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PERFORMANCE OF THE EXTENSION DEPARTMENT IN TAIWAN FARMERS' ASSOCIATIONS: DOES EMPLOYEE ATTITUDE MAKE A DIFFERENCE?

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Abstract

Past studies on organizational behavior or industrial psychology found work-related attitude crucial for the performance and success of organizations, whereas the industrial organization studies emphasized the importance of team operations and focused on the peer interaction among team members in the workplace. This study attempts to bridge the gap in the two parallel literature by investigating the determining factors for the performance of the extension department in Taiwan farmers' associations (*TFAs*). *The results in this study indicate that work-related attitude reflecting the extension personnel's willingness to devote time and efforts as well as their holding high self-expectation for themselves and work, have positive influence on both the group and individual performances. Nonetheless, attitudinal contagion is found to have a significant adverse effect on group performance. This result suggests the need to pay close attention to individual employee's job satisfaction even in the non-profit organizations like TFAs. Moreover, a routine monitor of the work atmosphere or one-by-one consultation with the extension personnel can improve their performance.*
Key Words: *Taiwan farmers' associations (TFAs), extension service, group and individual performances, work-related attitude, social interactions.*
JEL Codes: *Q11, Q12, Q13*

1. Introduction

The industrial structure of Taiwan farmers' associations (hereafter TFAs) is quite unique. Farmers' association is non-profit in nature, therefore, the managerial idea is different from general profit-seeking organizations. Over the past decades, TFAs have been facing major challenges of agricultural transition and trade liberalization, performance evaluation of the entire organization and individual department can render important policy implications. Among the four departments of the farmers' association, the extension department plays a key role in the implementation of rural development policies, while extension personnel are regarded as the helmsman of agriculture. However, most past research for the TFAs focused on the credit department and typically ignored the extension department. This study, therefore, is intended to present an in-depth study focusing on identifying the determinants of the extension department's performance for the farmers' associations in Taiwan.

Past studies on organizational behavior or industrial psychology found some psychological factors are crucial for the performance and success of organizations. These factors include

job stress (Westman and Eden, 1996; Siu, 2003; Jamal, 2011), job involvement/organization commitment (Diefendorff et al., 2002; Rotenberry and Moberg, 2007; Rizwan et al., 2011; Jamal, 2011) and job satisfaction (Wright et al., 2007; Hofmans et al., 2012; Hettiararchchi and Jayarathna, 2014; Abdalkrim and Elhalim, 2016; Bakotić, 2016). Among the recent studies, a link between the mentioned factors and organization success was established through the consideration of employee attitude (Hettiararchchi and Jayarathna, 2014; Rizwan et al., 2011; Lee and Chen, 2013; Rahman and Kodikal, 2017) in investigating the determinants of individual or group performance.

On the other hand, the theory of industrial organization emphasized the work environment as an important factor that influences individual/organization performance. Considering the importance of team operations of employees in the work environment, recent industrial organization research has been focusing on the peer interaction among team members in the workplace. Lazear (1998), for instance, indicated that the overall output of a company is greatly influenced by the interaction between peers within the organization. Previous literature discussing the effect of peer interaction within the workplace had mostly investigated the willingness of peers to help each other under different remuneration conditions (e.g., Drago and Garvey, 1998; Yang and Yang, 2009), only limited attention has been placed on the evaluation of the effects of direct peer influence on organization performance.

In order to bridge the gap between the two parallel literature, the present study attempts to investigate the effect of employee attitude and workplace peer interaction on the work performance of the TFAs' extension department. Contributions of the present study are two-folded. First, it could be drawn from the previous literature on organization behavior that the influence of work attitude as closely related to job stress, job involvement/organization commitment or job satisfaction, has been mostly investigated for the for-profit organizations. Attention to the relationship between performance and employee attitude or peer interaction for the non-profit organizations has been sparse. Through exploring the association between employee attitude and peer interaction with the non-profit organization's performance, the present study can provide a significant complement to the existing body of research.

The second contribution of this study concerns how peer interaction is modeled. Previous literature on peer interaction in the workplace considered unidirectional interactions. In Drago and Garvey (1998), for instance, the question related to worker's helping effort concerns if the employee "refuse to let other workers use their equipment, tools or machinery." That is, Drago and Garvey (1998) modeled the worker's engagement in active workplace interaction by making efforts in helping his/her colleagues. On the other hand, coworker interaction in the form of workplace sabotaging was modelled as a unidirectional relationship in Liu and Yu (2007). The present study considers two facets of peer interaction, active and passive interactions, as determinants of TFAs' performance. Moreover, social interaction is considered the "current practice in agricultural research and extension systems in developing countries" (Conley and Udry, 2010), extension personnel's interaction with workers in the neighboring farmers' associations is also considered. Thereby, this study contributes to the literature by providing a more comprehensive modelling of the patterns of social interactions in the non-profit organizations.

