation (farmers), CBET membership, length of residence, annual income, ethnicity, CBET knowledge, and environmental knowledge.

Additionally, the latent factors that have been identified by previous studies as the precedents of residents' attitude toward tourism were also used as independent variables in the Logit regression. Previous studies commonly employed these latent factors as precedents of residents' attitude toward tourism. Alternatively, this study will use the estimated factor scores of these latent factors as explanatory variables for resident clusters. This approach may provide more insights about the relationships between these factors and residents' attitude toward tourism. Since they are latent factors, the method of CFA was also implemented to verify the validity and reliability and to estimate the factor scores of these latent factors. Indicators for community attachment were adopted from Gursoy et al. (2002) and Gursoy & Rutherford (2004). Those of the ecocentric attitude were adopted and modified from Dunlap et al. (2000). Those of emotional solidarity were adopted from Woosnam (2012). The author developed the indicators of community concern, concern for livelihood activities, and natural resource dependency. All the indictors of the latent factors appear in Appendix 1.

Backward elimination method of independent variable selection was employed to search for the independent variables that had statistically significant relationships with the dependent variables. In the first step of backward elimination, all the potential explanatory variables are placed in the model. In the subsequent steps, one variable at a time is removed until attaining a model in which all the remaining independent variables have p-values smaller than a particular cut-off significance level. The variable deleted is the one with a p-value higher than the cut-off significance level that has been set by the analyst. The cut-off p-value should be set carefully because a high cut-off p-value may make a final model have many insignificant independent variables, whereas a low one may remove all the independent variables. For this reason, in this study three different cut-off significance levels were used. They are p-value = 0.25, p-value = 0.10, and p-value = 0.06. As a result, three different final models may be obtained (i.e., Model 1: p= 0.25, Model 2: p= 0.10, and Model 3: p = 0.06). Hence, model fit statistics were used to compare the three final models to identify the model with the best fit. The model fit statistics used included Likelihood ratio test (LRT), Information Criteria (i.e.,

Akaike information criteria [AIC], AIC/sample size, and Bayesian information criteria [BIC]), Hosmer–Lemeshow goodness of fit (GOF) Test, Tukey–Pregibon link test, and multicollinearity test. Each model fit statistic will be explained below in sequence.

LRT is used to compare a current model with its nested models estimated using the same sample. A nested model is derived from removing one or more independent variables from the current model. LRT is a significance test, where its null hypothesis states that the coefficients of the extra variables (that do not exist in the nested model) in the current model are simultaneously zero (Long & Freese, 2006). A significant chi-squared statistic means that the null hypothesis is rejected and the current model is better than the nested model. In contrast, Information Criteria (AIC, AIC/n, and BIC) can be used to compare different models, even across different samples and non-nested models. The model with smaller values of Information Criteria has a better fit (Long & Freese, 2006). Hosmer–Lemeshow (GOF) Test can be considered as the most important logistic regression fit statistic. A Hosmer–Lemeshow (H–L) statistic is based on the χ^2 distribution. If it is not significant at p-value < 0.05, the model has a good fit (Hilbe, 2009). Tukey–Pregibon link test is used to verify whether there are linear relationships between logit$[P(C_i = 1)]$ and the independent variables, which is one of the most important assumptions of Logit regression (Hilbe, 2009). Using linktest command in STATA 13 after the model estimation, the statistic _hatsq was obtained. A significant _hatsq indicates that the assumption of linearity is violated. The final test is the verification of multicollinearity of the explanatory variables. Multicollinearity is found in a model that has strongly correlated independent variables. It is checked by the statistics called Tolerance and Variance Inflation Factors (VIF). The value of Tolerance close to zero and VIF ≥ 10 are indications of multicollinearity (Agresti & Finlay, 2009).

6.2 Results of Yeak Laom Community-Based Ecotourism

The results of CFA for the latent factors used as independent variables are shown in Table 6.1. According to Table 6.1, all the standardized factor loadings were greater than 0.50 and statistically significant at p-value < 0.05. All the composite reliabilities were also greater than

Table 6.1 Results of Confirmatory Factor Analysis (Yeak Laom CBET)

Factor and Indicator	Standardized factor loading	t-value
Community attachment	0.78[a]	
I feel that this community is my hometown.	0.56	3.76
I am satisfied with this community.	0.99	4.28
I feel comfortable living in this community.	0.61	3.97
Community concern	0.83[a]	
I am concerned about the culture in this community.	0.64	5.64
I am concerned about education in this community.	0.53	3.36
I am concerned about health issues in this community.	0.86	5.36
I am concerned about the violence in this community.	0.74	8.83
I am concerned about security in this community.	0.76	6.20
Concern about livelihood activities	0.77[a]	
I am concerned about the out migration in this community.	0.82	9.27
I am concerned about the employment in this community.	0.71	6.06
I am concerned about farming in this community.	0.65	6.57
Ecocentric attitude	0.77[a]	
When humans interfere with nature it often produces disastrous consequences.	0.72	6.60
Humans are seriously abusing the environment.	0.84	7.58
If things continue their present course, we will soon experience a major ecological catastrophe.	0.60	2.81
Natural resource dependency	0.58[a]	
Perceived extent of dependency on natural resources.	0.63	6.56
Frequency of natural resource extraction.	0.65	28.59
Emotional solidarity	0.89[a]	
I appreciate tourists for the contribution they make to the local economy.	0.52	3.28
I feel close to some tourists I have met in this community.	0.81	6.83
I have made friends with some tourists in this community.	0.83	11.02
I identify with tourists in this community.	0.87	10.67
I have a lot in common with tourists in this community.	0.82	9.20
I understand tourists in this community.	0.68	5.84

Source: Author's analysis using data of author's survey (2014)

Note [a]: Composite Reliability (CR)

0.60, except CR of the factor of natural resource dependency (0.58) which was slightly lower than 0.60. Therefore, all the latent factors shown in Table 6.1 had acceptable reliability and validity. Since there are four resident clusters, four Logit regression equations were enumerated.

6.2.1 Determinants of Absolute Supporters (C1)

The model fit statistics for Logit regression to find the determents of Cluster 1 (Absolute Support) are illustrated in Table 6.2. According to Table 6.2, M1 and M2 were the same models. Comparison between them was not necessary, so M1/M2 were compared with M3. The LRT between M1/M2 and M3 had a chi-squared of 28.46, a degree of freedom of eight, and a p-value < 0.001, which was significant, suggesting that M1/M2 were better than M3. In other words, the additional independent variables in M1/M2 might have coefficients that were not zero. Additionally, AIC and AIC/N of M1/M2 were smaller than those of M3. However, BIC

Table 6.2 Model fit statistics of Logit regression, DV = C1 (Yeak Laom CBET)

Fit statistic	M1	M2	M3	Difference M1-M2	Difference M2-M3
Comparative fit statistic					
LRT					
Chi-square	48.58	48.579	20.113	0.00	28.46
df	9	9	1	0.00	8
p-value	0.000	0.000	0.000	-	0.000
Information criteria					
AIC	230.54	230.54	243.00	0.00	-12.46
AIC divided by N	1.10	1.10	1.16	0.00	-0.06
BIC	263.96	263.96	249.67	0.00	14.27
Absolute fit statistic					
Pseudo R^2	0.19	0.19	0.08	-	-
Hosmer–Lemeshow (GOF) Test					
Chi-square	4.52	4.52	2.86	-	-
p-value	0.807	0.807	0.414	-	-
Tukey–Pregibon link test					
Coef. Of hatsq	-0.0013	-0.0013	-0.091	-	-
p-value	0.99	0.99	0.785	-	-

Source: Author's analysis using data of author's survey (2014)

of M3 was smaller than that of M1/M2, which indicated that M3 was better than M1/M2. Although M3 had a smaller BIC, M1/M2 was selected. This was because M1/M2 had smaller AIC and AIC/N and the p-value of LRT was significant. Another reason is that M3 had only one independent variable; all other independent variables were removed, some of which may have significant coefficients as indicated by the LRT between M1/M2 and M3. These independent variables might have been missed if M3 had been selected as the final model. Hosmer–Lemeshow (GOF) Test of M1/M2 had a non-significant p-value of 0.80, indicating that it has goodness of fit. The Tukey–Pregibon link test provided a non-significant p-value of 0.99, indicating that the assumption of linearity was not violated. Finally, multicollinearity was also checked using Variance Inflation Factor (VIF) and Tolerance. Table 6.3 shows the remaining independent variables had the highest VIF of 1.56 and a minimum Tolerance of 0.64. This indicates that multicollinearity did not exist among the independent variables.

Table 6.4 lists the remaining independent variables of M2 as well as their coefficients, odds ratio (OR), and p-values. The significant independent variables were annual income, concern for livelihood activities, length of residence, natural resource dependency, and age. Of these significant independent variables, only concern for livelihood activities and age had

Table 6.3 Multicollinearity of independent variables, DV= C1 (Yeak Laom CBET)

Independent variable	VIF	Tolerance
Natural resource dependency	1.32	0.7564
CBET knowledge	1.26	0.7943
Concern for livelihood activities	1.18	0.8492
Occupation (Farmer)	1.2	0.833
Length of residence	1.56	0.6426
Age	1.23	0.815
Ecocentric attitude	1.03	0.975
Annual Income	1.13	0.8836
Community attachment	1.21	0.8259

Source: Author’s analysis using data of author’s survey (2014)

positive coefficients. Concern for livelihood activities had the largest coefficient and odds ratio (β = 0.24, OR = 1.27, p-value = 0.018). According to the value of OR, as the factor score of concern for livelihood increased by one unit, the odds of being an absolute supporter increased 1.27 times; that is it increased by 27%. Age had a positive coefficient of 0.03, OR =1.03, p-value = 0.05. It can be interpreted that for a Yeak Laom resident, the odds of being an absolute supporter was 1.03 higher than a resident one year younger. Annual income had a negative coefficient (β = -0.0004, OR = 0.99, and p-value = 0.004). The values of the coefficient and OR indicated that annual income had a very weak relationship with P [C1]. Natural resource dependency and length of residence also had negative coefficients (β = -0.24, OR = 0.78, and p-value = 0.042 and β = -0.03, OR = 0.97, and p-value = 0.027 respectively). For one-unit increase in the factor score of natural resource dependency and length of residence, the odds of being an absolute supporter decreased by 22% and three percent respectively.

Table 6.4 Determinants of C1 (Yeak Laom CBET)

Independent variable	Coefficient	Odds ratio	P-value
Annual Income	-0.0004	0.99957	0.004
Natural resource dependency	-0.24	0.78	0.042
Length of residence	-0.03	0.97	0.027
Ecocentric attitude	0.21	1.23	0.095
Concern for livelihood activities	0.24	1.27	0.018
CBET knowledge	0.18	1.19	0.091
Community attachment	1.38	3.98	0.065
Age	0.03	1.03	0.051
Occupation (Farmer)	0.74	2.09	0.06
Constant	-12.11	0.00	0.019

Source: Author's analysis using data of author's survey (2014)

6.2.2 Determinants of Beneficiary Supporters (C2)

The model fit statistics for Logit regression to identify the determents of Cluster 2 (Beneficiary Supporter) are illustrated in Table 6.5. According to Table 6.5, the LRT between M1 and M2

Table 6.5 Model fit statistics of Logit regression, DV = C2 (Yeak Laom CBET)

Fit statistic	M1 (p=0.25)	M2 (p=0.1)	M3 (p=0.06)	Difference M1-M2	Difference M2-M3
Comparative fit statistic					
LRT					
Chi-square	69.81	65.65	65.65	4.16	0
df	10	8	8	2.00	0
p-value	0.000	0.000	0.000	0.125	-
Information criteria					
AIC	124.13	124.3	124.3	-0.16	0
AIC divided by N	0.59	0.59	0.59	-0.00	0
BIC	160.89	154.37	154.37	6.52	0
Absolute fit statistic					
Pseudo R^2	0.41	0.38	0.38	-	-
Hosmer–Lemeshow (GOF) Test					
Chi-square	1.42	5.50	5.50	-	-
p-value	0.994	0.703	0.703	-	-
Tukey–Pregibon link test					
Coef. Of hatsq	-0.07	0.03	0.03	-	-
p-value	0.14	0.61	0.61	-	-

Source: Author's analysis using data of author's survey (2014)

Table 6.6 Multicollinearity of independent variables, DV= C2 (Yeak Laom CBET)

Independent variable	VIF	Tolerance
Community concern	1.37	0.7325
Concern for livelihood activities	1.37	0.7312
Ethnicity (Tompoun)	1.25	0.7984
Occupation (Farmer)	1.38	0.7223
Emotional solidarity	1.04	0.9585
Natural resource dependency	1.07	0.9364
Education	1.36	0.7378
Annual income	1.10	0.9063

Source: Author's analysis using data of author's survey (2014)

had a chi-squared of 4.16, a degree of freedom of 2, and a p-value of 0.125, which was not significant and was an indication that M2 was better than M1. Additionally, BIC of M2 was much smaller than that of M1, with a difference of 6.52 in BIC providing strong support for M2. Therefore, M2 fits better than M1. Table 6.5 also shows that M2 and M3 were not different.

They are the same model containing the same number of independent variables. Hosmer–Lemeshow (GOF) Test of M2 had a non-significant p-value of 0.703, indicating that it has goodness of fit. The Tukey–Pregibon link test provided a non-significant p-value of 0.607, indicating that the assumption of linearity was not violated. Finally, multicollinearity was also checked using Variance Inflation Factor (VIF) and Tolerance. Table 6.6 shows the remaining independent variables had the highest VIF of 1.38 and a minimum Tolerance of 0.7223. This indicates that multicollinearity did not exist among the independent variables. Consequently, M2 was chosen as the final model. Table 6.7 lists the remaining independent variables of M2 and their coefficients, odds ratio (OR), and p-values. The significant independent variables were community concern, concern for livelihood activities, ethnicity (Tompoun), occupation (farmer), emotional solidarity, natural resource dependency, education, and annual income.

