



THE STUDY OF COUNTRY WOMAN'S INTENTION TO ADOPT AGRICULTURE IN MIDDLE TAIWAN

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Abstract

Women are an important force input in the labor market. Especially in rural areas, country women not only bear both the household and economic burden, but are also a core force significant for community development. Their presence can be seen in rural

education, children's welfare, care for the elderly, medical care, community development and other public affairs. Therefore, it is an important topic for Taiwan's agricultural economy and community development to understand the factors that will affect the country women's input in agricultural production, and to empower and assist the country women. After reviewing the relevant research on country women, this study proposed a framework combining psychological variables and mode of input in countryside, trying to explain the basis that may affect the country women's engagement in agriculture. The opinions of 250 country women in Middle Taiwan were collected to serve as the basis of the analysis. In Mode 1, if we only consider the influence of background variables on the intention to adopt agriculture, the variables that will influence country women's intention to adopt agriculture include: family income ($\beta = .352$), Number of children in the family ($\beta = -.131$), farm size ($\beta = -.432$), number of farm machinery owned ($\beta = .539$), and the explanatory power of the overall regression mode is .283. However, once the psychological variables are added, the family income and number of family members will become insignificant. Even if the influence of the educational level, farm size and number of farm machinery owned reaches the significant level, it is very weak. It shows that the introduction of psychological variables will occupy most of the influence of the background variables on the intention to adopt agriculture. Obviously, psychological variables are the main factors that affect the country women's intention to stay in rural areas to adopt agriculture.

Keywords: intention, TPB, agriculture, women.

Introduction

Women have always been an indispensable labor force in the labor market. Compared with ordinary women, country women may play a more special role. Most of the women's labor supply will focus on general work, leisure, and household work, while country women may cover a relatively wider range of labor. The production activities of the family-style agriculture will generally be combined with the transactional economic activities and livelihood activities (such as household work), which are not

easy to be distinguished clearly, while women are the major family members participating in non-transactional activities. In many rural areas, women not only need to do household work, spend time in farming in the field, but also participate in the development of public affairs of the community, making significant contributions to the local community's agricultural development, medical services, rural education and even the care of the elderly.

According to a survey conducted by Tseng (2000) on women who are en-

gaged in farming in Kaohsiung and Pingtung, 45% of them want to develop sidelines due to the impact of Taiwan's accession to the WTO on their own industries; 51% of them think that themselves are the first choice if one of the family members has to find a part-time job or transfer from agriculture; 63% of them hope to transfer their jobs or find a part-time job through the employment guidance, special cultivation and other activities organized by the government. As for the purpose of part-time work, Khandker (1988) investigated the labor participation of married women in Bangladesh and found that their own wage rate and husband's educational level had a positive effect on the labor participation rate of women. Bokemeier and Garkovich (1987) found that women's attitude toward role identity will significantly affect the degree of their participation in agricultural work. Liu (2001) found that women's labor choice will be affected by such explanatory variables as the livelihood mode of farm families, women's wage rate and personal characteristics (such as educational level, age, life stage). Liu (2001) surveyed 245 farmers in Taiwan, and found that farm livelihood, women's income and personal characteristics may affect women's labor choice.

Other relevant studies on farmers' choice include: Wang (2009) found that work values, work satisfaction, work

input, educational level, agricultural experience, family support and other variables have a significant impact on rural young farmers' intention to adopt agriculture. Huang (2004) took the non-agricultural labor force returning to agriculture as the object and explored the factors affecting their choices to return to adopt agriculture. The results showed that the choice of returning to adopt agriculture is influenced by personal characteristics such as "age" and "educational level", as well as other factors like "whether to keep asking about the work information of non-agricultural sector after returning", "the difference in places to which they return" and "the number of dependent population in the peasant household"

Wang (2009) found that psychological factors, including work values, can affect people's adoption of agriculture; Wernick and Lockeretz (1977/1980) initiated the research on the impact of farmers' planting motivation on the choice of agricultural production mode and output; Conacher and Conacher (1982), Willer and Gillmour (1992) found that farmers' choice of farming method will be influenced by their affection toward the land and their care to the environment, both of which belong to the broad level of attitude. Therefore, this study also continues to explore the impact of attitude on the intention to adopt agriculture, and whether there are

other important influencing factors.

In this regard, this study further reviewed the relevant studies and found that attitude is an important factor affecting farmers' psychology and farming behavior (including continuous adoption of agriculture or choice of planting methods), (Conacher & Conacher, 1982; Dubgaard & Sorensen, 1988; Fisher, 1989; Beus & Dunlap, 1990/1991; Milder et al., 1991; Duram, 1997/2000; Best, 2008). Besides, although farmers may also be attracted to continue or return to adopt agriculture by economic factors (Fisher, 1989; Bruckmeier et al., 1994; Lockeretz, 1995; Duram, 2000; Jansen, 2000; Padel, 2001; Rigby et al., 2001), yet, compared with attitude, such economic factors have less influence (Burton et al., 1999; Lohr & Salomonsson, 2000; Pietola & Lansink, 2001; Darnhofer et al., 2005).

In addition to the attitude and economic incentives, other factors affecting farmers' adoption of agriculture include: psychological factors, farmer's background, health and food safety considerations, and external environment.

