

# A Structural Model of Cultural Tourism Supply Chain Collaboration on the R3A Route

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**Abstract**— This paper aims to evaluate the supply chain collaboration in the cultural tourism on the R3A route, which is starting from Kunming (China) to Luang Namtha (Lao PDR) and to Chiang Rai (Thailand). The Structural Equation Model (SEM) was used to evaluate the key factors that have affected to the collaboration between partners along the route. Data were collected from 200 cultural tourism enterprises via self-administrative questionnaires. The result was found that lack of data sharing is the barriers of collaboration on cultural tourism in R3A route between supply chain partners. Information, commitment, and communication technology are the key factors to promote collaboration sustainability.

**Keywords**— Supply Chain Collaboration, Cultural Tourism, Structural Equation Model, and R3A Route

## 1. Introduction

The ASEAN economic Community (AEC) that has launched in 2015 that is proposing to integration the regional economies, with enhanced connectivity, cooperation, and people-oriented center community. For achieving the goal of AEC, the Greater Mekong Sub-region Cooperation is the

main key to make collaboration between the members of GMS that also a member of AEC [14].

The Greater Mekong Sub-region Cooperation (GMS) was established since 1992 by the Asian Development Bank (ADB) which is 6 countries in Mekong region have attended (Lao PDR, Cambodia, Vietnam, Myanmar, China (Yunnan), and Thailand) [11], [12], [13]. With the vision from the ADB “GMS as a prosperous, harmonious, and integrated sub-region by providing increased connectivity, enhance competitiveness, and greater sense of community” [12], the main propose of this program is expected to contribute the trade, investment, industrial, agricultural, and services [7], [11]. Also, facilitating cross border trade and tourism.

The benefit of the region when go beyond the AEC is more integrated production network, improvement in infrastructure; particularly the big demand of other ASEAN countries and also from other region will increase dramatically. In addition, the ADB estimated that the share of ASEAN’s middle class will increase to 65% within 2030 [10]. However, the main problem of GSM region is the readiness of basic infrastructure especially land

road transportation [10], [11]. Therefore, ‘ASEAN Single Window’ is the key that will streamline the transportation in the region [10].

With the nine concepts of main strategies, there are 11 flagship programs that have been pushing. For examples, North-South Economic Corridor, Southern Economic Corridor, telecommunications backbone, flood control and water resource management [11]. The North-South Economic Corridor (NSEC) is the project that play important role in this region, which is connecting the China-Myanmar-Lao PDR-Thai. NSEC consists of 3 main routes; R5 route (from China to Vietnam), R3W (from China to Myanmar and to Thailand), and R3E (from China to Lao PDR and to Thailand) [11].

R3E stands for “Route No.3 East” or R3A route is part of the North-South Economic Corridor project, which is the land road to connect the northern of Thailand and the southern of China via Lao PDR [7]. This paper uses the term R3A as it is widely recognized by the ministry of transport. The aims of this project is to serve as a major land road to transport Thai products to other countries and also connect the tourism industry together, which this

route will reduce the costs of transportation and also attract more tourists [7], [12]. Furthermore, the transportation along the route will be more streamlined than the past, particularly in Lao PDR which is a bottleneck in term of physical infrastructure [7], [10].

Nowadays, there is the lack of tourism supply chain development on the R3A route in Thailand. Chiang Khong cross border in Chiang Rai province is just the pass way by tourists. There is only some business that got the benefit from this way (e.g., tour’s guide). So, Chiang Khong cross border should be supported to attract more tourists, especially cultural tourism.

Moreover, in tern of tourism industry in Thailand, the supply side of tourism industry is the main problem, particularly the supply chain management (SCM) and the cooperation between stakeholders; public sector, private sector, and community. Meanwhile, there is the evident that Chinese tourists more likely Thai’s cultural (e.g., Thai food and Thai festival), but not impressive in the operation of public and private sector. Thus, this problem may lead to the decision of tourists coming to Thailand.

