Study on Factors Creating Additional Income among Good and Excellent Silk Weaving Groups in Northeast Thailand

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This study analyzes the main factors affecting the creation of additional income among the 55 good and excellent formal silk weaving groups in Northeast Thailand. A multiple regression analysis was conducted to establish statistically significant variables among the factors. The results indicate that it is important for the groups to endeavor to increase the percentage of group members who are younger than 50 years old by promoting the participation of young people. It is also important to activate traditional knowledge transfer by increasing opportunities for skillful members to teach younger members and to activate sales activities by improving the functions of marketers.

Key words: silk weaving groups, additional income creation, group activities, regression analysis, Northeast Thailand

1. Introduction

As Thailand was one of the countries affected by the 1997 Asian financial crisis, the issue of rural development has consistently been raised in the 8th (1997–2001) until the 12th (2017–2021) National Economic and Social Development Plans. To realize economic and social development, the government has encouraged many kinds of projects to generate additional income and to create jobs/employment in local areas. The creation of silk weaving groups has been introduced as an extensive project. Silk weaving is an important source for farmers to acquire additional income after the harvest season, and it supports the intensive use of the rural labor force, as well as the empowerment of women (Khanson et al., 2015).

Income creation is the most important goal in silk weaving groups, as silk weaving is an economic activity.

Ruengdet and Wongsurawat (2010) conducted a study on the important determinants of success among various types of community groups in Thailand. They established five factors, such as the members’ drive for business, the systematic division of work, regular accounting records, intelligent marketing plans, and achieving certain kinds of quality certifications. By contrast, Watchareejirachot (2013) compared the degrees of business management between two silk weaving groups by evaluating the degrees of four management aspects, namely, administration, production, marketing, and finance, which indicated the existence of different types of management. Such findings are important in facilitating good management of the various community and silk weaving groups.

However, judging from the standpoint of further development of each silk weaving group, it is imperative for the members in the silk weaving groups to realize additional income, regardless of their present income levels. Former studies have not considered the relationship between the creation of additional income and its related factors. Therefore, this study analyzes the important factors that affect the creation of additional income among silk weaving groups by using

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a multiple regression analysis. We then present key measures for creating additional income based on these factors. The clarification of the factors and the presentation of these measures will be useful for silk weaving groups to realize additional income. Therefore, this analysis has significance and validity.

2. Study area and the outlines of the survey
(1) Study area
This study was conducted in the Khon Kaen province of Northeast Thailand. This province is the sixth largest among Thailand’s northeastern provinces, with a total area of 10,885.99 km² and a total population of 1,801,753. There are 2,331 villages, spread over 26 districts (National Statistical Office, 2017).

The Khon Kaen province is an area of intensive commercial silk production (Graham, 2011). In 2015, the province’s circulation of silk products was worth approximately 390 million baht (Community Development Department, 2016). A field survey was conducted in nine of the province’s districts. The location of these districts is shown in Fig. 1. The total number of formal silk weaving groups in these districts was 135 (Agricultural Extension Office, 2017). The share of the formal silk weaving groups occupied in the province was 78.0%. Therefore, this area, comprising of the nine districts, is an important study area.

(2) General structure and the activities of silk weaving groups
As shown in Fig. 2, silk weaving groups are composed of group committee members and general group members. Group committee members consist of executive and general committee members. Group management is an important part of the committee. It consists of a leader, vice-leader(s), secretary(ies), treasurer(s), consultant(s), and general committee member(s) who have specific duties.

The group leader is responsible for the overall group activities, and he/she directs and supports the group members. He/she also facilitates coordination between the external players (government organizations, other supporters, or customers) and group members. The vice-leader assists the group leader in managing the group operations and is the key person that contacts...
government organizations or other supporters. The secretary records the information collected from group meetings or other events. The treasurer manages the group’s finances.