1. Psychological factors include: farmers' psychological and cognitive differences or preferences for adoption of agriculture (psychological differences) (Austin et al., 2001; McGregor et al., 1996; Nuthall, 2001; Willock et al., 1999); their sense of

responsibility to their families, consumers and the land (Cranfield, Henson & Holiday, 2009); farmers' knowledge and experience (Golledge et al., 1972; Gold, 1980; Kates, 1962); attitude (Best, 2008).

2. Farmer's background factors: Part time or full-time, farm scale and the length of transfer time (Duram, 2000; Lockeretz, 1995); age, educational level, social customs and culture, sources of agricultural information, curiosity about farming, flexibility and risk tolerance (Bultena & Hoiberg, 1986; Korsching & Hoban, 1990; Lockeretz, 1997; Regouin, 2002).
3. Health and food safety considerations: Farmers' attention to themselves, their families and consumers (Lockeretz & Madden, 1987; Fisher, 1989; Milder et al., 1991; Duram, 2000); food safety considerations (Milder et al., 1991).
4. External environment: Including modern technology, social customs and culture (social contexts), agricultural policy and system (institutional settings), agricultural product channel, market structure and finance (Duram, 2000; Fairweather, 1999; Darnhofer et al., 2005).

Therefore, to sum up, the factors that affect people's consideration

on adoption of agriculture are not only personal characteristics and economic considerations, but also farmers' attitude, sense of responsibility, perception, past experience, personal background (educational level, acreage under cultivation, income, number of family members, age, gender, farm structure, crop types), as well as some psychological factors. Even the agricultural policies, market structure, social context, channels, technical support and information channels of the external environment may also be variables affecting farmers' behavior choices.

In view of the above research background, this study planned to explore what factors would affect the labor participation of country women in Taiwan. For this purpose, it adopted the widely-applied theory of social psychology, i.e., the theory of planned behavior (TPB), to explain the country women's choice to adopt agriculture. According to the above, this study also has the following research purposes:

1. Understand the country women's attitude, subjective norm, perceived behavioral control and intention to adopt agriculture.
2. Clarify whether the background factors will affect the country women's intention to adopt agriculture.

3. Discuss whether the attitude, subjective norm and perceived behavioral control will affect the country women's intention to adopt agriculture

Literature Review

1. The theory of planned behavior

Ajzen (1991) put forward the theory of planned behavior (TPB), which is a widely used psychological theory. TPB pointed out that the Behavioral Intention (BI) is a kind of cognitive activity, which reflects the individual's willingness to engage in a Behavior and Conscious Plans, and is an indicator of predicting the Behavior. Ajzen also believed that the correlation between behavioral intention and behavior is very high, BI is determined by the Attitude Toward the Behavior and Subjective Norm. In addition to this, TPB also takes into account the Perceived Behavioral Control. TPB predicts that the more positive an individual's attitude toward a behavior is, the more normative pressure he feels around him, and the more control he perceives over the behavior, the stronger his intention to engage in the behavior. For example, whether a woman will stay in rural areas to adopt agriculture depends on her intention, which is further determined by the following three aspects: (1) Whether she thinks it is a good or bad choice, simple or difficult, to stay in the countryside to adopt agriculture, or whether it is some-

thing that she should do; (2) Whether she thinks that the important people in her mind would agree or encourage her to stay in the countryside; (3) her subjective belief in the difficulty or feasibility of staying in the countryside to adopt agriculture.

In addition, because the behavioral control perceived by an individual has more or less some practical basis, such perception indirectly reflects a certain degree of practical difficulty; even if not through BI, the individual's perceived control can also be related to behavior (through practical difficulty). Therefore, in the structural mode of TPB, the relationship between behavior and perceived control is often represented by dotted lines.

1. Behavior Intention

Ajzen believes that the Behavioral Intention (BI) in TPB covers the motivational factors behind the Behavior, which reflects the degree of people's willingness to try a Behavior or how much efforts they plan to make for a Behavior. The stronger an individual's intention to engage in a Behavior, the more likely such Behavior will occur. If we examine TPB theory, we can find that BI is mainly determined by Attitude Toward the Behavior (AT), Subjective Norm (SN) and Perceived Behavioral Control (PBC). That is to say, these three variables will affect BI.

In addition, Ajzen found that Behavioral Intention is similar to Behavior. Therefore, BI was regarded as Behavior (B) in many of Ajzen's researches and subsequent related researches.

2. Attitude

"Attitude" refers to the positive or negative evaluation of a certain behavior held by an individual. The measurement of attitude toward a certain behavior is composed of the sum of the product of an individual's "Behavioral Belief" and "Outcome Evaluation". The measurement of Attitude can be shown as follows in the functional formula:

$$\text{Eq. 1: } AT = \sum_n b_i e_i$$

In Eq.1, b_i is an individual's belief (subjective probability) that "behavior B will lead to the i-th result", i.e. "Behavior Belief", such as the belief that it will be good for oneself to stay in the countryside to adopt agriculture; e_i is an individual's evaluation of the i-th result, such as the importance attached to staying in the countryside to adopt agriculture, and n is the sum of these beliefs. In summary, the more positive results a person believes that a certain behavior can bring, the stronger his attitude toward it.