This paper is organized as following. In next section, the empirical model of group and individual performance evaluation is described and followed by a depiction of the data source. The last two sections present, respectively, the discussion of the results and the conclusions.

2. The Empirical Model

2.1. Group Performance

To evaluate the determinants of group performance for the extension department of TFAs',

this study applies the Probit model which treats winning the award (golden extension or outstanding production/marketing teams) or not as the dependent variable. According to the setup of the Probit model in Maddala (1983), the latent variable that is not directly observable is denoted as Y_i^* and defined as the following:

$$Y_i^* = \mathrm{g}_i(\mathrm{S}, \mathrm{JA}, \mathrm{SI}; \alpha, \beta, \gamma) - \varepsilon_i \tag{1}$$

In the above equation, Y_i^* represents the probability of the TAF's winning golden extension award. The award winning probability is determined by the vector of social-economic variables, S, and the vectors of job attitude (JA) and social interaction (SI), respectively. Social interaction includes peer interaction and the extension personnel's interaction with farming instructors in the neighboring farmers' association. The random disturbance in (1) is denoted as ε_i, which is assumed to be normally distributed and $E(\varepsilon_i \varepsilon_j) = 0, \forall i \neq j$.

Although the probability of winning the award is not directly observable, whether the extension personnel made their efforts and wins the award is observable, the indicator variable, y_i, which takes the value of 1 if wins the award and 0 otherwise, is defined as

$$y_i = \begin{matrix} 1 \;\; if \;\; \mathrm{g}_i(\mathrm{S}, \mathrm{JA}, \mathrm{SI}; \alpha, \beta, \gamma) > \varepsilon_i \\ 0 \;\; if \;\; \mathrm{g}_i(\mathrm{S}, \mathrm{JA}, \mathrm{SI}; \alpha, \beta, \gamma) \leq \varepsilon_i \end{matrix} \tag{2}$$

The expected value of the dependent variable is the probability of winning the golden extension award and can be expressed as

$$\begin{aligned} E(y_i) &= \Pr(y_i = 1) = \Pr(Y_i^* > 0) \\ &= \Pr\big(\varepsilon_i > -g_i(\mathrm{S}, \mathrm{JA}, \mathrm{SI}; \alpha, \beta, \gamma)\big) \\ &= \Phi(g_i(\mathrm{S}, \mathrm{JA}, \mathrm{SI}; \alpha, \beta, \gamma)) \end{aligned} \tag{3}$$

In (3), $\Phi(\cdot)$ is the CDF (Cumulative Density Function) of the standard normal distribution, the probability that $y_i = 1$ is $\Phi(g_i(\mathrm{S}, \mathrm{JA}, \mathrm{SI}; \alpha, \beta, \gamma))$, whereas the probability for the indicator variable to be zero is $\Phi(g_i(\mathrm{S}, \mathrm{JA}, \mathrm{SI}; \alpha, \beta, \gamma))$. Because the Probit model is nonlinear in essence, the sign of the estimate can only indicate the direction of the marginal influence and not the size, the marginal effect needs to be calculated in order to investigate the size of the predictor's influence.

If the predictor m_i is categorical, such as the *k*th social interaction, the marginal effect can be calculated according to

$$ME_{SI_k} = \Phi\big(g(\mathrm{S}, \mathrm{JA}, \mathrm{SI}; \alpha, \beta, \gamma | SI_k = 1)\big) - \Phi\big(g(\mathrm{S}, \mathrm{JA}, \mathrm{SI}; \alpha, \beta, \gamma | SI_k = 0)\big) \tag{4}$$

Marginal effect at the sample mean is calculated while holding all remaining predictors at their sample average. Similarly, the marginal effect for a numerical explanatory variable, such as the *k*th job attitude variable, is calculated as

$$\frac{\partial \Phi(g_i(\mathrm{S}, \mathrm{JA}, \mathrm{SI}; \alpha, \beta, \gamma))}{\partial JA_k} = \phi\big(g_i(\mathrm{S}, \mathrm{JA}, \mathrm{SI}; \alpha, \beta, \gamma)\big)\beta_k \tag{5}$$

$\phi(\cdot)$ in the above equation is the PDF (Probaility Density Function) of the standard normal distribution.