The result shows that community concern had a positive relationship with P [C2] (β = 2.66, OR =14.41, p-value < 0.001). The value of OR suggests that as the factor score of community concern increased by one unit, the odds of being a Beneficiary Supporter increased 14.41 times. On the contrary, concern for livelihood activities had a negative relationship with P [C2] (β = -0.71, OR = 0.49, p-value < 0.001). According to the value of OR, for a one-unit increase in the factor score of concern for livelihood activities, the odds of being a Beneficiary

Table 6.7 Determinants of C2 (Yeak Laom CBET)

Independent variable	Coefficient	Odds ratio	p-value
Community concern	2.67	14.41	0.000
Concern for livelihood activities	-0.71	0.49	0.000
Ethnicity (Tompoun)	1.09	2.99	0.053
Occupation (Farmer)	-1.68	0.19	0.005
Emotional solidarity	2.51	12.26	0.012
Natural resource dependency	0.45	1.56	0.013
Education	0.18	1.20	0.013
Annual income	0.00	1.0010	0.000
Constant	-24.29	0.00	0.000

Source: Author’s analysis using data of author’s survey (2014)

Supporter decreased by 51%. Occupation (farmer) also had a negative relationship with P [C2] (β = -1.68, OR = 0.19, and p-value = 0.00). For a farmer, the odds of being a Beneficiary Supporter were 0.19 times smaller than that for a non-farmer. Emotional solidarity had a positive relationship with P [C2] (β = 2.506, OR =12.26, and p-value = 0.012). For the purpose of parsimony, the interpretations about odds ratio will not be explained from here because they are similar to the explanation for the first three variables. Natural resource dependency also had a positive relationship with P [C2] (β = 0.44, OR =1.56, and p-value = 0.013). Education had a positive relationship with P [C2] (β = 0.18, OR =1.20, and p-value = 0.013). Annual income also had a positive relationship with P [C2] (β = 0.001, OR =1.001, and p-value < 0.000). According to the coefficient and OR, the magnitude of this relationship was very weak, but it was not zero since the p-value was less than 0.001.

6.2.3 Determinants of Concerned Supporters (C3)

Table 6.8 indicates that the LRT between M1 and M2 had a non-significant p-value of 6.78. In addition, AIC, AIC/N, and BIC of M2 were consistently smaller than those of M1. Accordingly, M2 had a better fit than M1. Table 6.8 also shows that M3 was marginally better than M2 because the LRT between M2 and M3 had a slightly non-significant p-value of 0.07. Also, AIC, AIC/N, and BIC of M3 were slightly smaller than those of M3. However, M3 had a significant p-value in the Tukey–Pregibon link test, suggesting that the assumption of linearity was violated. For this reason, M3 was dropped. The Hosmer–Lemeshow (GOF) Test of M2 had a non-significant p-value of 0.12 indicating that it had goodness of fit. The Tukey–Pregibon link test provided a non-significant p-value of 0.06, suggesting that the assumption of linearity was not violated. Table 6.9 shows that the remaining independent variables had the largest VIF of 1.15 and the smallest Tolerance of 0.87. It indicates that multicollinearity did exist among the independent variables. Hence, M2 was chosen as the final model. According to Table 6.10, M2 of C3 had the significant independent variables as follow, concern for livelihood activities, community attachment, and length of residence. Of these remaining independent variables, only length of residence had a positive coefficient (β = 0.03, OR =1.03, and p-value = 0.008). Others

independent variables had negative coefficients. Concern for livelihood activities had a negative coefficient (β = -0.25, OR = 0.78, and p-value = 0.03). Community attachment had a negative coefficient (β = -0.64, OR = 0.52, and p-value = 0.01).

Table 6.8 Model fit statistics of Logit regression, DV = C3 (Yeak Laom CBET)

Fit statistic	M1	M2	M3	Difference M1-M2	Difference M2-M3
Comparative fit statistic					
LRT					
Chi-square	24.89	21.18	17.92	3.71	3.26
df	6	4	3	2.00	1
p-value	0.000	0.000	0.000	0.156	0.071
Information criteria					
AIC	129.34	129.05	130.31	0.2	-1.25
AIC divided by N	0.68	0.68	0.69	0.00	-0.00
BIC	152.07	145.28	143.29	6.78	1.98
Absolute fit statistic					
Pseudo R^2	0.18	0.15	0.13	-	-
Hosmer–Lemeshow (GOF) Test					
Chi-square	11.67	12.65	11.66	-	-
p-value	0.17	0.12	0.17	-	-
Tukey–Pregibon link test					
Coef. Of hatsq	-0.16	-0.41	-0.48	-	-
p-value	0.30	0.06	0.04	-	-

Source: Author's analysis using data of author's survey (2014)

Table 6.9 Multicollinearity of independent variables, DV= C3 (Yeak Laom CBET)

Independent variable	VIF	Tolerance
Community attachment	1.15	0.87
Concern for livelihood activities	1.11	0.90
Length of residence	1.04	0.97
CBET knowledge	1.01	0.99

Source: Author's analysis using data of author's survey (2014)

Table 6.10 Determinants of C3 (Yeak Laom CBET)

Independent Variable	Coefficient	Odds ratio	p-value
Concern for livelihood activities	-0.25	0.78	0.03
CBET knowledge	-0.22	0.80	0.06
Community attachment	-0.64	0.53	0.01
Length of residence	0.03	1.03	0.01
Constant	4.17	64.81	0.01

Source: Author's analysis using data of author's survey (2014)

6.2.4 Determinants of Ambivalent (C4)

Table 6.11 demonstrates that M2 and M3 were not different, so a comparison between them was not necessary. Table 6.11 also shows that the LRT of M1 and M2 had a significant p-value of 0.042 providing support for M1. M1 also had a smaller AIC and AIC/N, but BIC of M1 was much larger than that of M2. However, M2 had a significant p-value in the Hosmer-Lemeshow (GOF) test, so M2 was rejected. M1 had a non-significant p-value (i.e., 0.97) in the Hosmer-Lemeshow (GOF) test, suggesting that it had goodness of fit. It also had a non-significant p-value (i.e., 0.79) in the Tukey–Pregibon link test, indicating that the assumption of linearity was not violated. Table 6.12 shows that the VIFs of all the remaining independent variables were not greater than 1.09, while the Tolerance was at least 0.92, indicating that multicollinearity did not exist. As a result, M1 was chosen as the final model.

Table 6.13 shows that the significant independent variables were natural resource dependency, community concern, and emotional solidarity, all of which had negative coefficients. Natural resource dependency had a negative coefficient (β = -0.55, OR = 0.58, p-value = 0.036). Community concern had a negative coefficient (β = -1.10, OR = 0.33, p-value = 0.000. Emotional solidarity had a negative coefficient (β = -0.35, OR = 0.30, p-value = 0.04). Additionally, all of the standardized factor loadings were statistically significant at p-value < 0.05. In consequence, all the latent variables had acceptable convergent validity. Table 6.14 also indicates that all the latent variables had CR higher than the cut-off value (i.e., 0.60), so they had acceptable reliability.

Table 6.11 Model fit statistics of Logit regression, DV = C4 (Yeak Laom CBET)

Fit statistic	M1	M2	M3	Difference M1-M2	Difference M2-M3
Comparative fit statistic					
LRT					
Chi-square	31.85	20.33	20.33	11.53	0.00
df	5	2	2	5	0.00
p-value	0.000	0.000	0.000	0.042	0.00
Information criteria					
AIC	76.02	77.55	77.55	-1.53	0.00
AIC divided by N	0.36	0.37	0.37	-0.01	0.00
BIC	102.76	87.58	87.58	15.18	0.00
Absolute fit statistic					
Pseudo R^2	0.35	0.22	0.22	-	-
Hosmer–Lemeshow (GOF) test					
Chi-square	2.23	22.45	22.45	-	-
p-value	0.97	0.00	0.00	-	-
Tukey–Pregibon link test					
Coef. Of hatsq	-0.04	-0.07	-0.07	-	-
p-value	0.79	0.69	0.69	-	-

Source: Author's analysis using data of author's survey (2014)

Table 6.12 Multicollinearity of independent variables, DV= C4 (Yeak Laom CBET)

Independent Variable	VIF	Tolerance
Natural resource dependency	1.09	0.92
Gender (Female)	1.03	0.97
Ethnicity (Tompoun)	1.09	0.92
Community concern	1.05	0.95
Emotional solidarity	1.03	0.97
Ecocentric attitude	1.03	0.97
Environmental knowledge	1.06	0.94

Source: Author's analysis using data of author's survey (2014)

Table 6.13 Determinants of C4 (Yeak Laom CBET)

Independent variable	Coefficient	Odds ratio	p-value
Natural resource dependency	-0.55	0.58	0.036
Gender (Female)	-1.31	0.27	0.139
Ethnicity (Tompoun)	1.47	4.35	0.103
Community concern	-1.10	0.33	0.000
Emotional solidarity	-1.20	0.30	0.04
Ecocentric attitude	-0.35	0.70	0.078
Environmental knowledge	0.36	1.44	0.207
Constant	9.26	10475.33	0.004

Source: Author's analysis using data of author's survey (2014)

6.3 Results of Chi Phat Community-Based Ecotourism

Table 6.14 illustrates the result of CFA for checking the reliability and validity of the latent variables. Most of the standardized factor loadings were greater than 0.50. Only four of them were slightly below 0.50, so they were kept to retain the content validity of the latent variables. Additionally, all of the standardized factor loadings were statistically significant at p-value < 0.05. In consequence, all the latent variables had acceptable convergent validity. Table 6.14 also indicates that all the latent variables had CR higher than the cut-off value (i.e., 0.60), so they had acceptable reliability.

6.3.1 Determinants of Absolute Supporters (C1)

Table 6.15 presents the model fit statistics of Logit regression for C1. According to Table 6.15, the Hosmer–Lemeshow GOF test of M2 had a significant p-value of 0.038, indicating that M2 had a bad fit, so it was dropped. Consequently, only M1 and M3 were compared. The LRT between M1 and M3 had a non-significant p-value of 0.074, showing support for M3, although AIC and AIC/N of M3 were slightly smaller than those of M1. The difference of 12.67 in BIC between M1 and M2 provides a strong evidence that M3 had a better fit. M3 also had a non-significant Hosmer-Lemeshow GOF and Tukey–Pregibon link tests. This indicates that M3 had goodness of fit and did not violate the assumption of linearity. Therefore, M3 was selected as the final model.

Table 6.14 Results of Confirmatory Factor Analysis (Chi Phat CBET)

Factor and indicator	Standardized factor loading	t-value
Community attachment	0.67[a]	
I feel that I am a native of this community.	0.55	5.28
I feel that this community is my hometown.	0.71	6.40
I am satisfied with this community.	0.48[b]	7.06
I feel comfortable living in this community.	0.59	3.14
Community concern	0.75[a]	
I am concerned about the culture in this community.	0.45[b]	6.27
I am concerned about the violence in this community.	0.71	11.15
I am concerned about the natural disasters in this community.	0.59	8.96
I am concerned about the security in this community.	0.85	14.68
Concern about livelihood activities	0.61[a]	
I am concerned about the out-migration in this community.	0.62	5.17
I am concerned about the job in this community.	0.69	5.19
I am concerned about the farming in this community.	0.44	4.34
Ecocentric attitude	0.63[a]	
Environmental pollution is hazardous to our health.	0.51	2.70
Despite our special abilities, humans are still subject to the laws of nature.	0.83	13.47
Natural resource dependency	0.85[a]	
Perceived extent of livelihood dependency on natural resources.	0.96	20.68
Frequency of natural resource extraction.	0.75	16.45
Emotional solidarity	0.82[a]	
I appreciate tourists for the contribution they make to the local economy.	0.49[b]	5.33
I feel close to some tourists I have met in this community.	0.57	7.64
I have made friends with some tourists in this community.	0.72	16.97
I identify with tourists in this community.	0.80	16.12
I have a lot in common with tourists in this community.	0.70	10.72
I feel affection towards tourists in this community.	0.47[b]	3.71
I understand tourists in this community.	0.67	8.62

Source: Author's analysis using data of author's survey (2014)

Note [a]: Composite Reliability (CR)

[b]: smaller than the cut-off value

Furthermore, Table 6.16 shows that the highest VIFs of the remaining independent variables in M3 was one and the smallest Tolerance was 0.99, suggesting that there was no multicollinearity. Therefore, M3 was selected as the final model. The remaining independent variables are shown in Table 6.17. Only two independent variables remained in this model, occupation (farmer) and natural resource dependency. Occupation (farmer) had a negative coefficient (β = - 0.92, OR = 0.40, and p-value = 0.005). Natural resource dependency had also a negative coefficient (β = -0.38, OR =0.68, and p-value = 0.014).

Table 6.15 Model fit statistics of Logit regression, DV = C1 (Chi Phat CBET)

Fit statistic	M1	M2	M3	Difference M1-M3
Comparative fit statistic				
LRT				
Chi-square	21.62	16.75	13.10	8.52
df	6	3	2	4
p-value	0.001	0.001	0.001	0.074
Information criteria				
AIC	240.02	238.89	240.54	-0.52
AIC divided by N	1.20	1.19	1.20	0.00
BIC	263.11	252.08	250.43	12.68
Absolute fit statistic				
Pseudo R^2	0.09	0.07	0.05	-
Hosmer–Lemeshow (GOF) Test				
Chi-square	9.82	11.78	1.47	-
p-value	0.28	0.04	0.83	-
Tukey–Pregibon link test				
Coef. Of hatsq	-0.22	-0.02	-0.09	-
p-value	0.34	0.95	0.83	-

Source: Author's analysis using data of author's survey (2014)

Table 6.16 Multicollinearity of independent variables, DV= C1 (Chi Phat CBET)

Independent variable	VIF	Tolerance
Occupation (Farmer)	1.00	0.99
Natural resource dependency	1.00	0.99

Source: Author's analysis using data of author's survey (2014)

Table 6.17 Determinants of C1 (Chi Phat CBET)

Independent variable	Coefficient	Odds ratio	p-value
Occupation (Farmer)	-0.93	0.40	0.005
Natural resource dependency	-0.38	0.68	0.014
Constant	1.69	5.44	0.000

Source: Author's analysis using data of author's survey (2014)

6.3.2 Determinants of Regular Beneficiary Supporters (C2)

The model fit statistics of Logit regression model for C2 were presented in Table 6.18. The LRT between M1 and M2 had a non-significant p-value of 0.166, indicating that M2 was a better model than M1. M2 also had a smaller AIC and BIC than those of M1. The difference of 3.37 in BIC provides a positive support for M2 over M1. Thus, M2 was better than M1. However, the LRT between M2 and M3 provided a non-significant p-value of 0.087, showing more preference for M3 over M2. M3 also had a smaller BIC than M2. The difference of 5.707

Table 6.18 Model fit statistics of Logit regression, DV = C2 (Chi Phat CBET)

Fit statistic	M1	M2	M3	Difference M1-M2	Difference M2-M3
Comparative fit statistic					
LRT					
Chi-square	45.92	44.00	39.11	1.92	4.89
df	9	8	6	1	2
p-value	0.000	0.000	0.000	0.166	0.087
Information Criteria					
AIC	64.87	64.79	65.68	0.08	-0.89
AIC divided by N	0.32	0.32	0.33	0.00	0.00
BIC	97.85	94.47	88.76	3.38	5.71
Absolute fit statistic					
Pseudo R^2	0.51	0.48	0.43	-	-
Hosmer–Lemeshow (GOF) Test					
Chi-square	5.26	4.16	6.08	-	-
p-value	0.73	0.84	0.64	-	-
Tukey–Pregibon link test					
Coef. Of hatsq	0.03	0.04	0.05	-	-
p-value	0.68	0.39	0.21	-	-

Source: Author's analysis using data of author's survey (2014)

in BIC favored for M3 over M2. In addition, M3 had a non-significant p-value in the Hosmer-Lemeshow GOF (0.637) and non-significant p-value in the Tukey–Pregibon link tests (0.207). This proved that M3 had goodness of fit and did not violate the assumption of linearity. According to Table 6.19, multicollinearity did not exist among the remaining independent variables. Consequently, M3 was selected as the final model. The remaining independent variables in M3 are presented in Table 6.20. They are gender (female), CBET knowledge, occupation (farmer), annual income, emotional solidarity, and natural resource dependency. All of them had positive coefficients, except natural resource dependency. The independent variable gender (female) had a positive coefficient ($\beta = 2.33$, OR =10.24, and p-value = 0.014). CBET knowledge had a positive coefficient ($\beta = 1.02$, OR =2.77, and p-value = 0.014). Occupation (farmer) had a positive coefficient ($\beta = 1.88$, OR =6.58, and p-value = 0.022).