General committee members are responsible for conveying report information to executive committee members. For example, the pattern designer is in charge of the design and development of silk patterns, the credit collector reminds borrowers to repay loans, the auditor checks group accounts and finances, the marketer sells and promotes group products, and the receptionist welcomes visitors, decorates the group location, and prepares food and beverages. They also assist each other in fulfilling other unspecified tasks. The majority of the groups have fewer than 15 group committee members. There are various types of members in the groups, such as stockholders, borrowers, silk weavers, and sericulture farmers. One person could simultaneously belong to multiple categories.

The group obtains financing from various supporters, such as government organizations, NGOs, and state enterprises. In terms of financial activities, funds are provided to the group members through loans. The members also assist in funding the groups by buying its stocks, saving money, and paying interest. After receiving the profits, the group allocates the profit to group members in the form of dividends, welfare support, and allowances. The second facet is production activities. Group funds are allocated to active members, such as weavers, for reinvestment purposes. After selling group products, the groups allocate the remaining profit to active members.

Silk weaving techniques, such as tie/dye and other weaving methods, are some of the traditional practices that the silk weaving groups endeavor to preserve and pass on to younger group members. As a way of transferring this knowledge, the skillful members in the groups teach these techniques to younger members who are interested in silk weaving.

Furthermore, some of the silk weaving groups usually provide opportunities to young people who are not group members to master silk weaving techniques from skillful members. It also helps to recruit young people as new members.

(3) Survey of the silk weaving groups

Purposive sampling was used to select silk weaving groups that had consistently performed group activities for at least five years. All of the silk weaving groups surveyed in this study belonged to some kind of formal community group, as they were registered with the Agricultural Extension Office or the Community Development Department. The surveyed groups in this study were introduced by government officers from the Community Development Department, and according to an evaluation, were classified as good and excellent. Due to this classification, there is a high possibility of these groups continuing to perform their activities for many years. Consequently, the analysis concerning additional income creation is useful to these groups, as additional income creation will continue to be an area of concern in the future. The purposive sampling targeting these groups is valid as it enables the gathering of appropriate samples for the study objective.

Key informants (group leaders or group committee
members) were interviewed using questionnaires. The interviewees answered several questions and evaluated change scores during the recent five years (2012/13 to 2016/17) for additional income creation and its related factors. More than 60 silk weaving groups were interviewed from December 2017 to January 2018. As a result, 55 groups were applicable for the analysis.

(4) Additional income creation, its related factors, and the regression analysis model

Additional income creation was measured using the weavers' income change scores in silk weaving groups during the recent five years. Referring to the additional income creation change scores, a score of +10 indicates a substantial increase, a score of 0 indicates no change, and a score of –10 indicates a substantial decrease.

In this study, we determine two types of factors creating additional income. One type relates to structural factors such as X₁: Age of the groups, X₂: Percentage of group members who were younger than 50 years old, X₃: Percentage of weavers in the group, X₄: The number of group members, and X₅: The number of group committee members. The framework of the silk weaving groups is characterized by structural factors.

The other type concerns activity-related factors. As for these factors, we measured the change scores of group activities or activity results. Judging from the perspective of additional income creation, these factors appear to be important. Therefore, this study adopts several important activity-related factors with reference to the factors adopted from previous studies. The activity-related factors in this study are X₆: The number of group activities created, X₇: Traditional knowledge transfer, X₈: Sales activities supported by the groups, X₉: Sharing of information on the group situation among the group members, X₁₀: Possibility of having a successor, X₁₁: The amount of group funds, and X₁₂: The number of customers. We also measured the activity-related factors’ change scores during the recent five years, excluding X₆, where we used the actual number of group activities created during the recent five years.

We subsequently analyzed the relationship between additional income creation and the two types of factors creating the additional income by applying a multiple regression analysis.