2.2 Individual Job Performance

If the independent variables are correlated with the population disturbance, the endogeneity problem can lead to biased estimation and thus bias statistical inference. In the present case, endogeneity is due to some unobservable characteristics of the TFAs may in fact influence the performance of individual extension personnel's performance and thus their group performance. In order to deal with the complications involved while examining if job attitude or peer interaction affect extension personnel's performance, we apply the fixed-effect model to explain individual personnel's job performance.

Assume there are *K* farmers' associations and each has N_k extension personnel. The *i*th extension personnel's performance is

$$Q_{ki} = \phi_k + \mathrm{S}_{ki}\alpha + \mathrm{JA}_{ki}\beta + \mathrm{SI}_{ki}\gamma + u_{ki}, i = 1, \cdots, N_k, k = 1, \cdots, K \qquad (6)$$

In the above equation, Q_{ki} is the performance of the *i*th extension personnel in the *k*th farmers' association. The vectors of social-economic variables, job attitude and social interaction are denoted respectively by S, SI and JA.

3. Data Source and Empirical Design

3.1 Data Source

A field survey was conducted in the year of 2011 by a National Science Foundation (today's Ministry of Science and Technology) funded project. The research population for this study is the extension personnel listed in the "Agricultural extension staff member roster" printed by the Taiwan Agricultural Extension Association. In consideration of sample representativeness and survey funding, we decided to send questionnaires to 300 agricultural instructors in the extension department sampling population. A final of 216 questionnaires were returned with a response rate of 71.5%, but only 209 responses were considered valid for the following analysis.

3.2 Variable Definition and Description

3.2.1 The Dependent Variable

The dependent variables include group and individual performance. The explanatory variables are divided into four categories: work performance, job attitude, peer interaction, instructor related personal variables, and extension department team variables, for the purpose of research. Variable definition and descriptions of the extension department are listed in Table 1.

We consider two kinds of definition for the award won by the farmers' associations for their outstanding extension service. The first definition is winning the golden extension award. The golden extension award is given to the farmers' association which excels in providing the extension service to the rural area and farm operators. The second definition of group performance is either winning the golden extension award or the outstanding production-marketing-team award which is specifically awarded to the extension personnel. Individual extension personnel's performance as a farming instructor is measured by their self-reported change in the production and marketing teams' increase in yield and sales, respectively.

Table 1. Variable Definition and Descriptive Statistics (Individual, Farming Instructors)

Variable	Definition	Mean	S.D.
Performance			
Outstanding PM team	Win the award (=1), otherwise (=1)	0.130	0.337
PM team (yield)	Instructed PM team's change in yield (in %)	2.636	11.994
PM team (sale)	Instructed PM team's change in sales (in %)	4.824	12.679
Work-related attitude			
Hours	Hours of weekly routine duties (hours)	13.415	10.179
Activities	Number of extension activities held last year	11.981	14.51
Projects	Number of projects participated last year	8.142	6.82
Licenses	Number of professional licenses	0.512	0.501
Attitudinal contagion	Affected by other's attitude (=1), otherwise (=0)	0.849	0.359
Social interactions			
Active peer interaction	Assist colleagues (=1), otherwise (=0)	0.713	0.453
Passive peer interaction	Assistance from peers (=1), otherwise (=0)	0.620	0.453
Neighboring interaction	Frequently interacts with neighboring instructors	0.731	0.444
Socio-economic characteristics			
Male	Male (=1), female (=0)	0.838	0.374
Number of children	Number of children in respondent's family	1.833	1.185
Married	Married (=1), otherwise (=0)	0.852	0.356
College & up	College or higher degree (=1), otherwise (=0)	0.713	0.453
Work experience	Experience working as a farming instructor (yrs)	12.473	9.839
EXP1	Years of experience <=3 (=1), otherwise (=0)	0.227	0.42
EXP2	3 < years of experience <= 9 (=1), otherwise (=0)	0.199	0.4
EXP3	9 < years of experience <= 24 (=1), otherwise (=0)	0.421	0.495
EXP4	Years of experience > 24 (=1), otherwise (=0)	0.153	0.361
Workshops	Number of workshops attended	5.619	4.882
Organization			
Training	Number of training programs provided last year	3.316	4.465
Scale	Number of extension personnel	2.167	1.466
Urban	population >50000 & agricultural population <40%	0.370	0.484
Rural	population <50000 & agricultural population >40%	0.274	0.448
Mixed	Not urban-type or rural-type	0.356	0.481