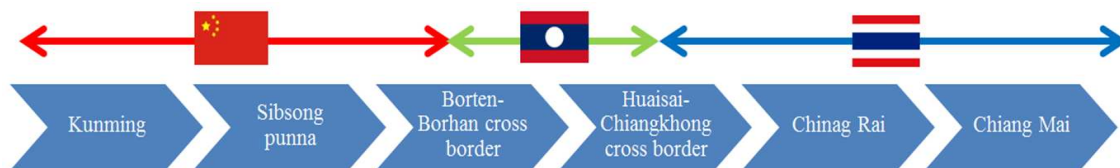


Figure 1. R3A route

## 2. Literature Review

Ref. [21] mentioned that there are 16 businesses on supply chain that have collaboration with each other (e.g., transportation, guide tour, activities, infrastructure, food and beverage), which is the result was indicated only the relationship between the businesses. Then, Ref. [22] has been developing the tourism supply chain especially tourism supply chain within destination. There are collaborations between second-tier supplier (e.g., food and beverage) and the first-tier supplier (e.g., accommodation, tour agents). However, tourism industry is not only considering with the destination, but also emphasizing in tourists or customer. Therefore, the tourism supply chain is starting from before the trip to during the trip and to

after the trip. Tourism Supply Chain was divided to 4 main parts; tourism service providers (e.g., accommodation), input providers (e.g., food supplier), customers or tourists, and intermediaries (e.g., travel agencies) [1,2].

The supply chain collaboration is a working whereby two organizations or more work together to achieve the business benefit together [23]. In supply chain collaboration, there are three aspects that have affected to the firm performance; information sharing, joint team, and dedicate investment [20]. Moreover, there are 2 mediating variables that have affected to the firm performance; trust and commitment. In addition, Ref. [24] has been studying the concept of collaboration and divided into seven aspects;

information sharing, goal congruence, decision synchronization, incentive alignment, resource sharing, collaborative communication, and joint knowledge creation.

Supply chain collaboration could be consisted of two firms or more in supply chain and working together [1], [2]. Ref [1] classified the supply chain collaboration into two types based on the level of collaboration.

- **Horizontal collaboration:** the collaboration between firms in the same level. It also the firm in same sector and maybe served same product to customers. In addition, the horizontal collaboration could be divided into two types; intra-sector collaboration and inter-sector collaboration. Intra-sector is the collaboration between in the same industry. In tourism sector, it is the collaboration between accommodation providers or between the transportation providers. Inter-sector collaboration is the collaboration between the firms in difference industry, for example the collaboration between tour operator and hotels [1], [2].
- **Vertical collaboration:** the collaboration between firms and their partners that supply them the inputs or sell the product to [1], [2]. It can be called upstream and downstream level of collaboration [1], [2].

The tourism on R3A route, [25] has studied about the readiness of tourism on R3A route. The result found that the attraction that has famous along the route is the natural and cultural tourism. However, transportation facilities should be improved because there are some obstacles along the route, e.g., insufficient infrastructure, lack of various activities along the route.

Therefore, the literature about supply chain collaboration is based on transaction cost economics theory and resource based view. The transaction cost can explain the scope of organization in the chain; while the resource based view literature can explain in term of collaboration from the resource that each business has. From the literature, the authors found that the factors that may have affected to the collaboration between partners in supply chain are transaction cost, trust, and commitment.

### 3. Methodology

The scope of study place is the tourist attraction along the R3A route. Starting from Kunming in Yunnan province in China to Bohan (or Mohan) cross border - Boten cross border and to Huai Sai at the Mekong bridge in Lao PDR and to Chiang Khong (Chiang Rai) in Thailand, including Chiang Mai as a famous destination to tourists.

The model was developed under the literature about collaboration, especially the factor that has affected to the collaboration between the cultural tourism supply chains. There are four main variables in this study; two dependent variables (trust and commitment), 1 dependent variable (collaboration), and 1 mediating variable (transaction cost).

The primary data were collected from the cultural tourism partners along the R3A route through the self-administrative questionnaires (e.g., hotel, restaurant, transportation). The 200 samples from three countries were questioned about the collaborative of cultural tourism along the route. Ref. [3] suggested that the sufficient number of sample size is the ratio of number of samples to the number of observed variables (1:5). Hence, the sample size that was used in this paper is 200 samples. The respondents were asked with 7 level Likert's scale from 1 (strongly disagree) to 7 (Strongly agree). The questionnaires were launched by convenient sampling to avoid the bias of selection.