3. Perceived norms

Perceived norm refers to the external pressure from the society or refer-

ence group that an individual perceives when he/she engages in a specific behavior. In other words, Subjective Norm refers to the pressure from the important related persons around an individual and the reference group that an individual feels when he / she is engaged in a specific behavior. The measurement of Subjective Norm is composed of the sum of the product of the individual's "Normative Belief" and "Motivation to Comply". The measurement of Subjective Norm can be shown as follows in the functional formula:

$$\text{Eq. 2: } SN = \sum_n b_j m_j$$

In Eq. 2, b_j is the Normative Belief of the j -th important person that the individual refers to (referent), that is, the degree to which the individual thinks that the j -th person will agree or disagree with his Behavior (B), for example, whether his friends think he should stay in the countryside to adopt agriculture, while m_j is the motivation to comply with the j -th person, for example, if he thinks that he should follow his friends' advice and stay in the countryside to adopt agriculture. In other words, the more an individual believes that these important related persons support him to engage in certain behaviors, and the more motivated he is to listen to these important related persons, the stronger he thinks that the support he receives for taking this Behavior will be.

4. Perceived Behavioral Control

Ajzen (1988, 1991) held that the Perceived Behavioral Control (PBC) reflects the past experience of an individual and the expected obstacles. The more resources and opportunities an individual thinks he has, the fewer obstacles he expects, and the stronger the PBC is. According to Ajzen and Madden (1986), PBC can affect Behavior (B) in two ways:

(1) PBC has Motivational Implications for the Behavioral Intention (BI). If an individual thinks he lacks resources and opportunities to complete a certain behavior, he cannot form a strong BI, even if he has a positive attitude towards the Behavior and believes that the important referent also agrees with the occurrence of the Behavior. In this case, the influence of PBC on B is mediated by "Behavioral Intention"

(2) PBC can also directly relate to B, but this only happens under the following two premises:

- I. The Behavior to be predicted is not under the control of complete will;
- II. PBC reflects a certain degree of Actual Control

As the actual control can affect the PBC and Behavior of an individual at the same time, when an individual perceives the behavioral control, it will also

have a direct impact on behavior.

Ajzen (1991) held that the Perceived Behavioral Control is composed of the sum of product of the individual's Control Belief and Perceived Facilitation. The measurement of the Perceived Behavioral Control can be shown as follows in the functional formula:

$$\text{Eq. 3: } \text{PBC} = \sum_n c_i p_i$$

In Eq. 3, c_i is the Control Belief, which is the belief under which an individual evaluates the resources and opportunities for engaging in certain behaviors, and the belief in what obstacles he/she will encounter when engaging in such behaviors. p_i is the Perceived Power, which is a subjective assessment of how these resources, opportunities and obstacles will affect the success of behaviors. For example, the more resources or the less obstacles an individual believes he/she has for engaging in certain behaviors, the stronger the behavioral control he thinks he has. And the more an individual believes that his/her own behavioral resources are enough to influence his/her success, the stronger behavioral control he/she perceives; or the more he/she believes that he has to face great behavioral obstacles that are difficult to overcome, the lower the perceived behavioral control.

2. Relevant research on women's adoption of agriculture

Chuang and Lin (2006) reviewed the literatures on the labor supply of women in Taiwan from 1979 to 2003, and found that among the variables of women's work productivity, age has a positive impact, while the quadratic term of age has a negative impact, and their comprehensive impact is inverted U-shaped; educational level and work experience mostly have positive impacts, and only a few studies indicated a negative impact; wage rate mostly have a positive impact. In terms of family work productivity, the number of children has significantly negative or not significant impacts, among which the number of young children (less than 6 years old) has a negatively impact, while the impact of the number of older children is not certain. In terms of family income and wealth variables, husband's income, wages and educational level have negative impacts, while the impacts of living area and self-owned housing are not certain. It can be seen that age, educational level and wage rate of Taiwanese women have positive impacts on labor productivity; however, number of children's income and spouse's income, wage and educational level have negative impacts on women's labor productivity.

Khandker (1988) thought that decision on labor participation would affect the time allocation. He took 444 country women aged between 15 and 49 in

Bangladesh as the subjects to conduct empirical research. First, he used probit model to explore the factors that influence the participation and non-participation, and then used the least square method to estimate the determinants of women's time spent on household work, and used the tobit model to estimate the effect of the variables on the time spent on market work. The results showed that: husband's education had a positive effect on women's household work time and their labor participation (contrary to the research results of Chuang and Lin); for women without work, their own education and age may reduce the household work time, but their wages have a positive effect on household work time. However, Malathy (1994) came to different research findings. Malathy investigated 666 married women aged 20-59 in the city of Madrac, India. The results showed that women's wages had a negative effect on household work time, and their own education also had a negative effect on non-market activities, but the time on children's education had no such negative effect.

Gronau (1976) divided time into three kinds of decision-making: market work, household work and leisure, and conducted an empirical study on married women by using the 1968 Israeli household income and expenditure survey. The improvement of women's own educational level will increase the probability

of their market work time, but reduce the probability of household time, while the effect on leisure is not significant; when the number of children in the family and the number of young people increase, the probability of household work time will increase but the probability of market work and leisure will decrease. This study simply used the data from the Israeli household income and expenditure survey to reflect the decisions of married women on how to allocate their limited time among market work, household work and leisure. It also showed that women with higher educational level are more likely to invest more time in the workplace.

Taiwan's agriculture is dominated by family farms, whose livelihood units are usually composed of husband and wife, their children and other immediate family members. The husband is mostly a professional or part-time farm operator and the main labor, the wife is mostly a regular helper, and the children are mostly helpers during the busy farming period. If the marginal productivity of the farm increases (usually expressed by the increase of the average agricultural income per household), the husband will invest more time to work on the farm, which will reduce the probability of women's investing time to work on the farm; and if the non-agricultural wage increases, women will be less likely to work part-time in the busy farming pe-

riod and will transfer to work outside the farm.