3.2.2 The Explanatory Variables

Judge et al. (2001) indicated that when the employees have a positive work attitude, work performance can improve effectively. A positive work attitude not only affects the employee's work performance directly; it can also affect the organization's performance due to affecting his/her colleagues' performance through peer interaction. Thus, in terms of variable selection, the present study includes individual work-related attitude variables to explain extension personnel's work performance and the TFAs' performance. Information related to employee work attitude came from four questions including "hours of contacts with farmers", "number of times of hosting agricultural extension activities," and "number of projects involved" and "number of professional licenses". As indicated in Sinha (2011) and Bull Schaefer and Palansk (2013), coworkers' attitudes can affect employee work attitude, this kind of attitudinal contagion is also considered as one of the attitude dimensions influential to work performance.

One of the focuses of the study is to delineate the relationship between social interactions and individual and organizational performances. We categorize on-the-job interactions into two types. The first type of peer interaction is that initiated by the farming instructor, which is measured with the question "I will take the initiative to ask my colleagues work related problems". The second type is the passive interaction between the farming instructor and the colleagues, and is measured with the question "I'm willing to accept work related assistance which my colleagues take the initiative to provide". In addition to on-the-job knowledge exchanges with peers within the same farmers' association, we also consider the extension personnel's interaction with neighboring agricultural extension workers.

The explanatory variables also include individual extension personnel's socio-economic characteristics, and the organizational characteristics of the farmers' associations. Socio-economic variables include gender, marital status, number of children, work experience, and educational level, whereas organizational characteristics include the types and locations of the farmers' association.

This study categorizes the farmers' associations into three types including urban, rural and mixed. Based on the types of farmers' association types defined in past research, the farmers' associations are classified into three different types according to local total population and the proportion of agricultural population. When local population is more than five million, with an agricultural population of less than 40%, it is defined as an urban-type. If local population is less than five million, with an agricultural population of more than 40%, it is defined as rural-type. Farmers' associations that do not belong to either of the two types are defined as mixed-type.

3.3 Descriptive Statistics

3.3.1 Individual Farming Instructor

Table 1 also reports the descriptive statistics for the farming instructors. Regarding the performance variables, there is approximately 12.8% of the farmers' associations was awarded the golden extension award, and around 13% of the production/marketing teams instructed by the extension personnel was awarded with the outstanding production-marketing-team award. As for the individual performances, among all the surveyed farming instructors, around 5% reported an increase in the sales of the instructed production/marketing teams, and a smaller proportion of 2.6% increase in yield was reported.

The gender ratio indicates that the majority of the farming instructors are male which takes approximately 83% out of the full sample. Around 85% of the farming instructors are married, whereas the average number of children for the extension personnel is 1.8, which is

consistent with Taiwan's population characteristics. As for the farming instructors' education level, the extension personnel with a college degree takes around 71%, indicating the majority of the extension personnel has a college degree. The distribution of respondent's work experience, extension personnel with less than or equal to 3 years, 3-9 years, 9-24 years and more than 24 years of work experience are, respectively, 22%, 19.91%, 42.13% and 15.28%. The average value of the work experience is about 12.5 years.

As for the variables of the work-related attitude, the instructor's average time of contacts with farmers per week was around 13.4 hours, and the times of holding extension activities in the past year reached an average of 12 times, with a frequency of one time per month. The farming instructors in our sample on average participated in 8 projects in the past year, whereas the number of professional licenses acquired is less than 1. One thing notable is that about 85% of the extension personnel reported that their colleagues' work attitude can affect theirs, which suggests the prevalence of attitudinal contagion among the extension personnel of the farmers' association in Taiwan.

This study considers three types of social interactions. The two on-the-job interactions include active peer interaction which takes around 71%, and the other is passive peer interaction that is slightly less than 60%. The statistics in Table 1 indicate that among the 216 farming instructors, approximately 76% of them interacted frequently with farming instructors in the neighboring farmers' associations. The bottom panel of Table 1 reports the characteristics of the farmers' associations surveyed. Among the farmers' associations surveyed, 37% belongs to the urban-type, while the rural-type farmers' associations accounted for around 27% of the surveyed farmers' associations. Farmers' associations located in the northern, central and southern areas take respectively 19%, 38% and 35%.