The Structural Equation Model (SEM) was used to analyze the collaboration of cultural tourism. The model was testing with the goodness of fit between the hypothesis and the sample data. Then, the confirmatory factor analysis (CFA) was conducted to measure the factors of each construct. To testing the hypothesis, the path analysis was estimated through the maximum likelihood approach to generate the model.

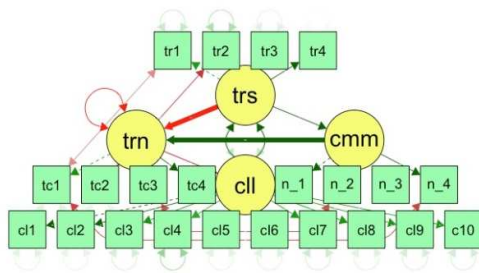


Figure 2. Study Model

4. Result

4.1 The value stream mapping of cultural tourism on the R3A route

The value stream of cultural tourism on R3A route was divided to 3 parts; physical, information, and financial. In physical part, China has developed the most especially infrastructure and tourism destination. However, the compositions of cultural

tourism (e.g., accommodation, transportation, tour guide, restaurant, and souvenir shop) in Chiang Mai has more attractive for tourists. Hence, tourists from China who traveled through the R3A route travel to destination with time compression, while the destination along the route is just the necessary physical (e.g., border crossing) which is take the time around 2-3 hours.

From the survey, the authors found that most of tourists who traveled through the R3A route traveled on this route first time. Tourists who used to travel on this route tend to travel on another route because they have already known that there is not much tourist’s attraction. They tend to travel to Chiang Mai by low cost airline because the price is not quite different. Therefore, cooperation between tour operators have been focusing on attracted the tourists along the R3A route.

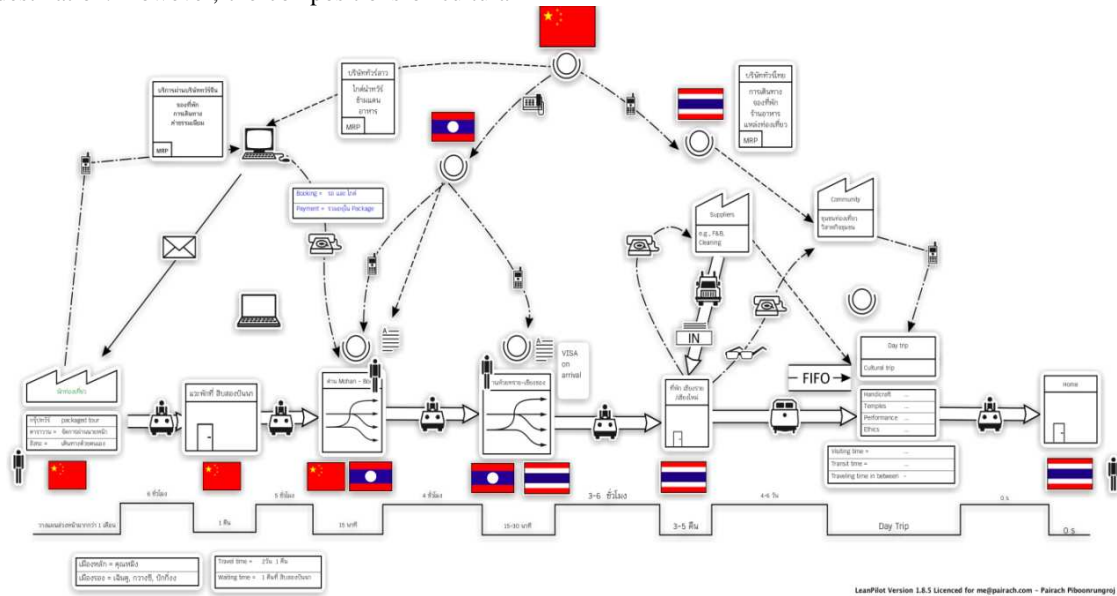


Figure 3. Value Stream Mapping on R3A Route

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The collaboration along R3A route, there are many forms of collaboration between entrepreneurs in the supply chain. For example, travel agencies want to create a partnership to attract tourists. Accordingly, there are 2 goals of collaboration between the

partners; economic benefit and to preserve the identity of the community.

Along the route, there are many collaborative activities.