We adopted an additional income creation change score as a dependent variable, and the twelve factors creating the additional income as independent variables. The activity-related factors are basically measured by change scores. However, using the change scores directly would lead to a bias of the parameters for the factors by the measurement error of the factors, as they were measured by discrete values (integer values). Therefore, to address this problem in the regression analysis, the factors X₇, X₈, X₉, X₁₀, X₁₁, and X₁₂ were changed to binary values based on the median value of each variable, and new dummy variables (D) were created as follows:

- D₇ = 1 in case X₇ ≥ 0, D₇ = 0 in case X₇ < 0
- D₈ = 1 in case X₈ ≥ 7, D₈ = 0 in case X₈ < 7
- D₉ = 1 in case X₉ ≥ 8, D₉ = 0 in case X₉ < 8
- D₁₀ = 1 in case X₁₀ ≥ 0, D₁₀ = 0 in case X₁₀ < 0
- D₁₁ = 1 in case X₁₁ ≥ 8, D₁₁ = 0 in case X₁₁ < 8
- D₁₂ = 1 in case X₁₂ ≥ 6, D₁₂ = 0 in case X₁₂ < 6

We used the median as a threshold for setting the value of 1 for each dummy variable, so the number of samples belonging to each category did not become very unbalanced. There is another reason for not adopting the middle point (0): X₉ cannot be adopted as a threshold, as its minimum value is 0. In this study, as we analyze the effects of factors relating to D₇–D₁₂ based only on the relative degrees of the change scores, the adoption of the threshold, other than the medium point, is not a problem.

The frequency of each category corresponding to the value (1 or 0) of dummy variables is shown as follows:

- D₇ = 1:47, D₇ = 0:8
- D₈ = 1:28, D₈ = 0:27
- D₉ = 1:28, D₉ = 0:27
- D₁₀ = 1:49, D₁₀ = 0:6
The regression analysis on the relationship between additional income creation and factors creating the additional income is modeled as follows:

\[ Y = \alpha_0 + \alpha_1 X_1 + \ldots + \alpha_6 X_6 + \alpha_7 D_7 + \ldots + \alpha_{12} D_{12} + \varepsilon \]  

(1)

Where \( Y \) is the additional income creation change score during the recent five years, \( X_1, \ldots, X_6, D_7, \ldots, D_{12} \) are the factors creating the additional income, and \( \varepsilon \) is the error term.

### 3. Results and discussions

#### 1) Information of surveyed silk weaving groups

Table 1 presents the descriptive statistics of the additional income creation change score and the factors creating the additional income. Concerning the other important indexes of the surveyed groups, on average, the number of silk product types is 4.3 (ranging from 1–9 types). The product types with the highest annual sales percentage was Mudmee (42.9%), followed by Dyeing (21.4%), Sarong (11.8%), Loincloth (8.7%), and Shawl (7.3%). Furthermore, the average net income of a group weaver per year is 633 US dollars (ranging from 147–1,759 US dollars).

#### (2) Factors creating the additional income

The results of the multiple regression analysis based on equation (1) are shown in Table 2. The number of samples is 55. The \( R^2 \) value of the regression equation is 0.411. This analysis indicates that the significant independent variables are \( X_2, D_7, \) and \( D_8 \).

From the perspective of additional income creation, the percentage of group members who were younger than 50 years old is a fundamental structural factor of the groups. A higher percentage of group members who are younger than 50 years old positively contributes to additional income creation. Such members are often active and determined to earn more income, compared with older group members. Therefore, the parameter of \( X_2 \) showed a positive sign, even though the significance level was 10%.

As expected, traditional knowledge transfer (\( D_7 \)) is a fundamental and indispensable function. A high change score for this activity in the groups may assist in the improvement of additional income creation, as traditional knowledge is useful in producing silk
products. Therefore, the parameter of $D_7$ showed a positive sign at a 5% significance level.

The parameter of sales activities supported by the groups ($D_8$) also showed a positive sign at a 1% significance level. Improving the sales activities supported by the groups is important in terms of increasing the sales volume for the silk weavers in the groups, thereby helping the weavers earn much more additional income. It can therefore be seen that the groups with higher change scores realized higher degrees of additional income creation.