3.3.2 The Extension Department

From the aspect of group performance, the determinants considered including farming instructors' work-related attitude and social interactions in the extension department of the working associations were averaged to measure the impact of various team traits on the performance. From the group statistics reported in Table 2, in terms of social interaction behavior, on average the proportion of farming instructors in the same association who ask questions from their peers was 71.3%, and the proportion of peers providing assistance was 59.4%. The average proportion of males in the extension department is as high as 83.3%, while the proportion of married instructors is 88.1%, the average number of children is 1.947, and the average work experience of the team is approximately 13 years. As for the proportions of four experience groups, the average work experience of the team with less than or equal to 3 years, 3-9 years, 9-24 years and more than 24 years of work experience are, respectively, 17.8%, 21.9%, 45.2% and 15.1%. The average team educational level with college or higher degree is 68.5%.

Work-related variables, such as the average time of contacts between instructors and farmers by the extension departments, was 13.9 hours, the average number of extension activities held by the extension department was 12.35, and the average number of projects that each extension department involved was 8.756. The average proportion of instructors holding professional licenses in the extension department reached 54.8%, while the average proportion of instructors in the team interacting with the instructors of the neighboring farmers' associations was 76.3%. Other organizational characteristics are the same as those reported in Table 1.

Table 2. Variable Definition and Descriptive Statistics (Group, Extension Departments)

Variable	Definition	Mean	S.D.
Golden extension	Win the award (=1), otherwise (=0)	0.128	0.335
Outstanding PMTs	Instructed PM team wins the award (=1), otherwise (=0)	0.115	0.293
Work-related attitude			
Hours	Average hours of weekly routine duties	13.90	10.60
Activities	Average number of extension activities held last year	12.35	12.26
Projects	Average number of projects participated last year	8.756	7.085
Licenses	Average number of professional licenses	0.548	0.460
Attitudinal contagion	% of workers whose attitude is affected by others	0.841	0.347
Social interactions			
Active peer interaction	% of workers providing assistance to colleagues	0.713	0.423
Passive peer interaction	% of workers receiving assistance from colleagues	0.594	0.462
Neighboring interaction	% of workers frequently interacts with neighboring peers	0.763	0.392
Socio-economic characteristics			
Male	% of male extension personnel	0.833	0.344
Number of children	% of male extension personnel	1.947	1.056
Married	% of married extension personnel	0.881	0.290
College & up	% of extension personnel with a college or higher degree	0.685	0.437
Work experience	Experience working as a farming instructor (yrs)	13.395	9.998
EXP1	% of workers with ext experience <= 3 yrs	0.178	0.384
EXP2	% of workers with ext experience >3 yrs & <= 9 yrs	0.219	0.415
EXP3	% of workers with ext experience >9 yrs & <= 24 yrs	0.452	0.499
EXP4	% of ext personnel with ext experience >24 yrs	0.151	0.359
Workshops	Average number of workshops attended	5.538	4.305
Organization			
Training	Number of training programs offered last year	3.624	4.953
Scale	Number of extension personnel	1.510	1.031
Urban	population >50000 & agricultural population <40%	0.370	0.484
Rural	population <50000 & agricultural population >40%	0.274	0.448
Mixed	Not urban-type or rural-type	0.356	0.481
North	Located in the northern area (=1), otherwise (=0)	0.192	0.395
Central	Located in the central area (=1), otherwise (=0)	0.384	0.488
South	Located in the southern area (=1), otherwise (=0)	0.349	0.478
East	Located in the eastern area (=1), otherwise (=0)	0.075	0.265

4. Empirical Results and Discussion

4.1 Determinants of the Group Performance

The first part of this study concerns investigating the determinants of the performance for the extension department of the TFAs. To achieve this end, we estimate the Probit model which accommodates for the identification of the influential factors for a discrete choice variable. We consider two kinds of definition for the award won by the farmers' associations for their outstanding extension service. The first definition is winning the golden extension award and the second is either winning the golden extension award or the outstanding production-marketing-team award which is specifically awarded to the extension personnel.

Table 3 lists the maximum likelihood estimates of the coefficients and marginal effect for the golden extension award determining model. The explanatory variables are all in their organizational-level averages. Results in Table 3 indicate that among the team-level social and economic variables, farmers' associations with more of the extension personnel's work experience lying between 6 to 9 years have a higher probability, approximately 15%, of winning the golden extension award. This result suggests the presence of the learning effect, which implies that the overall performance can be improved with the accumulation of work experience of the organization members. The other socio-economic variable that exhibits positive influence on the probability of winning golden extension award is the proportion of married workers in the extension department, which is consistent with our expectation that the married workers may devote more time and effort to their work due to larger opportunity cost when facing a salary cut or job loss.