Table 6.19 Multicollinearity of independent variables, DV= C2 (Chi Phat CBET)

Independent variable	VIF	Tolerance
Gender (Female)	1.13	0.8854
CBET knowledge	1.29	0.7735
Occupation(Farmer)	1.02	0.9759
Annual income	1.13	0.8832
Emotional Solidarity	1.32	0.7587
Natural resource dependency	1.04	0.9583

Source: Author's analysis using data of author's survey (2014)

Table 6.20 Determinants of C4 (Chi Phat CBET)

Independent variable	Coefficient	Odds ratio	p-value
Gender (Female)	2.33	10.24	0.014
CBET knowledge	1.02	2.77	0.014
Occupation (Farmer)	1.88	6.58	0.022
Annual income	0.001	1.001	0.050
Emotional Solidarity	2.20	9.01	0.021
Natural resource dependency	-1.79	0.17	0.018
Constant	-15.77	0.00	0.000

Source: Author's analysis using data of author's survey (2014)

Annual income had a positive coefficient (β = 0.001, OR = 1.0006, and p-value = 0.05). Emotional solidarity had a positive coefficient (β = 2.20, OR = 9.01, and p-value = 0.021). Natural resource dependency had a negative coefficient (β = -1.79, OR = 0.17, and p-value = 0.018).

6.3.3 Determinants of Occasional Beneficiary Supporters (C3)

According to Table 6.21, M2 and M3 were the same models, so comparison between them was not necessary. Table 6.21 shows that LRT between M1 and M2 provided a non-significant p-value of 0.62. This indicated that M2 was a better model. Additionally, M2 had a smaller BIC than M1. The difference of 1.82 in BIC provides more justification for M2 over M1. M2 had a non-significant p-value in the Hosmer-Lemeshow GOF (0.99) and non-significant p-value in the Tukey–Pregibon link test (0.73). This proved that M2 had goodness of fit and did not violate

Table 6.21 Model fit statistics of Logit regression, DV = C3 (Chi Phat CBET)

Fit statistic	M1	M2	M3	Difference M1-M2	Difference M2-M3
Comparative fit statistic					
LRT					
Chi-square	81.24	77.76	77.76	3.48	0.00
df	6	5	5	1	0.00
p-value	0.000	0.000	0.000	0.62	-
Information Criteria					
AIC	49.09	50.57	50.57	-1.48	0.00
AIC divided by N	0.25	0.25	0.25	-0.01	0.00
BIC	72.18	70.36	70.36	1.82	0.00
Absolute fit statistic					
Pseudo R^2	0.70	0.67	0.67	-	-
Hosmer–Lemeshow (GOF) Test					
Chi-square	1.79	1.02	1.02	-	-
p-value	0.99	1.00	1.00	-	-
Tukey–Pregibon link test					
Coef. Of hatsq	-0.02	-0.03	-0.03	-	-
p-value	0.85	0.73	0.73	-	-

Source: Author's analysis using data of author's survey (2014)

the assumption of linearity. According to Table 6.22, multicollinearity did not exist among the remaining independent variables. Thus, M2 was selected as the final model.

The remaining independent variables for this model were similar to the set of independent variables for C2. They were emotional solidary, CBET knowledge, annual income, concern for livelihood activities, and natural resource dependency. Emotional solidarity had a negative coefficient (β = -2.80, OR = 0.06, and p-value = 0.002). CBET knowledge also had a negative coefficient (β = -1.13, OR = 0.32, and p-value = 0.005). Annual income had a negative coefficient (β = -0.01, OR = 0.99, and p-value = 0.014). Natural resource dependency had a positive coefficient (β = 2.25, OR = 9.44, and p-value = 0.001). Concern for livelihood activities had a negative coefficient (β = -1.35, OR = 0.26, and p-value = 0.022).

Table 6.22 Multicollinearity of independent variables, DV= C3 (Chi Phat CBET)

Independent variable	VIF	Tolerance
Emotional solidarity	1.26	0.79
CBET knowledge	1.29	0.78
Annual income	1.11	0.90
Natural resource dependency	1.09	0.92
Concern for livelihood activities	1.06	0.95

Source: Author's analysis using data of author's survey (2014)

Table 6.23 Determinants of C3 (Chi Phat CBET)

Independent variable	Coefficient	Odds ratio	p-value
Emotional solidarity	-2.80	0.06	0.002
CBET knowledge	-1.13	0.32	0.005
Annual income	-0.01	0.99	0.014
Natural resource dependency	2.25	9.44	0.001
Concern for livelihood activities	-1.35	0.26	0.022
Constant	9.28	10760.69	0.014

Source: Author's analysis using data of author's survey (2014)

6.3.4 Determinants of Concerned Supporters (C4)

Table 6.24 illustrates the model fit statistics of Logit regression for C4. It shows that the Hosmer-Lemeshow (GOF) test of M2 had a significant p-value. It indicated that M2 did not have goodness of fit, so it was rejected. M1 and M3 were subsequently compared. The LRT between M1 and M3 had a significant p-value of 0.025. It indicated that the independent variables in M1 that were not in M3 might be statistically significant, so M1 was better. Although M3 had a smaller BIC, M1 was selected because M1 had smaller AIC and AIC/N, and the p-value of LRT was significant. Furthermore, M3 had only one independent variable; all other independent variables were removed, some of which may be significant independent variables as indicated by the LRT between M1 and M3. These independent variables might have been lost if M3 had been selected as the final model.

Table 6.24 Model fit statistics of Logit regression, DV = C4 (Chi Phat CBET)

Fit statistic	M1	M2	M3	Difference M1-M2	Difference M2-M3	Difference M1-M3
Comparative fit statistic						
LRT						
Chi-square	20.44	12.95	4.43	7.49	8.52	16.00
df	8	4	1	4.00	3	7
p-value	0.009	0.012	0.035	0.112	0.036	0.025
Information Criteria						
AIC	176.71	176.20	178.71	0.52	-2.52	-2.00
AIC divided by N	0.88	0.88	0.89	0.00	-0.01	-0.01
BIC	206.40	192.69	185.31	13.71	7.38	21.09
Absolute fit statistic						
Pseudo R^2	0.11	0.07	0.02	-	-	-
Hosmer–Lemeshow (GOF) Test						
Chi-square	3.10	22.34	2.48	-	-	-
p-value	0.93	0.00	0.65	-	-	-
Tukey–Pregibon link test						
Coef. Of hatsq	-0.41	-0.47	-0.21	-	-	-
p-value	0.09	0.27	0.84	-	-	-

Source: Author's analysis using data of author's survey (2014)

Table 6.25 Multicollinearity of IVs, DV= C4 (Chi Phat CBET)

Independent variable	VIF	Tolerance
Gender (Female)	1.11	0.90
CBET membership (Member)	1.17	0.86
Occupation (Farmer)	1.04	0.96
Age	1.14	0.88
Community concern	1.07	0.93
CBET knowledge	1.15	0.87
Annual income	1.15	0.87
Natural resource dependency	1.07	0.93

Source: Author's analysis using data of author's survey (2014)

Table 6.26 Determinants of C4 (Chi Phat CBET)

Independent variable	Coefficient	Odds ratio	p-value
Gender (Female)	0.58	1.78	0.209
CBET membership (Member)	0.60	1.83	0.174
Occupation (Farmer)	1.02	2.77	0.020
Age	0.03	1.03	0.036
Community concern	0.33	1.38	0.078
CBET knowledge	0.32	1.38	0.017
Annual income	0.00	1.00	0.227
Natural resource dependency	0.37	1.45	0.057
Constant	-6.61	0.00	0.000

Source: Author's analysis using data of author's survey (2014)

M1 had non-significant p-value in the Hosmer-Lemeshow GOF (0.92) and non-significant p-value in the Tukey–Pregibon link test (0.09). This proved that M1 had goodness of fit and did not violate the assumption of linearity. According to Table 6.25, multicollinearity did not exist among the remaining independent variables. Therefore, M1 was chosen as the final model. According to Table 6.26, the significant independent variables were occupation (farmer), age, CBET knowledge, and natural resource dependency. All of the independent variables had positive coefficients. The independent variable occupation (farmer) had a coefficient of 1.02 (OR=2.77 and p-value=0.020). Age had a coefficient of 0.03 (OR=1.03 and

p-value=0.036). CBET knowledge had a coefficient of 0.32 (OR=1.38 and p-value=0.017). Natural dependency had a slightly significant coefficient of 0.37 (OR=0.37 and p-value=0.057).

6.4 Discussion

To summarize, Table 6.27 compiles all the odds ratios of the clusters of residents' attitude toward CBETs at both Yeak Laom and Chi Phat communes. The results of Logit regression analysis suggest that female residents are very likely to be the Regular Beneficiary Supporters of Chi Phat CBET. Table 6.27 shows that the independent variable gender (female) had an OR of 10.24**, indicating that female residents in Chi Phat CBET had the odds of being an Regular Beneficiary Supporters 10.24 times higher than the odds of male residents being the Regular Beneficiary Supporters. The finding was in contradiction of the findings of Harrill & Potts (2003) and Mason & Cheyne (2000), which showed that women were more likely to have adverse attitudes toward tourism than men. However, being female was not a determinant of any resident clusters for Yeak Laom CBET. Occupation (farmer) was a negative predictor for the Beneficiary Supporter of Yeak Laom CBET (OR = 0.19**) (Table 6.27). A possible reason may be that most residents who had a high level of participation in the CBET did not identify themselves as farmers because most of them were staff of or full-time vendors at Yeak Laom CBET. On the other hand, Occupation (farmer) was a positive determinant of the Regular Beneficiary Supporter (OR = 6.57**) of Chi Phat CBET perhaps because farming was the primary occupation of most residents involved in the CBET. Their RPART in the CBET was only additional remunerative activities (Reimer & Walter, 2013). This difference – i.e., Occupation (farmer) was a negative determinant of the Beneficiary Supporter of Yeak Laom CBET, whereas it was a positive one for the Regular Beneficiary Supporter of Chi Phat CBET – may be due to the different practices of allowing residents to participate in CBET remuneration activities. As discussed earlier, Yeak Laom CBET allowed only a few residents to conduct full-time remunerative activities, while Chi Phat CBET allowed only its members to do so on a rotational basis.

Table 6.27 Summary of determinants of resident clusters in both research sites

Variable	Absolute Supporters		Beneficiary Supporters			Concerned Supporters		Ambivalent
				Chi Phat				
	Yeak Laom	Chi Phat	Yeak Laom	Regular	Occasional	Yeak Laom	Chi Phat	Yeak Laom
Female	-	-	-	10.24**	-	-	-	-
Farmer	-	0.40*	0.19*	6.57**	-	-	2.77**	-
Age	1.03**	-	-	-	-	-	1.03**	-
Annual income	0.99*	-	1.001*	1.0006**	0.99**	-	-	-
Education	-	-	1.20**	-	-	-	-	-
Length of residence	0.97**	-	-	-	-	1.03*	-	-
CBET knowledge	-	-	-	2.77**	0.32*	-	1.37**	-
Community attachment	-	-	-	-		0.52*	-	-
Community concern	-	-	14.41*	-	-	-	-	0.33*
Concern about livelihood activities	1.27**	-	0.49*	-	0.25**	0.78**	-	-
Emotional solidarity	-	-	12.26**	9.01**	0.06*	-	-	0.30**
Natural resource dependency	0.78**	0.68**	1.56**	0.17**	9.44**	-	1.45**	0.58**

Source: Author's analysis using data of author's survey (2014)

Note *: statistically significant at p-value < 0.01

**: statistically significant at p-value < 0.05

Moreover, in Chi Phat CBET, Occupation (farmer) also had a negative relationship with the Absolute Supporter (OR = 0.39***) and a positive relationship with the Concerned Supporter (OR = 2.77**). This finding implies that farmer residents were likely to be the Concerned Supporter, who had negative perceived impacts of CBET if they did not have a high involvement in CBET. If they had a high level of participation in CBET, they would become

the Regular Beneficiary Supporters, who had positive perceived impacts about CBET. This claim may be justified by the finding of Kakda (2012), which indicated that Chi Phat CBET had a very weak relationship with the local agricultural sector, which was the main occupation of most residents. Accordingly, farmers who were not CBET members did not have many opportunities to sell their agricultural products to Chi Phat CBET or tourists. That is why if the farmers were not involved in CBET, they might have negative perceived impacts of CBET.

Age was a positive determinant (OR = 1.02**) of the Absolute Supporter for Yeak Laom CBET. This was similar to finding of Tomljenovic & Faulkner (1999), which reported that older residents were more tolerant of foreign tourists and were less worried about the negative impacts of tourism on the environment. In contrast, at Chi Phat CBET, age was a positive determinant (OR = 1.03**) of the Concerned Supporter, who had negative perceived impacts of the CBET. This supports Cavus & Tanrisevdi's (2003) finding indicating that the older a resident was, the more negative perception of tourism they had (Harrill, 2004).