Kimhi and Lee (1996) shared the argument that the husbands' and wife's labor supply on and off the farm will affect each other. They also conducted an empirical study on farm couples by using the 1981 Israeli agricultural census data. The results showed that the increase of husband's labor supply on the farm may lead to the decrease of off-farm labor supply by himself and his wife; the increase of husband's off-farm labor supply may also lead to the decrease of his spouse's off-farm labor supply.

Liu et al. (1998) further discussed the characteristics of country women. Country women engaged in producing rice, vegetables and other traditional crops have higher average age, lower educational level and longer working experience on the farm, while country women who cultivate flowers, livestock, poultry and other high-value crops have lower average age and higher education level. However, country women engaged in rice cultivation spent limited time on the farm work. The reason for this is that due to the high mechanization of rice farming, a high proportion of farming work have been entrusted to others, followed by cultivation by the husband alone, while the proportion of women responsible for farming alone is very low. Women only do some routine work,

such as irrigation and fertilization.

Women engaged in vegetable farming have different participation in farm work due to different operating and farming projects on the farm. This study mainly compared the characteristics of women who grow different crops. The results showed that different farming items will affect the characteristics of women.

Different from the argument put forward by Liu (1975), Hua (1979) believed that the factors affecting country women's labor participation can be classified into four categories: wage level, conditions of the peasant family, non-agricultural employment opportunities, women's personal characteristics and family burdens. Hua pointed out in this study that the cultivated land area is the most important factor affecting women's investment of time on the farm, followed by the ratio of women to children, and then the degree of agricultural mechanization. The three main factors that affect the country women's off-farm work are: the number of off-farm employment opportunities, the percentage of married women and the number of family population. The more the family population is, the less the country women's participation on the farm is, and the more the country women's participation outside the farm is. Besides, the marital status of country women also has a significant impact on their labor participation, and the percentage of mar-

ried women is positively correlated to the helpers in busy farming period and non-agricultural labor participation.

Lin (1979) found in his study that there is a positive correlation between country women's labor participation rate on the farm and women's authority (summarized as the generalized attitude by this study), and a negative correlation between their labor participation rate on the farm and the land difference, the age of the head of household, the number of employed people, etc. Hsu (1980) found that the smaller the farm size, the more the cases of part-time work of the peasant family. In addition, part-time labor participation outside the farm is closely related to off-farm wages and farm income. Du (1997) believed that different types of agricultural production have different demands for women's labor due to different operation and management methods and work patterns, so there are differences in work time input. In addition, the flexibility of work time on the farm is greater than that of non-agricultural workers. Also, the work time in busy farming period is longer than that of non-busy farming period, so the household work time varies depending on whether it is the busy farming period.

Liu (2001) took the 324 country women he investigated in 1996 as the subjects, divided the labor participation of married women into "no work",

"full-time farm work", "full-time off-farm work", and "part-time work on and off the farm" and made empirical analysis by using the multinomial logit model. The results showed that: education years, age and the number of off-farm workers are important factors that affect the type of country women's labor participation, and the increase of education years will promote the full-time participation of country women in off-farm work. However, it is worth mentioning that whether there are only three factors that affect the labor participation of country women in Taiwan: education years, age and the number of off-farm workers. According to the above literature review, this study concluded that the country women's personal characteristics, spouse characteristics, family structure, farm management characteristics and off-farm wages have an impact on their labor participation on farm, off farm and in household work, and there is a high correlation between household work and on-farm labor participation.

Study Method

1. Study framework

Reviewing the research on the psychology and behavior of farmers at home and abroad, such as the researches of Liu (2001), Khandker (1988), Gronau (1976), we can find that in addition of country women's personal characteris-

tics (age, educational level, marital status), spouse characteristics (educational level, income), family structure (family type, number of family members, number of children), farm operation characteristics (farm size and agricultural machinery) and off-farm wage are important factors affecting labor participation. Researches made by scholars including Best (2008) and Lin (1979) further indicated that "attitude", "values" and "economic considerations" are the

important factors that affect farmers' adoption of agriculture.

Therefore, if we want to explore the factors that may affect the country women's labor participation, we should not only consider the county women's personal characteristics, the farm management characteristics and other conditions, but also include the psychological and behavioral decision-making factors of country women (see Figure 1).