- Physical collaboration: developed tourist's attraction and hosted the events together (e.g., roadshow)
- Information collaboration: information sharing in the both of tourist's behavior and roles, including knowledge sharing
- Financial collaboration: dedicate investment in facility

#### 4.2 The Structural Equation Model (SEM)

From the literature, the key factors that have affected to the collaboration are trust, commitment and transaction cost. In this paper, the model was tested to confirm the theoretical model with the sample data using the Structural Equation Model. The software R was used through the 'lavaan' package to confirm the hypothesis in this paper. The data was estimated by the maximum likelihood method to make the observed data the most probable [6].

The structural equation model result found that the model has significantly fitted more than 99%. The trust has positive affected to the commitment with estimate parameter 1.087 but has negative affected to the transaction cost with -0.164 of estimate parameter. The commitment has negative affected to the transaction cost as well with the transaction cost of -0.852. Consequently, the transaction cost has negative affected to the collaboration with the estimate parameter of -0.750.

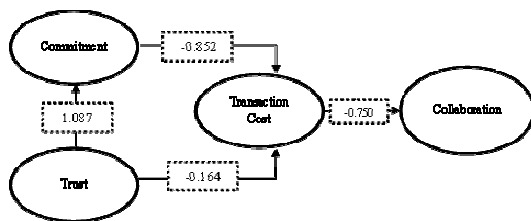


Figure 4. The Structural Equation Model

From the SEM estimation, the independent latent variable is the collaboration and there are 3 dependent variables; trust, commitment, and transaction cost. Although the transaction cost is only the factor that has direct effected to the collaboration, the trust and commitment have effected to collaboration as well (mediating variable). To compare the effect of these factors

that has affected the collaboration, the total effect calculation was used by multiply all factor loading for each factor.

Table 1. The total effects of collaboration

cause	estimator	standard error
trust	0.123	0.001
commitment	0.639	0.001
transaction cost	-0.750	0.043

We found that transaction cost has the highest total effect to the collaboration with the estimation of -0.750. It means that if the business contraction has low transaction cost, the entrepreneurs will have more collaboration with the statistically significant at 99% and the low standard error of 0.043.

#### 4.3 The collaboration of cultural tourism on R3A route

From the survey of measurement of collaboration between the partners in the cultural tourism supply chain, the data was estimate by 7 levels Likert's scale and weight by factor loading from the SEM estimation. Then, the result was shown in Table 1.

The overall collaboration between the partners in the supply chain is low (the weight average less than 2.5), especially the dedicate investment and collaborative decision which is very low collaboration (the weight average less than 2.00).

Moreover, we found that low collaboration between partners is because of this route is the new route for tourists. In addition, this route gets through 3 countries, but there is only destination at the beginning and the end of the route. Dedicate investment and collaborative decision is regarded as a high-level collaboration in the supply chain, which the trust and commitment ware required. The transaction cost in this collaboration is not high although this route is not ready for this collaboration.

Table 2. The collaboration of cultural tourism supply chain on R3A route

collaboration type	Mean	Weight	weight average	collaboration level
sharing same goal	2.565	0.945	2.424	low
sharing information	2.465	0.955	2.354	low
do activity together	2.475	0.923	2.284	low
sharing knowledge	2.315	0.940	2.176	low
communication	2.280	0.945	2.155	low
fair profit	2.295	0.938	2.153	low
fair risk	2.315	0.908	2.102	low
sharing resources	2.250	0.918	2.066	low

dedicate investment	2.415	0.783	1.891	very low
collaborative decision	2.020	0.924	1.866	very low

## 5. Conclusion

According to [20], the collaboration of supply chain collaboration consist of 3 aspects; information sharing, joint team, and dedicate investment. In this study, we scope this study to the cultural tourism supply chain on the R3A route. Therefore, we adapt the concept of tourism supply chain from [1], [2] to get the model, with the trust and the commitment as independent variables of this study and transaction cost as a mediating variables. We found that the transaction cost has the highest total effect to the collaboration of the firms in the industry. We suggest that in the commitment, government should have the clear policy to make understanding with the private sector in the area and also the private sector should have more collaboration with any consortiums. In particularly, the academic sector should support the public and private sector by research. In trust aspect, the academic sector should play important role by being the intermediary to sharing the knowledge and operate the activities to build the trust between the stakeholders.

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