Annual income was a positive determinant of the Beneficiary Supporter for Yeak Laom CBET and the Regular Beneficiary Supporter for Chi Phat CBET. The ORs of the former and the latter were 1.001*** and 1.0006** respectively. It can be inferred that for a one US$ increase in annual income, the odds of being a Beneficiary Supporter increased by 1.001 times for Yeak Laom CBET and 1.0006 times for Chi Phat CBET; that is, it increased by 0.01% for Yeak Laom CBET and 0.006% for Chi Phat CBET. These increases are apparently too trivial to take into account. However, the change of annual income by one US$ was not very practical and relevant in the context of both research sites. Usually, it may change by US$100 or US$1,000; so if US$100 change in annual income is used, the OR would be 1.001 powered by 100 (Yeak Laom CBET) and 1.0006 powered by 100 (Chi Phat CBET). That is (1.001)x100 = 1.10 and (1.006)100 = 1.06 respectively. Therefore, for a US$100 increase in annual income, the odds of being a Beneficiary Supporter of Yeak Laom CBET and a Regular Beneficiary Supporter of Chi Phat CBET increased by 10% and six percent respectively. Consequently, the effect of annual income on the probability of being a Beneficiary Supporter was relatively small

but should not be ignored. Moreover, annual income also had negative relationships with the Absolute Supporter (OR = 0.99***) of Yeak Laom CBET and the Occasional Beneficiary Supporter (OR =0.99**) of Chi Phat CBET. These findings imply that, in general, the better-off residents were more likely to be involved in CBETs than the poorer residents were. More specifically, to have a high RPART in CBET, a resident needs to have or to invest with capital or assets. For instance, to host homestays, good houses are needed; to provide transportation services, boats and vehicles are required; to be a tourist guide, a relatively high level of education (i.e., general education and English language) is necessary; and so on. These findings were similar to that of Ven's (2013) study on Koh Phdao CBET, which discovered that 75.50% of the CBET members were from better-off households, 18.40% from the slight poor, and 6.10% from the poorest. In addition, the poorer households tended to be involved in the service groups that earned less and had incomes that are more unstable.

Education had a positive relationship with only the Beneficiary Supporter of Yeak Laom CBET (OR = 1.20**). This suggests that the residents with a higher level of education were more likely to become the Beneficiary Supporters. It is in line with findings of the previous studies (i.e., Haralambopoulos & Pizam, 1996; Hernandez et al., 1996; Inbakaran & Jackson, 2006), which found that the level of education was positively associated with residents' positive attitude toward tourism.

Length of residence was found to have a negative relationship with the Absolute Supporter (OR = 0.97**) and a positive relationship with the Concerned Supporter (OR = 1.03**) of Yeak Laom CBET. This might imply that the residents with a longer period of residence were less likely to be the Absolute Supporter and more likely to be the Concerned Supporter who thought that CBET might negatively affect livelihood assets. The finding is similar to those of the previous studies (i.e., Brunt & Courtney, 1999; Mansfeld, 1992; McCool & Martin, 1994; Ryan & Montgomery, 1994; Snaith & Haley, 1999; Stynes, Stewart, & others, 1993; D. R. Williams, McDonald, Riden, & Uysal, 1995) which asserted that long-term residents were more likely to have negative or less positive attitudes toward tourism than

shorter-term residents were. On the other hand, at Chi Phat CBET, the length of residence did not have any relationship with any resident clusters, which is in line with findings of Allen et al. (1993) and Liu & Var (1986), who did not find a significant relationship between length of residence and residents' attitude toward tourism.

CBET knowledge was found to have a negative relationships with the Occasional Beneficiary Supporter (OR = 0.32*) and positive relationships with the Regular Beneficiary Supporter (OR = 2.77**) and the Concerned Supporter (OR = 1.37**) of Chi Phat CBET. It suggests that the residents with better knowledge about CBET were less likely to become the Occasional Beneficiary Supporter, but they were more inclined to be the Regular Supporter and the Concerned Supporter. In other words, it may imply that the residents with better CBET knowledge held both favorable and unfavorable attitudes toward CBET. They had a positive attitude toward CBET, if they were involved in CBET. Otherwise, they had concerns that CBET had negative impacts on livelihood assets and outcomes. According to the values of the OR, the possibility of being a Regular Beneficiary Supporter was greater than that of being a Concerned Supporter. This is similar to findings of the past studies (Davis et al., 1988; Lankford, 1994), which found that knowledge of the industry [tourism] was related to both positive and negative attitudes toward tourism.

Community attachment was a negative predictor for the Concerned Supporter (OR = 0.52*) of Yeak Laom CBET. The more attached a resident was to the community, the less likely he/she was to be a Concerned Supporter who worried that CBET negatively affected livelihood assets. It is in line with findings of Lee (2013) and Gursoy & Rutherford (2004), who reported that community attachment had positive effects on perceived economic and social benefits and support for tourism. On the contrary, community attachment did not have a significant relationship with any resident clusters at Chi Phat CBET, which supports the studies of Gursoy et al. (2002) and McCool & Martin (1994), which did not find any association between community attachment and perceived impacts or benefits/costs and support for tourism.

Community concern had a strong positive relationship with the Beneficiary Supporter (OR = 14.41*) and a negative relationship with the Ambivalent (OR = 0.33*) of Yeak Laom CBET. It may suggest that the residents with a higher level of community concern had a higher tendency to be the Beneficiary Supporter and a lower likelihood to be the Ambivalent, who were slightly opposed to CBET. It supports the results of Gursoy & Rutherford (2004), reporting that a high level of community concern leads to the perception that tourism generates economic and social benefits. It is also in line with the finding of Gursoy et al. (2010), that is, community concern had a positive effect on perceived cultural benefits. Nonetheless, community concern did not have a relationship with any resident clusters of Chi Phat CBET.

Concern for livelihood activities was adversely related with the Occasional Beneficiary Supporter of Chi Phat CBET (OR = 0.25*). Concern for livelihood activities had a positive relationship with the Absolute Supporter (OR = 1.27**) and negative relationships with the Beneficiary Supporter (OR = 0.49*) and the Concerned Supporter (OR = 0.78*) of Yeak Laom CBET. Based on these findings, it can be speculated that the residents with a higher level of concern for livelihood activities were less likely to be the Beneficiary Supporter and the Concerned Supporter, but were more likely to be the Absolute Supporter. This result might indicate that because of the concern for livelihood activities, they might desire additional economic activities. As a result, they had positive perceptions of and strong support for CBET. It supports findings of the previous studies (Campbell, 1999; Holladay & Ormsby, 2011; Lepp, 2007; Lindberg & Johnson, 1997; Smith & Krannich, 1998; Stronza & Gordillo, 2008) which asserted that one of the common justifications for positive perceptions of and support for ecotourism were the desire for additional economic opportunity.

Emotional solidary consistently had strong positive relationships with the Beneficiary Supporter (OR = 12.26**) of Yeak Laom CBET and the Regular Beneficiary Supporter (OR = 9.01**) of Chi Phat CBET. Moreover, it also had negative relationships with the Ambivalent (OR = 0.33**) of Yeak Laom CBET and the Occasional Beneficiary Supporter (OR =0.06**) of Chi Phat CBET. This implies that the higher level of emotional solidarity residents have, the

more likely they are to be the Beneficiary Supporter, the less liable to become the Ambivalent, and somewhat less likely to become the Occasional Beneficiary Supporter. The reason for emotional solidarity were slightly related to the Occasional Beneficiary Supporter of Chi Phat CBET might be that they were only involved in CBET occasionally, so they had less interaction with tourists, and in turn they also had less emotional solidarity with tourists.

Finally, natural resource dependency consistently had negative relationships with the Absolute Supporter of both Yeak Laom CBET (OR =0.78**) and Chi Phat CBET (OR = 0.68**), but it had a positive relationship with the Beneficiary Supporter of Yeak Laom CBET (OR = 1.56**) and a strong relationship with the Occasional Beneficiary Supporter of Chi Phat CBET (OR = 9.44**). Unexpectedly, it strongly related with the Regular Beneficiary Supporter of Chi Phat CBET (OR = 0.16**). Moreover, it positively associated with the Concerned Supporter of Chi Phat CBET (OR = 1.45**) and adversely related with the Ambivalent of Yeak Laom CBET (OR = 0.58**). Based on these findings, it can be implied that the residents with a higher level of natural resource dependency were not likely to become the Absolute Supporter, but they had a tendency to be the Beneficiary Supporter. One possible justification for this proposition might be that the residents who depended on natural resources had been encouraged to be involved in CBET because one of the common goals of CBET is to provide an alternative livelihood activity to the residents who had previously exploited the natural resources. On the other hand, it also suggests that if the residents with a high level of natural resource dependency did not get involved in CBET, they might have negative perceived impacts of or be opposed to CBET. This can be justified by the fact that at Chi Phat CBET the residents, who depended on the natural resources and who were not involved in the CBET, had negative perceptions of Chi Phat CBET.

6.5 Summary

In brief, the objective of this chapter is to address the second objective. Based on results of Confirmatory Factory Analysis (CFA) and Logit regression analysis, the determinants of resident clusters from the viewpoints of socio-demographic factors and latent factors are

identified. The findings of Chapter 6 can be summarized as follows:

- At Yeak Laom CBET, the positive determinants of the Absolute Supporter were age and concern for livelihood activities, while the negative determinants were annual income, length of residence, and natural resource dependency. At Chi Phat CBET, the negative determinants included occupation (farmer) and natural resource dependency; there were no positive determinants.
- At Yeak Laom CBET, the positive determinants of the Beneficiary Supporter were annual income, education, community concern, emotional solidarity, and natural resource dependency, while the negative determinants were occupation (farmer) and concern about livelihood activities. At Chi Phat CBET, the positive determinants of the Regular Beneficiary Supporter were gender (female), occupation (farmer), annual income, CBET knowledge, and emotional solidarity, while the negative determinant was natural resource dependency.
- The Occasional Beneficiary Supporter of Chi Phat CBET had a positive determinant of natural resource dependency, while the negative determinants were annual income, CBET knowledge, emotional solidarity, and concern for livelihood activities.
- The Concerned Supporter of Yeak Laom CBET had two negative determinants such as community attachment and concern for livelihood activities, while the positive determinant was length of residence. The Concerned Supporter of Chi Phat CBET had the following positive determinants: occupation (farmer), age, CBET knowledge, and natural resource dependency. It did not have any negative determinants.
- The Ambivalent of Yeak Laom CBET only had negative determinants including community concern, emotional solidarity, and natural resource dependency.

Chapter 7: Relationships of Residents' Participation with Their Perceived Impacts and Support for CBET: A Structural Equation Modeling

7.1 Methodology

7.1.1 Model specification

At the outset, a model specification based on the literature review or any substantial theory is necessary. The following two subsections describe the SEM theoretical model, in which the interrelationships among RPART, NRPART, PILA, PILO, and SUPPORT are proposed as hypotheses. These hypotheses are postulated mostly based on the literature reviewed in Chapter 2. One of the conclusions of the literature review (in section 2.2 in Chapter 2) stated that RPART is likely to have direct positive effects on NRPART, PILA, PILO, and SUPPORT.

In the context of CBET, remunerative activity (opportunity) is usually used as an incentive for the residents to be involved in CBET, partake in the conservation of natural resource, and support CBET. After the inception of CBET, residents who carry out livelihood activities that negatively affect the natural resources will be restrained from doing such activities. As a result, they need alternative livelihood activities, one of which is remunerative participation in CBET such as providing service to tourists, selling their handicraft or agricultural products to tourists or CBET, and working for CBET. Without remunerative participation in CBET, the residents who economically depend on the natural resources are not likely to be involved in non-remunerative activities and support CBET. Therefore, it is apparent that remunerative participation in CBET is an incentive for non-remunerative participation in CBET. This assertion, however, is rarely studied and confirmed academically. The following hypotheses are postulated:

H1: Residents' remunerative participation (RPART) has a direct positive influence on their non-remunerative participation (NRPART).

H2: Residents' remunerative participation (RPART) has a direct positive influence on their perceived impacts of CBET on livelihood assets (PILA).

H3: Residents' remunerative participation has a direct positive influence on their perceived impacts of CBET on livelihood outcomes (PILO).

H4: Residents' remunerative participation has a direct positive influence on their support for CBET (SUPPORT).

Regarding NRPART, another conclusion of the literature review in section 2.2 of Chapter 2 stated that NRPART is likely to have a direct positive influence on residents' perceived impacts of and support for CBET. Thus, the following hypotheses are postulated:

H5: Residents' non-remunerative participation (NRPART) has a direct positive influence on perceived impacts of CBET on their livelihood assets (PILA).

H6: Residents' non-remunerative participation has a direct positive influence on their perceived impacts of CBET on their livelihood outcomes (PILO).

H7: Residents' non-remunerative participation has a direct positive influence on their support for CBET (SUPPORT).

According to Social Exchange Theory (SET)[30] and the previous studies reviewed in section 2.2 of Chapter 2, residents' perceived impacts of CBET have a direct positive influence on their support for tourism. Besides, residents' perceived impacts of CBET on livelihood assets (PILA) is likely to have a direct positive influence on perceived impacts of CBET and on livelihood outcomes because livelihood assets are the foundations for achieving livelihood outcomes. Thus, the following hypotheses are proposed:

H8: Residents' perceived impacts of CBET on livelihood assets (PILA) have a direct positive influence on their perceived impacts of CBET on livelihood outcomes (PILO).

[30] Social Exchange Theory (SET) emerged during the early 1960s and was used in the sociology by Blau (1964), Homans (1961), Thibaut & Kelley (1959). Its basic principle is that humans in society behave in a manner that maximize the likelihood of fulfilling their self-interests. From a tourism perspective, its basic concept is that if residents perceive that tourism has more positive impacts (benefits) than negative impacts (cost), they are inclined to support it.

H9: Residents' perceived impacts of CBET on their livelihood assets (PILA) have a direct positive influence on their support for CBET (SUPPORT).

H10: Residents' perceived impacts of CBET on their livelihood outcome (PILO) have a direct positive influence on their support for CBET (SUPPORT).

Hypotheses H1 and H7 state that remunerative participation has a direct positive influence on non-remunerative participation, which, in turn, has a direct positive influence on support for CBET. Thus, remunerative participation is likely to have an indirect positive influence on support for CBET with NRPART as a mediator. Likewise, according to other hypotheses, it is likely that remunerative and non-remunerative participations have an indirect positive influence on support for CBET with PILA or PILO as mediators. Hence, the following hypotheses regarding the indirect effects are suggested:

H11: Residents' remunerative participation (RPART) has an indirect positive influence on their support for CBET (SUPPORT) with NRPART as mediator.

H12: Residents' remunerative participation (RPART) has an indirect positive influence on their support for CBET (SUPPORT) with PILA or PILO as mediator.

H13: Residents' non-remunerative participation (NRPART) has an indirect positive influence on their support for CBET (SUPPORT) with PILA or PILO as mediator.

Based on the hypotheses proposed above, Figure 7.1 graphically visualizes the structural relationships of remunerative participation (RPART), non-remuneration participation (NRPART), perceived impacts on livelihood assets (PILA), perceived impacts on livelihood outcomes (PILO), and support for CBET (SUPPORT).