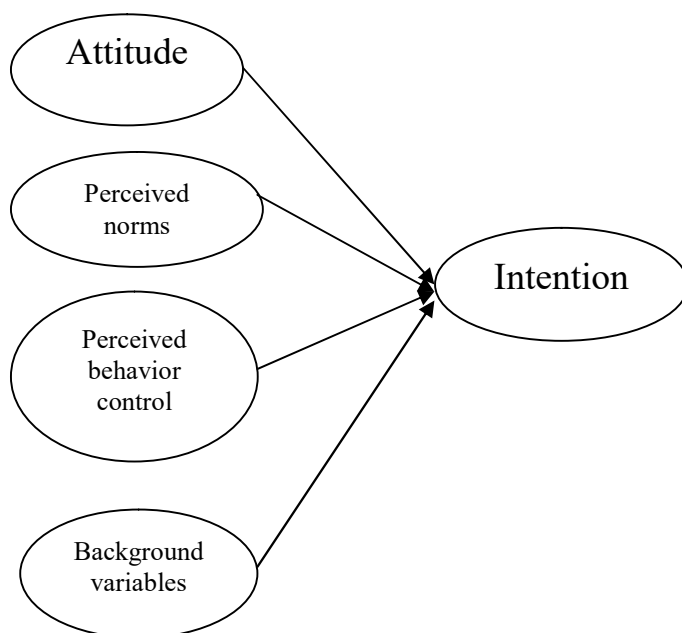


Figure 1. Study Framework

2. Questionnaire design

(1) Attitude

In terms of the definition of attitude and item design, this study takes the mode proposed by Ajzen (1991), Best (2006), Hartmann and Apaolaza-Ibanez (2008), Wu (2011) as reference and

adopts a broader definition of country women's farming attitude, that is, including the components of recognition, emotion, women's rights, even knowledge and value in the generalized attitude. This study uses Likert's five-point scale as the measurement method (Strongly agree 5 points, Agree 4 points,

Fair 3 points, Disagree 2 points, Strongly Disagree 1point). The items on attitude include:

- a. If I stay in the countryside to adopt agriculture, I can help and accompany my family. I think it is very meaningful.
- b. If I staying in the countryside to adopt agriculture, I can give full play to my expertise. It is a nice thing.
- c. I think staying in the countryside to adopt agriculture is very meaningful because I can achieve self-efficiency in this way.
- d. Staying in the countryside to adopt agriculture allows me to have more flexible living space and time. I like this kind of life.
- e. Although I earn less by staying in the countryside to adopt agriculture, it is sufficient to afford myself and my family.
- f. By staying in the countryside to adopt agriculture, we can produce healthy agricultural products for consumers. It is very useful for the society.
- g. Although I can't get nice work title by staying in the countryside to adopt agriculture, it is something I look forward to.
- h. Staying in the countryside to adopt agriculture allows me to enjoy the glamorous natural scenery of the field and countryside.
- i. I like the life and pace of the countryside since my childhood. I would love to

stay in the countryside to adopt agriculture

- j. I have friends and relatives in the countryside. It is great fun to stay in the countryside to adopt agriculture.

(2) Perceived norms

Subjective Norm refers to whether country women value the opinions of their important opinion objects when they decide to stay to work in countryside. This study also assumes that country women will identify with and refer to the opinions of their family members and friends and also the agricultural policies. Therefore, family and friends are regarded as important opinion group objects in this study. It is also assumed that country women will consider the trend of agricultural policy to decide whether to stay in countryside for work. In the design of items on Subjective Norm, this study takes the design modes of Ajzen (1991) and Wu (2011) as references, and adopts Likert's five-point scale as the measurement method (Strongly agree 5 points, Agree 4 points, Fair 3 points, Disagree 2 points, Strongly Disagree 1point). The items on Subjective Norm are as follows:

- a. You will listen to your family members' opinions when deciding to stay in the countryside to adopt agriculture.
- b. You will listen to your friends' opinions when deciding to stay in the countryside to adopt agriculture.

- c. You will consider the agricultural policies of the government when deciding to stay in the countryside to adopt agriculture.
- d. You will be influenced by the opinions of your family members when deciding to stay in the countryside to adopt agriculture.
- e. You will be influenced by the opinions of your friends when deciding to stay in the countryside to adopt agriculture.
- f. You will be influenced by the agricultural policies of the government when deciding to stay in the countryside to adopt agriculture.

(3) Perceived Behavioral Control

Perceived Behavioral Control (PBC) refers to the evaluation of the country women on their personal ability to stay in the countryside to adopt agriculture. Personal ability may include personal knowledge of agriculture, agricultural information sources, technology, physical strength, perceived difficulty of work in the countryside, materials and marketing, and sales channels. In the design of items on PBC, this study takes the design methods of Ajzen (1991) and Wu (2011) as reference and adopts Likert's five-point scale as the measurement method (Strongly agree 5 points, Agree 4 points, Fair 3 points, Disagree 2 points, Strongly Disagree 1point). The items on PBC include:

- a. You think you have enough knowl-

edge of agriculture.

- b. You think you know where to find the agricultural knowledge you need.
- c. You think you have enough physical strength to work in the countryside.
- d. You think you have enough agricultural skills to work in the countryside.
- e. It is easy for you to stay in the countryside and work.
- f. You think you know where to buy agricultural related materials and equipment.
- g. You think you know how to use relevant channels to sell agricultural products.
- h. You think you know how to market farms or agricultural products.

(4) Background variables

Referring to research of Liu (2001) and other scholars, this study proposes that the background factors should include the following items:

- a. Age
- b. Educational level
- c. Marital status
- d. Husband's educational level
- e. Monthly income of the family
- f. Family structure (living with parents-in-law, husband and children)
- g. Number of family members
- h. Number of children
- i. Operating area of self-owned farm
- j. Area of leased farm land

- l. Number of farm machinery owned
- l. Salary of surrounding areas (based on female's daily wage)
- m. Whether to work on self-owned farm
- n. Number of days working on the farm

(5) Intention to adopt agriculture

The intention to adopt agriculture defined in this study refers to country women's evaluation on whether they are willing to stay in the countryside to adopt agriculture. Also, as the intention may vary in different degrees, while designing the items on Intention, this study takes the design mode developed by Ajzen (1991) and Wu (2011) as reference and adopts Likert's five-point scale as the measurement method (Strongly agree 5 points, Agree 4 points, Fair 3 points, Disagree 2 points, Strongly Disagree 1 point).