As for the statistically non-significant independent variables, they could not show statistical significance because the number of samples was insufficient.

### 4. Conclusion

The results of our multiple regression analysis showed that the percentage of group members who were younger than 50 years old, traditional knowledge transfer, and sales activities supported by the groups were important factors that affect additional income creation. Therefore, it can be stated that the measures described below could have a significant effect on additional income creation.

First, it is important for silk weaving groups to endeavor to increase the percentage of younger members. This can be done by promoting the training of young people who are not group members in silk weaving techniques, as this training will also help in the recruitment of new weavers.

Second, the activation of traditional knowledge transfer should be practiced by increasing opportunities for skillful members of silk weaving groups to teach younger members to enable them to become masters in producing silk products. Third, the activation of sales activities should be practiced by improving the functions of marketers within the groups, as they are responsible for sales and for promoting sales activities.

Concerning the structural factors, we obtained and used data reflecting the present situation. However, as additional income creation is influenced by past situations, originally past data should be adopted. In that sense, there remains a limitation to this study.

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**Table 2. Results of the regression analysis on the factors creating additional income**

| Independent variables | Dependent variable $Y$: Additional income creation change score | $r$ between $Y$ and each of the independent variables |
|-----------------------|---------------------------------------------------------------|-------------------------------------------------|
|                       | Coefficient | $t$-value |                             |                             |
| Constant ($a_0$)      | 1.939       | 0.725     | —                             |                             |
| $X_1$: Age of the groups | $-0.063$  | $-0.795$  | $-0.124$                       |                             |
| $X_2$: Percentage of group members who were younger than 50 years old | 0.051     | 1.764*    | 0.185                         |                             |
| $X_3$: Percentage of weavers in the group | $-0.021$  | $-1.104$  | 0.008                         |                             |
| $X_4$: The number of group members | $-0.022$  | $-0.749$  | 0.016                         |                             |
| $X_5$: The number of group committee members | 0.063     | 0.391     | 0.167                         |                             |
| $X_6$: The number of group activities created | $-0.162$  | $-0.375$  | 0.254*                        |                             |
| $D_7$: Traditional knowledge transfer | 3.719     | 2.596**   | 0.358***                       |                             |
| $D_8$: Sales activities supported by the groups | 3.357     | 2.938***  | 0.430***                       |                             |
| $D_9$: Sharing of information on the group situation among the group members | $-1.188$  | $-1.016$  | 0.233*                        |                             |
| $D_{10}$: Possibility of having a successor | 0.258     | 0.153     | 0.063                         |                             |
| $D_{11}$: The amount of group funds | 0.566     | 0.528     | 0.183                         |                             |
| $D_{12}$: The number of customers | 1.955     | 1.658     | 0.289**                       |                             |

Source: Author’s calculation based on a 2017 survey.

1) ***, ** and * are significant at 1%, 5%, and 10%, respectively.
Notes
1 In this paper, the word “committee” refers to a sub-group of people who organize the group activities in different capacities based on a Thai context.
2 There are also informal silk weaving groups in communities as they are not registered under any kind of government organization. However, the fundamental structure of the informal silk weaving groups is similar to that of the formal silk weaving groups.
3 Although a recent five-year change is a short-term change, stacking short-term endeavors leads to long-term development. Therefore, judging from the standpoint of the development of each silk weaving group, conducting an analysis using the five-year change score is important.
4 Several questions related to the additional income creation and its related factors were used in the interview to obtain the change scores for the recent five years from the group leader or committee members. For example, referring to the question concerning traditional knowledge transfer, the question was: “How did the transfer of traditional knowledge about silk weaving techniques change in the recent year, compared with five years ago? Please answer the integer number of change score based on a scale from –10 to +10. A score of +10 indicates a substantial increase, 0 indicates no change, and –10 indicates substantial decrease.”
5 1 US dollar was 34.11 baht in 2017.

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