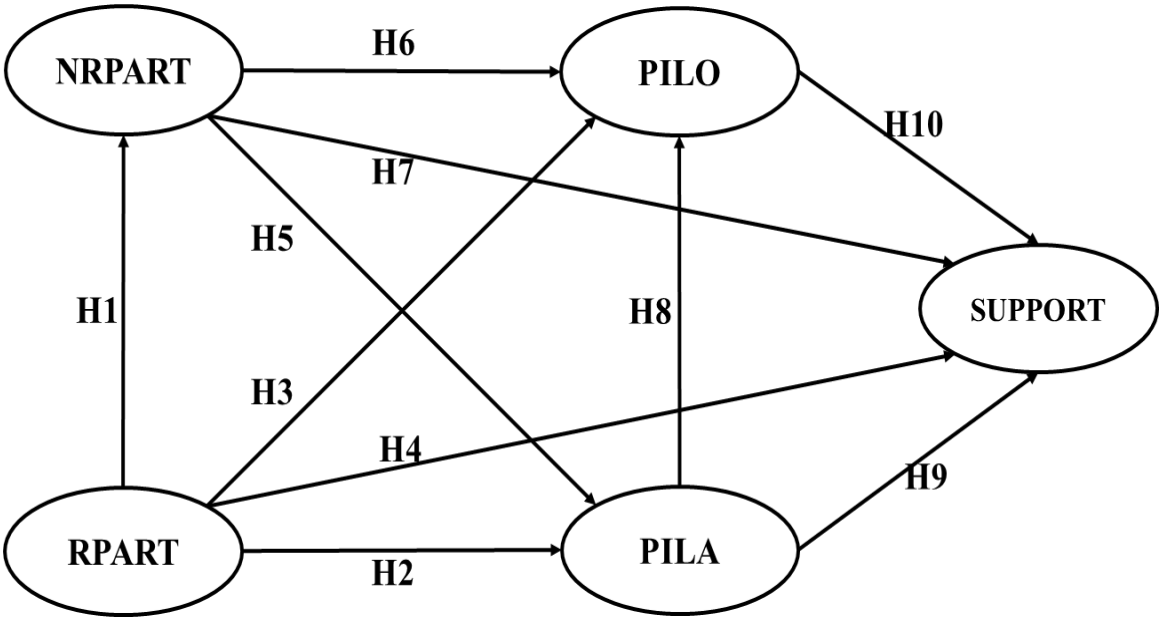

Figure 7-1 Theoretical model
Source: Based on the literature[31], H1 and H8 are based on author's idea
Note H: Hypothesis

7.1.2 Two-stage Structural Equation Modeling (SEM)

The two-stage approach of Structural Equation Modeling (SEM) was carried out to test the hypotheses illustrated in the theoretical model (Figure 7.1). A full SEM model comprises two models, namely the measurement model and the structural model. In the measurement model, the observable variables or the indicators are specified to load on the relevant latent factors while the structural model represents the structural relationships among the latent factors. These relationships in the structural model are equivalent to those in the ordinary least squares regression analysis.

The first stage tests the fitness of the measurement model via Confirmatory Factor Analysis (CFA). Testing the fitness of the measurement model is necessary because it is the foundation of the structural model. A measurement model with a bad fit leads to two consequences. First, the latent factors are not properly measured; second, the structural model

[31] Based on the literature (i.e., Ap, 1992; Chiang & Huang, 2012; D. Gursoy, Chi, & Dyer, 2010; Dogan Gursoy & Kendall, 2006; Dogan Gursoy & Rutherford, 2004; Harrill, 2004; Lankford, Chen, & Chen, 1994; Lee, 2013)

has a bad fit with the data. Next, the reliability and validity of all the latent factors need to be verified. The criteria for reliability and validity are the same as those described in CFA in the first step of the analysis for the first objective (section 5.1 in Chapter 5). It should be noted that the reliability and validity of all the latent factors were tested once in CFA in the first step of analysis for the first objective. The difference between CFA in Chapter 5 and CFA in this Chapter is that the former CFA was carried out separately for each latent factor, whereas the latter was implemented by including all the latent factors of interest in a single generic measurement model. In a full SEM, researchers have to include all factors in a single generic model and specify them to covariate freely so that the fitness of the overall measurement model can be assured before the second stage can be implemented. Therefore, the criteria for the reliability and validity in this analysis are more stringent than those in the former analysis so that a good fit of the measurement model can be achieved. Then the hypotheses model (Figure 7.1) was tested in the second step, the structural model. In this step, the relationships among the latent factors posited in all the hypotheses were tested whether they are statistically significant or not. By adopting the backward elimination process in multiple regression analysis, the path coefficients with the highest p-values were deleted one at a time until the remaining path coefficients were statistically significant at the 5% significance level. Non-significant structural paths were deleted from the model, and the corresponding hypotheses were rejected.

7.2 Results of Yeak Laom Community-Based Ecotourism

7.2.1 Measurement model

The model fit statistics of the measurement model, the theoretical structural models and the verified structural model for Yeak Laom CBET appear in Table 7.1. This table shows that the measurement model has a significant Chi-square (χ^2 = 146, df = 107, and p-value < 0.007) indicating that it does not fit the data well (Hu & Bentler, 1999). However, Chi-square is likely to be significant when the sample is large (McDonald & Ho, 2002), so it is recommended that researchers should use alternative fit indices in addition to Chi-square. One of them is the ratio of Chi-square/degree of freedom. Its cut-off value for a good fit model is < 3. The measurement

model had a ratio of Chi-square/degree of freedom of 1.37. It was less than three, indicating that the measurement model had a good fit. Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI) were used to examine the model fit. They are two of the so-called incremental fit indices, which are used to compare the target model with the null model that assumes that no variables are related. The incremental fit indices indicate how much the target model fits better than the null model. A model with CFI and TLI > 0.95 has a good fit (Hu & Bentler, 1999; Schermelleh-Engel, Moosbrugger, & Müller, 2003). CFI and TLI of the measurement model were 0.96 and 0.95 respectively, suggesting that the measurement model had a good fit.

Table 7.1 SEM Model fit statistics (Yeak Laom CBET)

Model fit index	Measurement Model	Structural Model		Criteria value for good fit
		Theoretical	Verified	
Absolute fit indices				
Chi-Square	146.370	146.370	154.505	
df	107.000	107.000	112.000	$p > 0.05$
p-value	0.007	0.007	0.005	
Chi-Square/df	1.37	1.37	1.38	< 3
Incremental fit indices				
Comparative fit index (CFI)	0.96	0.96	0.95	≥ 0.95
Tucker-Lewis Index (TLI)	0.95	0.95	0.94	≥ 0.95
Misfit indices				
SRMR	0.07	0.07	0.08	≤ 0.05
RMSEA	0.04	0.04	0.04	≤ 0.05
Relative fit indices				
Akaike (AIC)		7996.689	7995.061	Smaller: better fit
Bayesian (BIC)		8207.256	8188.916	
Sample-Size Adjusted BIC		8007.639	8005.142	
Satorra-Bentler $\chi 2$ difference test (between the theoretical and verified models)				
$\chi 2$ difference			8.358	$p < 0.05$: Theoretical M. better
df			5	
p-value			0.138	

Source: Author's analysis using data of author's survey (2014)

Table 7.2 Results of Confirmatory Factor Analysis (Yeak Laom CBET)

Factor and indicator	Standardized factor loading	t-value
Non-remunerative Participation in CBET (NRPART factor)	0.83[a]	
Frequency of participation in CBET meetings.	0.78	13.45
Frequency of participation in CBET training.	0.92	15.41
Frequency of forest patrolling.	0.66	9.69
Remunerative Participation in CBET (RPART factor)	0.88[a]	
Frequency of selling goods to tourists.	0.80	8.91
Frequency of working for CBET.	0.98	10.54
Perceived impacts on livelihood assets (PILA factor)	0.89[a]	
Impacts on the residents' ability to work together.	0.77	13.27
Impacts on the residents' adherence to common rules, norms and sanctions.	0.75	9.60
Impacts on natural resources.	0.81	10.37
Impacts on sustainable use of the natural resource base.	0.93	22.30
Perceived impacts on livelihood outcomes (PILO factor)	0.78[a]	
Impacts on sustainable use of the natural resource base.	0.40	5.89
Impacts on access to sufficient quantities of appropriate food.	0.79	9.19
Impacts on the residents' ability to obtain appropriate, necessary food.	0.949	12.20
Support for community-based ecotourism (SUPPORT factor)	0.86[a]	
I want to see tourism remain important to this community.	0.61	4.56
I think tourism should be actively encouraged in this community.	0.85	10.96
This community should remain a tourist destination.	0.75	8.57
I support the growth of tourism in the community.	0.90	16.27
The positive benefits of tourism outweigh negative impacts.	0.54	5.76

Source: Author's analysis using data of author's survey (2014)
Note [a]: Composite Reliability (CR)

Moreover, Standardized Root Mean Square Residual (SRMR) and Root Mean Square Error of Approximation (RMSEA) were used to measure the misfit of the target model. The recommended cut-off values of SRMR and RMSEA for a good-fit model are < 0.05 (Hu & Bentler, 1999; Schermelleh-Engel et al., 2003). SRMR and RMSEA of the measurement model were 0.07 and 0.04 respectively. RMSEA of 0.04 indicates that the measurement model had a good fit while the SRMR of 0.07 was slightly above the cut-off value. However, less ideally, SRMR < 0.08 is considered acceptable fit.

The results of CFA appear in Table 7.2, which shows that all the latent factors (i.e., RPART, NRPART, PILA, PILO, and SUPPORT) had construct reliability (CR) > 0.80. These values of CRs indicate that all the latent factors had high degrees of internal consistency. In addition, all the indicators had the standardized factor loadings greater than 0.50, except an indicator of PILO. This indicator had a standardized factor loading of 0.40, but it was kept to retain the content validity of PILO. Additionally, all the standardized factor loadings were significant at the 1% significant level. Hence, all the latent factors had a convergent validity.

7.2.2 Structural model

The fit statistics for the structural models of Yeak Laom CBET appear in Table 7.1. There are two structural models, the theoretical model and the verified models. As described earlier, the theoretical model was built mostly based on the literature reviewed in Chapter 2. It contains all the hypotheses, so it can be called the full model. The verified model is a nested model of the theoretical model; it was derived by deleting some parameters from the theoretical model. Table 7.1 indicates that the theoretical structural model had the following fit indices: χ^2/df = 1.37, CFI = 0.96, TLI = 0.95, SRMR = 0.07, and RMSEA = 0.04. Therefore, it had a good fit with the data. Nevertheless, many path coefficients were not statistically significant and should be deleted to have a parsimonious model. By adopting the backward elimination process of multiple regression analysis, the path coefficients with the highest p-values were deleted one at a time until the remaining path coefficients were statistically significant at the 5% significance level. As a result, the verified model depicted by Figure 7.2 was obtained. Table 7.1 illustrates that the verified model had the following fit indices, χ^2/df = 1.38, CFI = 0.95, TLI = 0.94, SRMR = 0.08, and RMSEA = 0.04. These fit indices are the indication that the verified model had goodness of fit similar to those of the theoretical model. Hence, to compare the theoretical model with the verified model, a Satorra-Bentler (S-B) scaled χ^2 difference test was implemented. Its result appears in Table 7.1, which shows that the Satorra-Bentler (S-B) scaled χ^2 difference was 8.358, df = 5, and p-value = 0.138. The non-significant p-value gives preference to the verified model over the theoretical model.

Table 7.3 Direct effects in Yeak Laom model

Hypothesis	Direct Path		Coefficient		t-value	p-value	R^2
	From	To	Unstandardized	Standardized			
H1	RPART	NRPART	0.293	0.324	3.39	0.001*	0.105
H8	PILA	PILO	0.121	0.354	3.57	0.000*	0.125
H7	NRPART	SUPPORT	0.014	0.153	2.75	0.006*	0.087
H10	PILO		0.098	0.251	2.52	0.012**	

Source: Author's analysis using data of author's survey (2014)

Note *: statistically significant at p-value < 0.01

**: statistically significant at p-value < 0.05

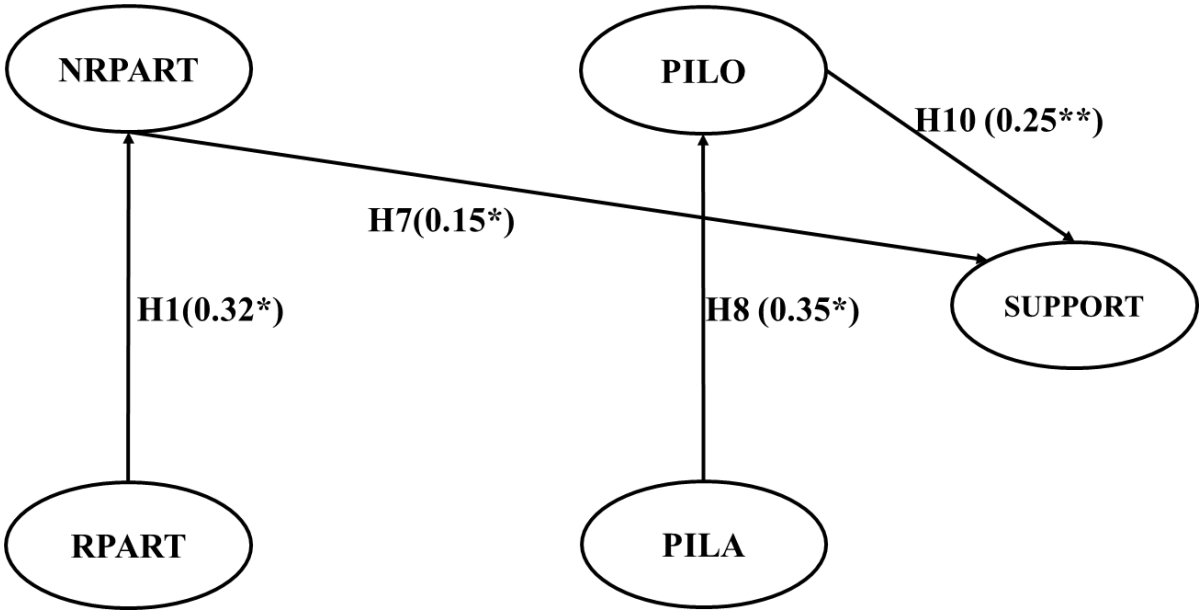

Figure 7-2 Yeak Laom model

Source: Author's analysis using data of author's survey (2014)

Note H: Hypothesis, the numbers in ( ) are the standardized coefficients.

*: statistically significant at p-value < 0.01

**: statistically significant at p-value < 0.05

Therefore, the verified model was chosen as the final model. The verified model is graphically illustrated in Figure 7.2, henceforth referred to as Yeak Laom model. The values of its path coefficients (β), t-value, p-value, and R-squared of the direct effects and indirect effects appear in Table 7.3 and Table 7.4 respectively.