3. Questionnaire collection method

In order to collect the opinions of country women on stay in the countryside to adopt agriculture, the researchers of this study asked relatives and friends in Middle Taiwan to send out questionnaires at the Four-Health Workshops held by peasant associations in districts of Taichung City. A total of 250 valid questionnaires were collected. The questionnaires were issued in October 2019. In terms of the interview method, the researchers first communicated with the peasant associations to obtain their ap-

proval for the researchers to conduct the questionnaire survey on country women before the workshop, and ask the organizers of the workshops of peasant associations to explain the survey unit and purpose to the women first, and then distribute the questionnaires in the workshops. Women can raise their hands to ask questions if they have any, and the researchers and interviewers would assist the women to fill in the answers before the workshop.

Study Result

1. Background analysis

In this study, 250 valid samples were collected. In the background statistics of country women, the open items of the questionnaires were used to ask the interviewees about the operating area of the farm, the area of the leased farm land, the number of farming machineries owned, the salary of surrounding areas and the number of days per week working on the farm. However, the following two problems were encountered in the investigation and statistics: first, in the investigation, country women hoped that the questionnaires can be choice items for them to tick, which are more convenient to answer. In statistics, this study found that the data filled in by the respondents were very scattered. In order to facilitate the follow-up regression analysis to verify whether the background factors (converted into virtual

variables) will affect the country women's intention to adopt agriculture, and to ensure the simplicity of reading, these open-ended items were first summarized into two items according to the cumulative percentage of the times so that the cumulative percentage of the two items was not far from the number of times.

According to the statistical results, 81 country women were under 40 years old, while the rest were over 41 years old ($N = 169$); in terms of educational level, 169 respondents had education below high school (67.6%), and the rest were above junior college ($N = 81$); in terms of husband's educational level, 115 had education above junior college, and the rest had education below high school ($N = 135$); in terms of family income, 138 respondents (55.2%) answered that their family income was less than \$50,000 per month; in terms of family structure, 182 country women answered that they lived with their parents-in-law; 182 respondents said they had 6-10 family members (72.8%); 149 respondents answered that they had more than 3 children (59.6%); 153 respondents replied that their own farmland was less than 5 *fen* (0.033 acre) (61.2%); 134 respondents said they rented more than 4 *fen* (0.027 acre) of land from others (53.6%); 136 respondents said they owned more than 5 farming machines (54.4%); 170 country

women said the wages of their surrounding areas were NT \$1,000 (68%); 76.4% respondents said they would go out to look for work opportunities to earn wages when they had free time ($N = 191$); in terms of working hours on the farm every week, most country women work six days a week on their own farms (92 respondents), followed by 5 days a week (73 respondents), and 7 days a week (64 respondents).

It can be seen from the background information of the above respondents that more than half of the country women interviewed were middle-aged (over 41 years old), had an educational level mostly under high school, and the educational level of their husbands was slightly higher than that of country women (115 husbands had college degree or above, higher than the number of country women with such degrees, 81); half of the country women didn't have high family income and two thirds of them live with their parents in law; two thirds of the respondents have 6-10 family members, and more than half of them have more than 3 children; three fifths of the respondents owned farmland of less than 5 *fen* (0.033 acre), and more than half of the respondents have rented farmland of more than 4 *fen* (about 0.027 acre) from others; more than half of the respondents have more than 5 agricultural machines in their homes; 68% of the respondents said that the daily salary

of surrounding work opportunities was NT \$1,000, and, about three fourths of the respondents said they would go out to look for job opportunities to earn salary when they have free time. In terms of working hours on the farm every week, all the country women interviewed at least worked on their own farms for more than 5 days a week.

2. Descriptive statistical analysis

a. Attitude

According to the results of the descriptive statistical analysis, the overall average opinions about the items on Attitude of the interviewed country women was inclined to agree, and they agreed the most with item "6. By staying in the countryside to adopt agriculture, we can produce healthy agricultural products for consumers. It is very useful for the society" (*Mean* = 4.10, *Standard deviation* = .81), followed by item "8. Staying in the countryside to adopt agriculture allows me to enjoy the glamorous natural scenery of the field and countryside" (*Mean* = 4.04, *Standard deviation* = .74), and then item "7. Although I can't get nice work title by staying in the countryside to adopt agriculture, it is something I look forward to" (*Mean* = 3.97, *Standard deviation* = .82). The items on Attitude had a high overall reliability of .94.

b. Perceived norms

According to the results of narrative statistical analysis, on the items on Subjective Norm, the interviewed country women agreed the most with item "2. You will listen to your friends' opinions when deciding to stay in the countryside to adopt agriculture" (*Mean* = 3.95, *Standard deviation* = .79), followed by item "1. You will listen to your family members' opinions when deciding to stay in the countryside to adopt agriculture" (*Mean* = 3.84, *Standard deviation* = .81), and then item "3. You will consider the agricultural policies of the government when deciding to stay in the countryside to adopt agriculture" (*Mean* = 3.80, *Standard deviation* = .86). The items on Subjective Norm had a high overall reliability of .98.

c. Perceived Behavioral Control

According to the results of the narrative statistical analysis, on the items on Perceived Behavioral Control, the interviewed country women agreed the most with item "6. You think you know where to buy agricultural related materials and equipment" (*Mean* = 3.85, *Standard deviation* = .46), followed by item "2. You think you know where to find the agricultural knowledge you need" (*Mean* = 3.81, *Standard deviation* = .61), and then item "5. You think you have enough physical strength to work in the countryside" (*Mean* = 3.79, *Standard deviation* = .58). The items on Perceived Behav-

ioral Control had a high overall reliability of .99.

d. Intention

According to the results of the narrative statistical analysis, on the items on Intention, the interviewed country women had a slightly higher intention of continuing to stay in the countryside (*Mean* = 3.65, *Standard deviation* =.81) than choosing to continue stay in the countryside in the future (*Mean* = 3.62, *Standard deviation* =.80).