Regarding the direct effects, in Yeak Laom model, hypotheses H2, H3, H4, H5, H6, and H9 were rejected, because there were no significant relationships between RPART and PILA, RPART and PILO, RPART and SUPPORT, NRPART and PILA, NRPART and PILO, and PILA and SUPPORT. The hypotheses that were supported by Yeak Laom model were H1, H7, H8, and H10. As hypothesized in H1, RPART had a relatively strong direct positive effect on NRPART (Standardized β=0.32, p-value = 0.001). Supporting H7, the verified model revealed that NRPART had a relatively weak direct effect on SUPPORT (Standardized β=0.15, p-value = 0.006). In line with H8, PILA had a direct positive effect on PILO (Standardized β=0.35, p-value = 0.000), which in turn had a direct effect on SUPPORT (Standardized β=0.25, p-value = 0.012) as hypothesized in H10.

Besides the direct effects, the indirect effects were determined. According to the structural paths sketched in Figure 7.1, several plausible indirect effects might exist. Unfortunately, in Yeak Laom model all the indirect paths were not statistically significant at the 5% significance level (Table 7.4).

Table 7.4 Indirect effects in Yeak Laom model

Indirect Path			**Coefficient**		**t-value**	**p-value**
From	**Mediator**	**To**	**Unstandardized**	**Standardized**		
RPART	NRPART	SUPPORT	0.004	0.049	1.830	0.07
PILA	PILO	SUPPORT	0.012	0.089	1.916	0.06

Source: Author's analysis using data of author's survey (2014)

7.3 Results of Chi Phat Community-Based Ecotourism

7.3.1 Measurement model

The model fit statistics of the measurement model, the theoretical structural model and the verified structural model appears in Table 7.5. The table shows that the measurement model had a ratio of Chi-square/degree of freedom of 1.65. It was less than three, indicating that the measurement model had a good fit. Table 7.5 demonstrates that the measurement model had an acceptable fit because its Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI) were 0.95

Table 7.5 SEM Model fit statistics (Chi Phat CBET)

Model fit index	Measurement Model	Structural Model		Criteria value for good fit
		Theoretical	Verified	
Absolute fit indices				
Chi-Square	201.64	201.64	204.42	
df	122.00	122.00	125.00	p > 0.05
P-Value	0.00	0.00	0.00	
Scaling Correction Factor for MLR	1.09	1.09	1.08	
Chi-Square/df	1.65	1.65	1.64	< 3
Incremental fit indices				
Comparative fit index (CFI)	0.95	0.95	0.95	≥ 0.95
Tucker-Lewis Index (TLI)	0.94	0.94	0.94	≥ 0.95
Misfit indices				
SRMR	0.05	0.05	0.05	≤ 0.05
RMSEA	0.06	0.06	0.06	≤ 0.05
Relative fit indices				
Akaike (AIC)		10887	10881	Smaller: better fit
Bayesian (BIC)		11108	11092	
Sample-Size Adjusted BIC		10895	10890	
Satorra-Bentler χ2 difference test (between theoretical and verified models)				
χ2 difference			1.229	If p < 0.05: Theoretical Model better
df			3	
p-value			0.746	

Source: Author's analysis using data of author's survey (2014)

Table 7.6 Results of Confirmatory Factor Analysis (Chi Phat CBET)

Factor and indicator	Standardized factor Loading	t-value
Non-remunerative Participation in activities (NRPART)	0.84[a]	
Frequency of participation in CBET meetings.	0.84	26.21
Frequency of participation in CBET training.	0.75	15.87
Frequency of providing ideas or discussion in CBET meetings.	0.79	17.817
Participation in remunerative activities (RPART)	0.75[a]	
Frequency of providing service to tourists.	0.82	16.46
Frequency of selling goods to CBET.	0.73	12.075
Perceived impacts on livelihood assets (PILA)	0.87[a]	
Impacts on residents' leadership skills.	0.59	8.65
Impacts on social networks and connectedness.	0.90	32.07
Impacts on trusts among the residents.	0.84	15.42
Impacts on the residents' ability to work together.	0.86	19.32
Impacts on the residents' mutual reciprocity and exchanges.	0.70	9.66
Impacts on sustainable use of the natural resource base.	0.37	4.44
Perceived impacts on livelihood outcomes (PILO)	0.71[a]	
Impacts on sustainable use of the natural resource base.	0.28	3.46
Impacts on food security of the commune.	0.92	23.86
Impacts on access to sufficient quantities of appropriate food.	0.88	20.41
Impacts on residents' leadership skills.	0.30	4.24
Support for community-based ecotourism (SUPPORT)	0.88[a]	
I support tourism in this community.	0.75	10.73
This community should remain a tourist destination.	0.84	14.71
Tourism will continue to play a major role in this community.	0.85	15.71
I support the growth of tourism in the community.	0.63	7.16
The positive benefits of tourism outweigh negative impacts.	0.75	9.90

Source: Author's analysis using data of author's survey (2014)
Note a: Composite Reliability (CR)

and 0.94 respectively. As shown in Table 7.5, the measurement model had a good fit according to the misfit indices, particularly SRMR, which is 0.05. RMSEA is 0.06, which was slightly higher than the cut-off value. Nonetheless, less ideally, RMSEA < 0.08 is considered an acceptable fit. Moreover, all the latent factors had a high level of internal consistency because their construct reliability (CR) scores were greater than 0.70 (Table 7.6). They had convergent validity because the standardized factor loadings of all the observed variables were statistically significant at the 1% significance level. Most standardized factor loadings were higher than 0.70, which are considered ideal according to Fornell and Larcker (1981). Only one standardized factor loading was less than 0.70 but higher than 0.50. Three of them were less than 0.50, but these observed variables were kept to retain the content validity of their latent variables.

7.3.2 Structural model

After obtaining a good fit for the measurement model, all the hypotheses visualized in the theoretical model (Figure 7.1) were tested. According to Table 7.5, the theoretical structural model had the following fit indices: χ^2/df = 1.65, CFI = 0.95, TLI = 0.94, SRMR = 0.05, and RMSEA = 0.06. Hence, it had an acceptable fit, but several path coefficients were not statistically significant. The non-significant path coefficients should be deleted in order to have a parsimonious model. Consequently, by adopting the backward elimination process of multiple regression analysis, the path coefficients with the highest p-values were deleted one at a time until the remaining path coefficients were statistically significant at the 5% significance level. As a result, the verified model portrayed by Figure 7.3 was acquired. According to Table 7.5, the verified model had a good fit (χ^2/df = 1.64, CFI = 0.95, TLI = 0.94, SRMR = 0.05, and RMSEA = 0.06). Next, a Satorra-Bentler scaled χ^2 difference test was implemented to compare the fit of the theoretical model with the verified model. As presented in Table 7.5, the Satorra-Bentler scaled χ^2 difference was non-significant (χ^2 = 1.23, df = 3, and p-value =0.75), suggesting that the verified model fits the sample data better than the theoretical model does. Hence, the verified model was selected as the final model. Figure 7.3 graphically depicts the

verified model, hereafter referred to as Chi Phat model. Table 7.7 and Table 7.8 display its path coefficients (β), t-values, p-values, and R-squared.

In Chi Phat model, hypotheses H3, H4, and H5 were rejected, showing that RPART did not have a relationship with PILO and SUPPORT and NRPART did not significantly correlate with PILA. Regarding the direct effects, the verified model supported hypotheses H1, H2, H6, H7, H8, H9, and H10. As hypothesized in H1, RPART had a significant strong direct positive effect on NRPART (Standardized β=0.80, p-value < 0.001, and R2 = 0.64). Chi Phat model supports hypothesis H2, indicating that RPART had a significant direct relationship with PILA (Standardized β = 0.21, p-value = 0.03), but the magnitude of the relationship was weak. The study found that NRPART had a significant weak direct positive effect on PILO (Standardized β = 0.23, p-value = 0.01) and SUPPORT (Standardized β = 0.15, p-value < 0.001), supporting hypotheses H6 and H7. In line with hypotheses H8 and H9, PILA had a significant direct positive effect on PILO (Standardized β = 0.41, p-value < 0.001) and SUPPORT (Standardized β = 0.28, p-value = 0.01). Lastly, PILO has a significant direct positive effect on SUPPORT (β = 0.32, p-value < 0.00).

Table 7.7 Direct effects in Chi Phat model

Hypothesis	Direct path		Coefficient		t-value	p-value	R^2
	From	To	Unstandardized	Standardized			
H1	RPART	NRPART	0.67	0.80	12.64	0.00*	0.64
H2	RPART	PILA	0.06	0.21	2.18	0.03**	0.05
H6	NRPART	PILO	0.05	0.23	2.80	0.01**	0.25
H8	PILA		0.31	0.41	4.52	0.00*	
H7	NRPART	SUPPORT	0.10	0.15	3.02	0.00*	0.32
H9	PILA		0.59	0.28	2.47	0.01**	
H10	PILO		0.90	0.32	3.82	0.00*	

Source: Author's analysis using data of author's survey (2014)

Note *: statistically significant at p-value < 0.01

**: statistically significant at p-value < 0.05

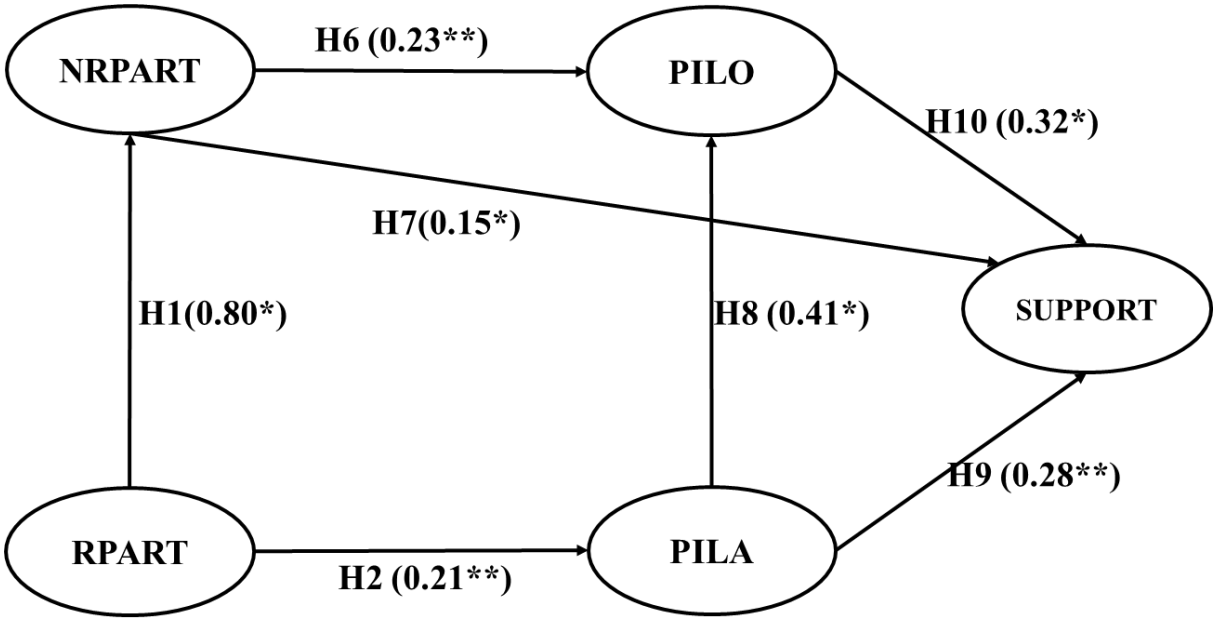

Figure 7-3 Chi Phat model
Source: Author's analysis using data of author's survey (2014)
Note H: Hypothesis, the number in ( ) is the standardized coefficient.
*: statistically significant at p-value < 0.01
**: statistically significant at p-value < 0.05

In addition, the indirect effects were determined. According to the structural paths sketched in Figure 7.3, eight plausible indirect effects might exist, which appear in Table 7.8. H11, H12, H13 are fragmented into H11a, H11b, H11c, H12a, H12b, H12c, H13a, and H13b respectively (Table 7.8). However, only five indirect path coefficients were statistically significant at the 5% significance level. They were the indirect paths of H11a, H11b, H11c, H13a, and H13b.

Table 7.8 indicates that RPART had an indirect positive effect on PILO via NRPART (Standardized β = 0.18, p-value = 0.01). It had indirect positive effects on SUPPORT via NRPART (Standardized β = 0.12, p-value = 0.01) and via NRPART-PILO (Standardized β = 0.06, p-value = 0.05). Apparently, RPART had other plausible indirect effects on SUPPORT via PILA and PILA-PILO, which were nevertheless non-significant. Table 7.8 illustrates that NRPART had an indirect positive effect on SUPPORT via PILO (Standardized β = 0.07, p-

value = 0.05). Finally, via PILO, PILA had an indirect positive effect on SUPPORT (Standardized β = 0.13, p-value = 0.01).

Table 7.8 Indirect effects in Chi Phat model

Hypothesis		Indirect path			Coefficient		t-value	p-value
		From	Mediator	To	Unstandardized	Standardized		
H11	a	RPART	NRPART	PILO	0.04	0.18	2.74	0.01**
	b	RPART	NRPART	SUPPORT	0.07	0.12	2.80	0.01**
	c	RPART	NRPART, PILO	SUPPORT	0.03	0.06	1.94	0.05**
H12	a	RPART	PILA	PILO	0.02	0.09	1.69	0.09
	b	RPART	PILA	SUPPORT	0.03	0.06	1.59	0.11
	c	RPART	PILA, PILO	SUPPORT	0.02	0.03	0.02	0.11
H13	a	NRPART	PILO	SUPPORT	0.05	0.07	1.96	0.05**
	b	PILA	PILO	SUPPORT	0.28	0.13	2.80	0.01**

Source: Author's analysis using data of author's survey (2014)

Note *: statistically significant at p-value < 0.01

**: statistically significant at p-value < 0.05

7.4 Discussion

7.4.1 Effects of remunerative participation

The result shows that RPART has a relatively strong positive effect on NRPART (Standardized β = 0.32 at Yeak Laom CBET and Standardized β = 0.80 at Chi Phat CBET). Obviously, the residents who are involved in remunerative activities usually have the obligation to join in non-remunerative activities, such as meetings, training, and other conservation activities. Hence, RPART plays a vital role in motivating residents to take part in CBET. However, it should be noted that the effect of RPART on NRPART in Yeak Laom model was not as influential as that in the Chi Phat model. Perhaps, it is because only a few residents are involved in RPART of Yeak Laom CBET.

As discussed earlier, RPART is commonly used as an incentive for the residents to support the CBET. The result, nonetheless, shows that RPART has trivial relationships with PILA, PILO, and SUPPORT. As shown in the results, RPART only had weak direct positive effects on PILA (Standardized $\beta = 0.21$) in the Chi Phat model, whereas it did not have any significant relationships with PILA, PILO, and SUPPORT in Yeak Laom model. This suggests that regardless their level of RPART, all the residents tend to have similar levels of PILA, PILO, and SUPPORT, which were high according to the results of Chapter 4. Specifically, this finding may primarily reflect the characteristics of the Absolute Supporters (the majority of both samples) who had high levels of positive PILA, PILO, and strong SUPPORT although they had low levels of RPART and NRPART. It may imply that residents' perceived impacts and support for CBET are more likely to be influenced by other factors such as their desire for additional economic development (Campbell, 1999; Lepp, 2007), concern about livelihood activities, natural resource dependency, annual income, and so on (as per the findings of Chapter 6). Another possible justification for the residents with low RPART to have high levels of positive PILA, PILO, and strong SUPPORT is that they may believe in the so-called trickle-down effects, as discussed previously in Chapter 5. More specifically, they may believe that CBET directly improves the livelihoods of a group of residents. Eventually, one way or another it will indirectly enhance their livelihoods as well.

7.4.2 Effects of non-remunerative participation

Similar to the result of RPART, the study shows that NRPART does not have a significant role in stimulating positive perceived impacts, as the finding shows that at Yeak Laom CBET, NRPART did not have any significant relationships with PILA and PILO. At Chi Phat CBET, NRPART did not have a significant positive effect on PILA, while its relationship with PILO was somewhat weak (standard $\beta = 0.23$). This result is similar to that of Nicholas et al. (2009), who reported that community participation did not have a significant relationship with perceptions of sustainable tourism.

Likewise, NRPART consistently had weak positive effects on SUPPORT in both Yeak Laom and Chi Phat models (standardized β of both models = 0.15). Although the magnitude of the effects was somewhat small, the direction was positive as hypothesized. A possible justification of the weakness of the effect may be that the levels of participation of most residents were low. Despite the weak effect, this result may support Lankford's (1994) assertion that if the residents perceive that their opinions or interests are taken into account, they are more likely to support tourism. It is consistent with the finding of Lee (2013) that reported that community involvement was one of the important factor influencing the level of support for sustainable tourism. Based on this result, it may be inferred that the residents who are involved in CBET training programs, meetings and express ideas in CBET meetings are supportive of CBET slightly more than those without NRPART are. Perhaps, that is because by means of NRPART the residents may be well informed and become aware of the goodwill, real condition, and contribution of CBET, which in turn can make them more adaptable and tolerant to CBETs' impacts.

In addition, Yeak Laom model indicates that all the indirect effects were not statistically significant, yet the Chi Phat model supports H11a, H11b, and H11c that show that RPART has indirect positive relationships with PILO and SUPPORT (standardized β = 0.18 and 0.12 respectively) mediated by NRPART and that it has an indirect positive relationship with SUPPORT (standardized β = 0.06) mediated by RPART and PILO (Table 7.8). These results may imply that the residents who participate in both remunerative and non-remunerative activities of CBET are more likely to have slightly more positive PILO and stronger SUPPORT than those who only participate in remunerative activities. It, therefore, can be concluded that RPART alone is not an adequate incentive for the residents to support CBET, but RPART accompanied by NRPART is a more effective approach to gain the residents' support for CBET.

7.4.3 Effects of perceived impacts

Both Yeak Laom and Chi Phat models show that PILA and PILO are important direct antecedents of SUPPORT. At Chi Phat CBET, PILA and PILO had significant relationships

with SUPPORT (standardized β = 0.28 and 0.32 respectively). At Yeak Laom CBET, although PILA did have a significant relationship with SUPPORT, PILO had a direct positive effect on SUPPORT (standardized β =0.26). This implies that the residents who believe that CBET contributes to improving livelihood assets and outcomes tend to support CBET. This result may support the premise of Social Exchange Theory (SET) and the findings of most previous studies (Chiang & Huang, 2012; Choi & Murray, 2010; Dyer et al., 2007; Ko & Stewart, 2002; Nunkoo & Ramkissoon, 2011; Oviedo-Garcia et al., 2008; Vargas-Sánchez et al., 2011; Yoon et al., 2001), which asserted that if the residents think that tourism has positive impacts or benefits rather than unacceptable negative impacts or costs, they are inclined to support tourism.

7.5 Summary

This chapter has addressed the findings of the third objective of the dissertation that is to find the relationships of residents' participation with their perceived impacts and support for CBET, employing a structural equation modeling approach. First of all, the theoretical model (Figure 7.1) was built primarily based on the literature reviewed in Chapter 2. A two-step approach of Structural Equation Modelling (SEM) was carried out to test the hypotheses illustrated in the theoretical model using the sample data of both Yeak Laom and Chi Phat CBETs. As a result, the verified models (Figure 7.2 and Figure 7.3) were obtained. The findings of this chapter can be summarized as follows:

- Remunerative participation in CBET had a substantial role in inspiring the residents to have non-remunerative participation in CBET.
- Remunerative participation had a weak effect on perceived impacts on livelihood assets, but did not have significant relationships with perceived impacts on livelihood outcome and support for CBET.
- Likewise, non-remunerative participation in CBET was not likely to influence positive perceived impacts on livelihood assets and perceived impacts on livelihood outcome.

- However, non-remunerative participation in CBET had a somewhat direct positive effect on residents' support for CBET.
- Remunerative participation, in conjunction with non-remunerative participation, was an effective method to gain residents' support for CBET.
- Residents who believed that CBET contributed to improving livelihood assets and outcomes tended to support CBET.

Yeak Laom and Chi Phat models has the following differences.

- Most of the respondents for Yeak Laom models are non-member residents, this con be the reason why RPART and NR PART had little effects on PILA, PILO, and SUPPORT.
- The respondents for Chi Phat model consist of a larger proportion of CBET members than that of Yeak Laom model. In Chi Phat model, RPART and NRPART had relatively more effects on PILA, PILO, and SUPPORT than the Yeak Laom model.

Chapter 8: Conclusions

8.1 Residents' attitude toward community-based ecotourism

This study revealed that residents of a CBET site in Cambodia constitute four clusters based on the levels of RPART, NRPART, PILA, PILO, and SUPPORT, which feature the attitude toward CBET. First, the Absolute Supporter (69% of both the samples) has positive perceived impacts and a strong support for CBET, albeit little participation. Second, the Beneficiary Supporter (14% and 23% of the residents in Yeak Laom and Chi Phat communes respectively) has a relatively higher level of participation in, positive perceived impacts of, and a high level of support for CBET. The Beneficiary Supporter consists of the Regular Beneficiary Supporter and the Occasional Beneficiary Supporter[32]. Third, the Concerned Supporter (11% and 9% of the residents in Yeak Laom and Chi Phat communes respectively) has a strong support for CBET, but has concerns over CBET. It is likely that CBET may have somewhat negative impacts on livelihood assets and/or outcomes. Finally, the Ambivalent (6% of the residents in Yeak Laom commune)[33] has an ambiguous attitude toward CBET. Therefore, Yeak Laom and Chi Phat communes can be considered as tourism-hungry communities from the viewpoint of attitude toward tourism.

The previous studies showed that socio-demographic factors and the latent factors had contradictory and mixed roles in explaining residents' attitude toward tourism. This study found that the determinants of resident clusters were varied in distinctive settings and geographical conditions of CBETs. The better-off residents were more likely to be involved in CBET than the poorer residents were and the better-off residents were more likely to benefit from CBET. For example, farmers with a higher level of participation in CBET were more likely to have a positive attitude toward Chi Phat CBET than those with a lower level of participation. Additionally, residents with better CBET knowledge had a positive attitude toward CBET, if they were involved in CBET. Otherwise, they had concerns that CBET had negative impacts

[32] The Occasional Beneficiary Supporters were only found at Chi Phat CBET.
[33] The Ambivalent were only found at Yeak Laom CBET.

on livelihood assets and outcomes. With respect to natural resource dependency, residents with a high level of natural resource dependency had a tendency to be the Concerned Supporter, if they were not involved in CBET.

Remunerative participation in CBET had a vital role in inspiring residents to have non-remunerative participation in CBET. However, a significant effect of RPART on the residents' positive perceived impacts of and support for CBET was not detected. It suggests that all the residents, regardless of their levels of RPART, tend to have similar high levels of PILA, PILO, and SUPPORT. It can be asserted that residents' perceived impacts of and support for CBET are more likely to be influenced by other factors such as their desire for additional economic development, concern about livelihood activities, and natural resource dependency. Likewise, non-remunerative participation in CBET does not significantly enhance positive perceived impacts of CBET. This result is similar to that of Nicholas et al. (2009). However, non-remunerative participation in CBET has somewhat positive effect on residents' support for CBET. Accordingly, it may be concluded that residents who are involved in CBET training/meetings and express ideas in CBET meetings are slightly more supportive of CBET than those without NRPART are. Regarding the indirect effects, Chi Phat model may imply that residents who participate in both remunerative and non-remunerative participations of CBET are likely to have slightly more positive perceived impacts on livelihood outcomes and stronger support for CBET than those who only participate in remunerative activities. It confirms that remunerative participation, together with non-remunerative participation, is an effective method to gain residents' support for CBET. Moreover, residents who believe that CBET contributes to improving livelihood assets and outcomes tend to support CBET. This may support the premise of the Social Exchange Theory (SET) and the findings of most previous studies.

8.2 Policy recommendations

CBET developers and managers should consider the following recommendations to enhance the harmony between CBET and the residents. First, the finding suggests that about 69% of the

residents of a CBET are absolute supporters, who have a very positive perceived impacts of and strong support for CBET, but little participation. As cited earlier, Lepp (2007) asserted that residents' positive attitude is an evidence that tourism is appropriate for the local community. Nonetheless, the Absolute Supporters' perception should be considered with prudence and caution, because they are likely to be too optimistic about the impacts of CBET and may overlook any possible negative impacts. Consequently, they may become disappointed when they realize that CBET cannot meet their expectations. To prevent the problem, CBET should educate or inform the Absolute Supporter about its actual contributions. Second, though being specific for Yeak Laom CBET, only a few residents participate in both remunerative and non-remunerative activities of the CBET because only 21 residents officially participated in CBET. Therefore, CBET should allow a reasonable and moderate number of local people to join in its remunerative activities on a rotational basis, as implemented by Chambok CBET (Steck, 2013), Chi Phat CBET (Reimer & Walter, 2013) and Koh Phdao CBET (Ven, 2013). A rotating schedule for providing services or selling goods to tourists is an effective tool to ensure that the benefits are distributed widely to the residents, especially the poor residents or those who previously undertook livelihood activities that negatively affected natural resources. However, sharing the benefits of CBET should be implemented transparently and fairly. Otherwise, it may lead to conflicts among the local people as indicated by Stronza & Gordillo (2008) and problems related to whom should be included as members of CBET (Medina, 2005; cited in Weaver & Lawton, 2007). Finally, CBET should not allow more local people to partake in its operations than it can distribute benefits. It is because it may lead to the problem of illusive broad participation. Specifically, when there are too many members on the waiting list for providing services or selling goods to tourists, the waiting time is long and the benefits may be small. As a result, it may cause unfavorable sentiments toward CBET.

The better-off residents were more likely to benefit from CBET than the poor were. It may lead to a wider income gap, which contradicts one of the common objectives of CBET, that is, improvement of residents' livelihoods. So CBET should try to provide alternative

benefits to those with a lower level of income. This can be done by providing employment opportunities, like Chi Phat CBET, such as buying goods and products from low-income residents, or spending the development fund to help those in need directly, if possible. Nonetheless, it is difficult to provide additional employments to the poorer residents, because too many residents' joining RPART of CBET may lead to the problem of illusive broad participation. Besides, it can be observed that many CBETs in Cambodia including Chi Phat, Yeak Laom, Chambok and Koh Phdao CBETs, were more likely to purchase products from markets or vendors outside the local community. Consequently, CBETs might have little economic linkage with the other sectors in the village, especially agricultural sector, which is the primary economic activity of most residents. Therefore, CBET should try to adopt a supply chain that prioritizes the involvement of other local sectors in the village, particularly agricultural sector. In this way, CBET will have a multiplying effect beyond its beneficiaries.

From the viewpoint of improving residents' positive attitude toward CBET, in other word managing or developing CBET, RPART should not be done without NRPART. NRPART such as training and meetings arranged for decision-making, operation planning, or expressing ideas, interest, or concerns is essential for a successful and sustainable CBET. Through trainings provided by CBET, residents will gain necessary skills to supply high-quality services to tourists and cope with adverse impacts from CBET. CBET can be managed for residents to address their preoccupations so that CBET can sustainably exist in harmony with the local community. Consequently, CBET will gain strong support for CBET from residents. However, what encourages residents to be involved in the non-remunerative participation? This study proved that remuneration participation is a useful means to stimulate non-remunerative participation. CBET managers or developers should implement programs for informing or educating residents on the contribution of CBET to improving their livelihoods and/or protecting natural resources.

8.3 Limitations of the study

Like all other studies, this study is not free from limitations. The limitations are related to non-

random samples, cross section data without a specific time frame and models for analyses.

The sample was not randomly selected. Quantitative research design commonly requires that the sample must be randomly selected so that it can be a representative sample of the population. In this study, this limitation was due to the lack of the list of all residents in the research sites. Without the list of all residents, random sampling could not be implemented. Another reason was that the survey was based on residents' consent and ability to respond to the questionnaires. At the time of the survey, many residents did not agree and were unable to answer the questionnaire. Suppose, if random sampling was implemented and many residents who were selected by a random sampling did not agree or were unable to respond to the questionnaire, the fundamental basis of random sampling would not be achieved. It means that a selected sample by random sampling would consist of only those residents who agreed and were able to respond to the questionnaires. Consequently, the author utilized the proportional stratified sample methods. Therefore, proportions of respondents in the sample strata should approximate the proportion of the household number in the population strata respectively. The residence location (i.e., villages) was used as the criterion for stratification, so that the sample was diversified across all villages in both communes. As a result, the sample was representative of the population to a great extent.

The sample data for this study was cross section data. For example, regarding perceived impacts, the respondents were asked to respond to the questions or statements of indicators of perceived impacts based on their perceptions in general at the time of the survey without taking account of the specific time dimension. Some scholars argue that this approach would make respondents perceive impacts from different periods and the periods of perceptions may also be different. On the other hand, many previous studies of this topic often did not take specific time dimension into account. For example, the previous studies of Dyer et al. (2007), Ko & Stewart (2002), Nunkoo & Ramkissoon (2011), Oviedo-Garcia et al. (2008), Vargas-Sánchez et al. (2011) and Yoon et al. (2001) used similar methods to study the perceived economic, cultural,

social and environmental impacts. Commonly, they did not fix the time period of impacts or perceptions.