3. Multiple regression analysis

In order to find out whether the background variables and psychological variables (Attitude, Subjective Norm, Perceived Behavioral Control) of the country women affect their intention to stay in the countryside to adopt agriculture, this study will conduct two-stage regression analysis. In the first stage (Mode 1), the background variables of the country women are put into the regression mode to analyze the net explanatory power of background variables to the intention to adopt agriculture; in the second stage (Mode 2), in addition to the original background variables, the background variables are added to understand how much influence can be added by the psychological variables in addition to the influence of the background variables.

Before putting the variables into

regression analysis, this study first summed up the two items on Intention: "25. You have the intention to stay in countryside", "26. You will choose to continue stay in countryside in the future" and calculated the average, which represents the score of Intention. The calculation method for the Attitude and Perceived Behavioral Control is the same as that for the Intention.

In the calculation of Subjective Norm, according to Ajzen's theory of planned behavior, Subjective Norm can be divided into two forces, namely, "normative Belief" and "motivation to Comply". The measurement of Subjective Norm is composed of the sum of the product of individual "normative Belief" and "motivation to Comply". Therefore, this study multiplies item "11. You will listen to your family members' opinions when deciding to stay in the countryside to adopt agriculture" by item" 14. You will be influenced by the opinions of your family members when deciding to stay in the countryside to adopt agriculture", multiplies item 12 by item 15, and multiplies item 13 multiplies item 16, and then sums up the three multiplied scores to get the average, which represents the score of Subjective Norm.

In terms of the treatment of background variables, in this study, women's education, husband's educational level (0 means below senior high school, 1

means above junior college), family structure (0 means living with parents in law, 1 means living with husband), work at home or not (0 means full-time, 1 means working out at leisure time) are virtual variables, and other background variables are continuous variables.

The results showed that in Mode 1, family income ($\beta = .352$), number of children in the family ($\beta = -.131$), family size ($\beta = -.432$), number of farm machinery owned ($\beta = .539$) would affect the country women's intention to adopt agriculture. The explanatory power of overall regression mode was .283. The result showed that the family income of the country women, the more children in the family, the smaller the farm size and the more farm machinery owned in the family, the higher the intention to adopt agriculture.

In Mode 2, Attitude ($\beta = .308$), Perceived Behavioral Control ($\beta = .568$), educational level ($\beta = .060$), number of family members ($\beta = .055$), farm size ($\beta = -.180$) and number of farm machinery owned ($\beta = .073$) will affect the interviewed country women's intention to adopt agriculture. The explanatory power of overall mode increased to .849, and the net explanatory power of the psychological variables on the intention to adopt agriculture was .563. Although background variables including the educational level, number of family

members, farm size and the number of farm machinery owned could still affect the intention to adopt agriculture, their influence has declined significantly, which was obviously due to the fact that psychological variables have occupied the influence on the intention to adopt agriculture. This shows that psychological variables are indeed the main factors affecting these country women's intention to adopt agriculture.

In Mode 2, the more positive the attitude of country women toward staying in the countryside to adopt agriculture, the more sufficient resources and conditions they have for staying in the countryside to adopt agriculture according to their evaluation, the higher their own educational level, the more family members, the smaller farm size and the more farm machinery owned, then the higher their intention to stay in the countryside to adopt agriculture (see Table 1).

Conclusion

1. Psychological variables are the main factors affecting country women's stay in the countryside to adopt agriculture

In order to understand the possible factors that may affect the country women's stay in the countryside to adopt agriculture, this study regarded the psychological variables and background variables as the main factors that may

Table1. Summary Table of Regression Analysis of Predicted Intention with Background Variables and Psychological Variables

	Non standardized coefficient		Standardized co-efficient		
	Estimate of B	Standard error	Beta distribution	t	Significance
Mode 1					
(constant)	2.475	.553		4.472	.000
Age	-.004	.004	-.054	-.984	.326
Education	-.047	.094	-.029	-.503	.615
Husband's educational level	.024	.088	.016	.277	.782
Family income	8.450E-006	.000	.352	3.075	.002**
Family structure	.040	.098	.024	.409	.683
Number of family members	.031	.023	.073	1.320	.188
Number of children in the family	-.116	.050	-.131	-2.328	.021*
Farm size	-.102	.021	-.432	-4.742	.000***
Leased area	-.037	.020	-.167	-1.844	.066
Number of farm machinery owned	.301	.034	.539	8.933	.000***
Salary of surrounding areas	.000	.000	.057	1.055	.293
Work at home or not	.110	.102	.062	1.080	.281
Weekly farming hours	-.019	.047	-.023	-.403	.687
Mode 2					

(constant)	-.189	.379		-.498	.619
Age	-.001	.002	-.008	-.303	.762
Education	.097	.043	.060	2.221	.027*
Husband's educational level	.001	.040	.000	.018	.986
Family income	1.670E-006	.000	.070	1.291	.198
Family structure	.029	.045	.017	.645	.519
Number of family members	.023	.011	.055	2.178	.030*
Number of children in the family	-.034	.023	-.038	-1.458	.146
Farm size	-.042	.010	-.180	-4.123	.000***
Leased area	-.004	.009	-.018	-.423	.673
Number of farm machinery owned	.041	.018	.073	2.278	.024*
Salary of surrounding areas	2.803E-005	.000	.005	.183	.855
Work at home or not	.006	.047	.004	.136	.892
Weekly farming hours	.012	.022	.014	.542	.588
Attitude	.408	.116	.308	3.509	.001**
Subjective Norm	.002	.014	.015	.140	.888
Perceived Behavioral Control	.533	.110	.568	4.827	.000***
F value	Mode 1: 8.672		Mode 2: 88.453		
significance	Mode 1:.000***		Mode 2:.000***		
R ²	Mode 1:.286		Mode 2:.849		

* $p < .05$, ** $p < .01$, *** $p < .001$

effect the intention, and used the two-stage regression equation for verification. The results show that in the first stage, when the background factors were regarded as the independent variables affecting the intention to adopt agriculture, the explanatory power was .283. However, in the second stage, when psychological variables were included in the analysis, the explanatory power increased to .849, and the net explanatory power of psychological variables (Attitude and Perceived Behavioral Control) on the intention to adopt agriculture was .563. Although education variables, including educational level, number of family members, farm size and number of farm machinery owned, can still affect the intention to adopt agriculture, the overall influence of background variables was significantly reduced, which represented that their influence on the intention to adopt agriculture have been occupied by the psychological variables. Therefore, psychological variables are indeed the main factors affecting country women's intention to stay in countryside to adopt agriculture.

2. Attitude, Perceived Behavioral Control, educational level, number of family members, farm size and number of farm machinery owned will affect country women's intention to adopt agriculture.

a. Regression results of psychological variables

According to the regression results of psychological variables, Perceived Behavioral Control ($\beta = .568$) and Attitude ($\beta = .308$) will significantly affect the intention to adopt agriculture, and the influence of PBC is much higher than that of A. This means that when country women are thinking about whether to stay in the countryside to adopt agriculture, they care and value most about whether they have the conditions for staying in the countryside to adopt agriculture (PBC). These conditions include: assessing whether they have enough agricultural related knowledge; whether they know where to find the required agricultural related knowledge; whether they have enough physical strength to work in the countryside; Whether they have enough agricultural skills to work in the countryside; whether it is a simple thing to stay in the countryside; whether they know where to buy agricultural related materials and equipment; whether they know the channels to sell agricultural products; whether they know the ways to market their farms or agricultural products.

When women have considered their own resources and conditions for stay in the countryside to adopt agriculture, then they will begin to think about their own views on stay in the countryside to adopt agriculture. For example, they may feel that, by staying in the countryside to adopt agriculture, they can help

and accompany their families, play their own expertise, be self-sufficient, have more flexible living space and time, afford the life of themselves and the family with the money earned (though not much), produce healthy agricultural products for consumers, which is very helpful to the society, meet their expectations for work, live in the glamorous natural scenery of the field scenery and countryside; or because they like rural life and pace since childhood or have their own family and friends in the countryside.

As for the reasons why the influence of subjective norm is not significant, this study put forward the following explanations according to the conversation with country women when sending out the questionnaire: (1) they chose to stay in the countryside to adopt agriculture mostly because they grew up in the countryside and were familiar with the environment and naturally wanted to work in their hometown. (2) They have their own farmland and were usually married to a family in the same village or the neighboring village, so they chose to stay in the countryside to help the husband and take care of children. (3) It is difficult to find a job outside, and the business has been in a downturn. Instead of doing a low-wage job in a factory or company, it is better to return to work for a better hometown, in which way, they can also stay with the

family every day while living in the countryside with beautiful natural sceneries. (4) The government's agricultural policies often make small farmers feel meaningless. It is hard to find someone who knows relevant policies except for consulting the peasant association by themselves. Usually, if you don't read the news or search for agricultural information on the Internet every day, it is hard to get relevant information. (5) On the matter of stay in the countryside to adopt agriculture, the opinions of relatives and friends are only for reference. The most important thing is whether they like it or not, whether they can accept it, and whether they can earn a living for themselves and the family by staying in the countryside to adopt agriculture.

b. Regression results of background variables

In Mode 1, if we only consider the impact of background variables on the intention to adopt agriculture, the family income ($\beta = .352$), number of children in the family ($\beta = -.131$), farm size ($\beta = -.432$), number of farm machinery owned ($\beta = .539$) will affect country women's intention to adopt agriculture, and the explanatory power of the overall regression mode was .283. However, once psychological variables were included, the influence of the family income and the number of family mem-

bers became insignificant. Although the impact of educational level, farm size 与 number of farm machinery owned also reached the significant level, the influence was very weak. This shows that the inclusion of psychological variables would occupy most of the influence of the background variables on the intention to adopt agriculture. Therefore, it is obvious that psychological variables are truly the main factors affecting country women' stay in the countryside to adopt agriculture.

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