Coefficients resulted from Logit regression and SEM based on cross section or observational data may not be sufficiently considered as causal relationships. According to Agresti & Finlay (2009), a causal relationship must satisfy three criteria, specifically association, appropriate time order, and elimination of alternative explanation (for detail see Agresti & Finlay, 2009). The Logit regression and the SEM models of this study may satisfy the criteria of association and the elimination of alternative explanation to a great extent. The coefficients of the Logit regression and the SEM models can verify the association among variables of interest. Because the Logit regression and the SEM models were specified based on the literature, the criterion of the elimination of alternative explanation can be fulfilled to a great extent. However, the models of this study could not verify the criterion of the appropriate time order as a determinant that precedes the dependent variables. Another limitation is that the Logit regression model has not included some important variables that may be the determinants of residents' participation and attitude toward CBET. Those variables include residents' intention to participate in CBET, residents' social desirability and residents' desire for additional economic opportunity. However, there is no statistical model that perfectly represents the complex real world. The internal process of a complicated realism cannot be reflected precisely by statistical models. Instead, a statistical model is an instrument for estimation that aids analysts to arrange their thoughts in order to understand a phenomenon of study (Humphreys, 2003; Kline, 2011).

Lastly, another limitation is the complex details of economic or operational structure of CBET, because the data are not available; and data collection method and objective of this study cannot gain such kind of data.

8.4 Suggestions for future study

Numerous suggestions for future study on the attitude toward CBET emerged from findings

and limitations of this study. Specifically, as mentioned earlier, the Logit regression model failed to include some important determinants of residents' attitude like residents' willingness to participate, residents' desire for additional economic opportunities and social desirability. As to the limitation, Chapter 4 has not shown the complex details of economic or operational structure of CBET because the data is not available and the data collection method and objective of this study cannot gain such kind of data. The complex details of the economic or operational structure of CBET can be a topic for future study, in which a very rigorous research method is required. Research methods for such topic can be Input-Output Table (I-O Table), Social Accounting Matrix (SAM), or Computable General Equilibrium (CGE). These methods can examine the structural linkages between CBET and other sectors in the economy of the village or community.

Up to now, there have been studies conducted to develop attitudinal scales for measuring residents' attitude toward tourism. Two of the most well-known are the Tourism Impact Attitude Scale (TIAS) of Lankford & Howard (1994) and the Sustainable Tourism Attitude Scale (SUS-TAS) of Choi & Sirakaya (2005) and Yu, Chancellor, & Cole (2011). As discussed earlier, TIAS and SUS-TAS may be more suitable for mass or large-scale tourism, where private companies provide tourism products or services. However, there is a lack of such a scale for measuring residents' attitude toward to community-based ecotourism with the purpose of conserving natural resources and improving the livelihood of local people. Therefore, it is recommended that future study should consider developing an attitude scale for measuring residents' attitude toward CBET.

Finally, because this study dealt with only two CBETs, future study can examine whether or not findings of this study would be generalized to other areas by replicating the research design of this study. This would provide more validity to findings of this dissertation.

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Appendix 1

Interview Questionnaire

I. Personal information

1. Sex: □ Female □ Male
2. How old are you?…..……...
3. How many years of schooling did you complete?.....
4. Where is your place of residence?...……
5. What is your occupation?...……...
6. What is your position in CBET?.....…….
7. How much is your approximate annual income?

   a) Income from farming:……

   b) Income from livestock:……..

   c) Income from tourism:……

   d) Income from natural resources:…….

   e) Income from remittance:……

   f) Others (Please specify:……...):……...……..

II. Residents' participations in CBET

Non-remunerative participation (NRPART)

1. How often do you participate in CBET meeting?
   1) Never
   2) Rarely
   3) Sometimes
   4) Slightly Often
   5) Often
   6) Moderately often
   7) Very often
2. How often do you participate in CBET training?
   1) Never
   2) Rarely
   3) Sometimes
   4) Slightly Often

5) Often
6) Moderately often
7) Very often

3. How often do you provide any ideas or express interest or concern in CBET meeting?
   1) Never
   2) Rarely
   3) Sometimes
   4) Slightly Often
   5) Often
   6) Moderately often
   7) Very often

4. How often do you participate in patrolling the community forest?
   1) Never
   2) Rarely
   3) Sometimes
   4) Slightly Often
   5) Often
   6) Moderately often
   7) Very often

Remunerative participation (RPART)

1. How often do you provide service to tourists?
   1) Never
   2) Rarely
   3) Sometimes
   4) Slightly Often
   5) Often
   6) Moderately often
   7) Very often

2. How often do you sell goods to tourists?
   1) Never
   2) Rarely
   3) Sometimes
   4) Slightly Often
   5) Often
   6) Moderately often
   7) Very often

3. How often do you sell goods to CBET?
   1) Never
   2) Rarely
   3) Sometimes
   4) Slightly Often
   5) Often
   6) Moderately often
   7) Very often

4. How often do you work or provide any services to CBET?
   1) Never
   2) Rarely

3) Sometimes
4) Slightly Often
5) Often
6) Moderately often
7) Very often

Economic dependency on tourism

To what extent do you depend on tourism?

1) Not at all
2) Slightly dependent
3) Moderately dependent
4) Fairly dependent
5) Considerably dependent
6) Strongly dependent
7) Completely dependent

III. Residents' perceived impacts of and Support for CBET

Perceived impacts on livelihood assets (PILA)

Please indicate your perception of the following impacts from tourism (please circle the answer):	**Extremely negative**	**Considerably negative**	**Negative**	**Neither**	**Positive**	**Considerably positive**	**Extremely positive**
Impacts on residents' livelihood skills (language skills, guide, cooking, hospitality …)	1	2	3	4	5	6	7
Impacts on residents' education and livelihood knowledge	1	2	3	4	5	6	7
Impacts on residents' ability to work	1	2	3	4	5	6	7
Impacts on residents' leadership potential	1	2	3	4	5	6	7
Impacts on residents' health	1	2	3	4	5	6	7
Impacts on networks and connectedness among the residents	1	2	3	4	5	6	7
Impacts on trusts among the residents	1	2	3	4	5	6	7
Impacts on the residents' ability to work together	1	2	3	4	5	6	7
Impacts on the residents' membership in formalized groups	1	2	3	4	5	6	7
Impacts on the residents' adherence to mutually-	1	2	3	4	5	6	7

agreed or commonly accepted rules, norms and sanctions							
Impacts on the residents' mutual reciprocity and exchanges among the residents in the community	1	2	3	4	5	6	7
Impacts on natural resources needed for livelihoods	1	2	3	4	5	6	7
Impacts on access to natural resources needed for livelihoods	1	2	3	4	5	6	7
Impacts on transportations in the community	1	2	3	4	5	6	7
Impacts on residents' shelters in the community	1	2	3	4	5	6	7
Impacts on water supply and sanitation in the community	1	2	3	4	5	6	7
Impacts on energy usage in the community	1	2	3	4	5	6	7
Impacts on residents' access to information and communication	1	2	3	4	5	6	7
Impacts on residents' income	1	2	3	4	5	6	7

Perceived impact on livelihood outcome (PILO)

Please indicate the extent of your agreement with the following statements (please circle the answer):	**Strongly disagree**	**Moderately**	**Slightly disagree**	**Neither**	**Slightly agree**	**Moderately**	**Strongly agree**
I feel proud to have this community to be a tourism destination.	1	2	3	4	5	6	7
Because of tourism, I have the sense of control and inclusion in this community.	1	2	3	4	5	6	7
Tourism positively influences the physical security of the people in this community.	1	2	3	4	5	6	7
Tourism contributes to the health status of the people in this community.	1	2	3	4	5	6	7
Tourism contributes to improving the residents'	1	2	3	4	5	6	7

access to services such as health center, information, micro-credit and education…							
Tourism contributes to the maintenance of local culture.	1	2	3	4	5	6	7
CB ET contributes to the more sustainable use of the natural resource base.	1	2	3	4	5	6	7
CBET contributes in bringing sufficient quantities of appropriate, necessary types of food to this community	1	2	3	4	5	6	7
CBET contributes to residents' ability to obtain appropriate, necessary food for their family	1	2	3	4	5	6	7
CBET contributes to residents' ability or capacity to cope with natural disasters such as drought, flood, storm	1	2	3	4	5	6	7
Tourism raises the prices of goods and services to an extent that the local people can hardly afford	1	2	3	4	5	6	7

Support for CBET (SUPPORT)

Please indicate the extent of your agreement with the following statements (please circle the answer):	**Strongly disagree**	**Moderately disagree**	**Slightly disagree**	**Neither**	**Slightly agree**	**Moderately disagree**	**Strongly agree**
I support tourism in this community.	1	2	3	4	5	6	7
I support new tourism facilities that will attract additional visitors to this community	1	2	3	4	5	6	7
The NGO partners should continue its support for tourism in this community.	1	2	3	4	5	6	7
I want to see tourism remain important to this community	1	2	3	4	5	6	7
I believe tourism should be actively encouraged in	1	2	3	4	5	6	7

this community							
This community should remain a tourist destination.	1	2	3	4	5	6	7
The tourism sector will continue to play a major role in this community.	1	2	3	4	5	6	7
Tourism in this community disrupts local activities.	1	2	3	4	5	6	7
Tourism in this community harms the local environment.	1	2	3	4	5	6	7
There are too many tourists in the community and this is offensive.	1	2	3	4	5	6	7
In general, the positive benefits of tourism outweigh negative impacts.	1	2	3	4	5	6	7
Planning by CBET committee can control negative impacts.	1	2	3	4	5	6	7

IV. **Others**

Residents' dependence on natural resources

1. To what extent do you think you and your family depend on extraction natural resources?
   1) Not at all
   2) Slightly dependent
   3) Moderately dependent
   4) Fairly dependent
   5) Considerably dependent
   6) Strongly dependent
   7) Completely dependent

2. How often do you collect non-timber forest products?
   1) Never
   2) Rarely
   3) Sometimes
   4) Slightly Often
   5) Often
   6) Moderately often
   7) Very often

Community Attachment

Please indicate the extent of your agreement with the following statements (please circle the answer):	**Strongly disagree**	**Moderately**	**Slightly disagree**	**Neither**	**Slightly agree**	**Moderately**	**Strongly agree**
I feel that I am a native of this community.	1	2	3	4	5	6	7
I feel that this community is my hometown.	1	2	3	4	5	6	7
I am satisfied with this community	1	2	3	4	5	6	7
I feel at home in this community	1	2	3	4	5	6	7
I am please if I move away	1	2	3	4	5	6	7
I know what going in this community	1	2	3	4	5	6	7
How long have you been living in this community? (Please write in number).							

Community concern

Please indicate the extent of your agreement with the following statements (please circle the answer):	**Strongly disagree**	**Moderately disagree**	**Slightly disagree**	**Neither**	**Slightly agree**	**Moderately disagree**	**Strongly agree**
I worry about the culture in this community.	1	2	3	4	5	6	7
I worry about the education in this community.	1	2	3	4	5	6	7
I worry about the health issue in this community.	1	2	3	4	5	6	7
I worry about the domestic violence in this community.	1	2	3	4	5	6	7
I worry about the crime in this community.	1	2	3	4	5	6	7
I worry about the economy in this community.	1	2	3	4	5	6	7
I worry about the out-migration in this community.	1	2	3	4	5	6	7
I worry about the job in this community.	1	2	3	4	5	6	7
I worry about the farming in this community.	1	2	3	4	5	6	7

I worry about the land conflict in this community.	1	2	3	4	5	6	7
I worry about the natural resources	1	2	3	4	5	6	7
I worry about the natural disasters	1	2	3	4	5	6	7
I worry about the security of this community.	1	2	3	4	5	6	7

Ecocentric attitude

Please indicate the extent of your agreement with the following statements (please circle the answer):	**Strongly disagree**	**Moderately**	**Slightly disagree**	**Neither**	**Slightly agree**	**Moderately**	**Strongly agree**
Environmental pollution is hazardous to our health	1	2	3	4	5	6	7
Agriculture and horticulture need toxic pesticides	1	2	3	4	5	6	7
The protection of animal species is unnecessary	1	2	3	4	5	6	7
The usage of plastic bags should be banned	1	2	3	4	5	6	7
People who litter messily in the woods should be fined	1	2	3	4	5	6	7
Driving in the community forest is inappropriate	1	2	3	4	5	6	7
Humans have the right to modify the natural environment to suit their needs	1	2	3	4	5	6	7
When humans interfere with nature it, often produces disastrous consequences	1	2	3	4	5	6	7
Humans are seriously abusing the environment	1	2	3	4	5	6	7
Plants and animals have as much right as humans to exist	1	2	3	4	5	6	7
Despite our special abilities, humans are still subject to the laws of nature	1	2	3	4	5	6	7
Humans were meant to rule over the rest of nature	1	2	3	4	5	6	7
If things continue on their present course, we will	1	2	3	4	5	6	7

soon experience a major ecological catastrophe.							
Environmental pollution is hazardous to our health	1	2	3	4	5	6	7

Emotional solidarity

Please indicate the extent of your agreement with the following statements (please circle the answer):	**Strongly disagree**	**Moderately disagree**	**Slightly disagree**	**Neither**	**Slightly agree**	**Moderately disagree**	**Strongly agree**
I am proud to have tourists come to my community	1	2	3	4	5	6	7
I feel the community benefits from having tourists	1	2	3	4	5	6	7
I appreciate tourists for the contribution they make to the local economy	1	2	3	4	5	6	7
I treat tourists fair in this community	1	2	3	4	5	6	7
I feel close to some tourists I have met in this community	1	2	3	4	5	6	7
I have made friends with some tourists in this community	1	2	3	4	5	6	7
I identify with tourists in this community	1	2	3	4	5	6	7
I have a lot in common with tourists in this community	1	2	3	4	5	6	7
I feel affection towards tourists in this community	1	2	3	4	5	6	7
I understand tourists in this community	1	2	3	4	5	6	7

Knowledge about CBET

Please indicate the extent of your agreement with the following statements (please circle the answer):	**True**	**False**	**I don't know**
CBET is nature-based tourism			

Those who have better profession about CBET should control and manage CBET, even though they are not the local people			
CBET should financially benefit the local community			
It is not the responsibility of CBET to conserve natural resources in the area			
CBET involves education and interpretation of the natural environment			
In order to maintain its operation in the long term, CBET should try to maximize revenue by attracting as many as tourist available			
CBET involves education and interpretation of the local culture			
CBET must try to minimize negative impacts			

Knowledge about environment

1. Many animals and plants exist together in a diverse environment, what is called?
   1) Biodiversity
   2) Evolution
   3) Socio-economy
   4) Complexity
2. Which of the following is a renewable resource?
   1) Oil
   2) Iron ore
   3) Forest
   4) Coal
3. Which of the following is considered as hazardous waste?
   1) Plastic bag
   2) Glass
   3) Battery
   4) Spoiled food
4. What is the main cause of animal extinct?
   1) Hunting
   2) Habitat loss
   3) Climate change
   4) Preying

Other comments:……

Thank you very much for your responses and time.