The results in this study, nevertheless, indicate that the number of children in the worker's family has a negative impact on the probability of winning the golden extension award. The increase in the average number of children will reduce the extension department's chance of winning the golden extension award by about 13%. This result suggests parenting may crowd out the extension personnel's work effort, and thus the group performance. The other factor that produces the crowing-out effect on work effort is the number of times the extension personnel attends workshops which may not be related to the extension work. This crowding-out effect, however, is relatively small in terms of magnitude.

The work attitude of the extension personnel is found to be an important variable that affects group performance. The empirical results in Table 3 indicate that the average number of professional licenses acquired by the extension staff of the department is a positive determinant for the group performance. The increase in the number of work-related license on average will increase the TFA's probability of winning the golden extension award by approximately 17%. The possible explanation lies in the fact that licenses require extra off-work time and effort to acquire, which can thus reflect the high self-expectation the extension personnel have for themselves. Therefore, farmers' associations with more of the professional licenses on average will have better group performance. None of the three types of social interactions, however, was found to be significant determinants for the extension department's group performance measured by winning the golden extension award.

The location and types of the farmers' associations were found to be influential to the extension department's group performance. Results in Table 3 reveal that the mixed-type farmers' associations had a 10.1% higher chance of receiving golden extension award than rural farmers' associations. This result may be due to the fact that the extension department of the farmers' associations is funded by the surplus of the entire organization. As a matter of fact, the surplus of the farmers' associations is positively correlated with the degree of urbanization.

Table 3. ML Estimates of the Determinants for Golden Extension Award

Variable	Estimate	S.E.	M.E.
Work-related attitude			
Attitudinal contagion	-0.366	0.466	-0.046
Hours	-0.014	0.016	-0.002
Activities	0.025	0.016	0.003
Projects	-0.014	0.028	-0.002
Licenses	1.310***	0.468	0.166
Social interactions			
Active peer interaction	0.091	0.410	0.012
Passive peer interaction	0.188	0.419	0.024
Neighboring interaction	-0.088	0.508	-0.011
Socio-economic characteristics			
Male	-0.143	0.491	-0.018
Children	-1.000***	0.251	-0.127
Married	3.249***	0.935	0.413
College & up	-0.351	0.403	-0.045
EXP2	1.196**	0.526	0.152
EXP3	0.691	0.460	0.088
Organization			
Workshops	-0.193***	0.066	-0.024
Training	-0.084	0.076	-0.011
Scale	0.617***	0.149	0.078
Northern area	-1.593**	0.737	-0.202
Central area	-1.038*	0.631	-0.132
Southern area	-0.993	0.661	-0.126
City-type	0.614	0.465	0.078
Mixed-type	0.854	0.521	0.108
Constant	-2.626**	1.123	

Note: ***, ** and * denote significant at 1%, 5% and 10%.

The mixed-type farmers' associations have a higher degree of urbanization than the rural ones, therefore farmers' associations of this type are more abundant in funds and resources to be devoted to extension service. Accordingly, the performance of the extension department in the mixed-type farmers' associations is comparably better, and thus leads to higher chances of winning the golden extension award. In addition, the results in Table 3 also indicate that, compared with the eastern farmers' associations, the chances of winning the golden extension

by the farmers' associations located in the northern and central areas are 20% and 13% lower, respectively. Furthermore, the other group characteristics—number of extension personnel—is found to be one of the determinants that has positive effect on the extension department's probability of winning the golden extension award.

Table 4. ML Estimates for Determinants of Group and/or Individual Award

Variable	**Estimate**	**S.E.**	**M.E.**
Work-related attitude			
Attitudinal contagion	-0.812**	0.391	-0.191
Hours	-0.012	0.013	-0.003
Activities	0.025*	0.013	0.006
Projects	-0.015	0.021	-0.003
Licenses	0.678**	0.316	0.160
Social Interactions			
Active peer interaction	0.358	0.358	0.085
Passive peer interaction	-0.02	0.315	-0.005
Neighboring interaction	-0.055	0.382	-0.013
Socio-economic characteristics			
Male	0.275	0.417	0.065
Children	-0.267	0.179	-0.063
Married	1.065*	0.559	0.251
College & up	-0.349	0.311	-0.082
EXP2	0.692*	0.37	0.163
EXP3	-0.082	0.353	-0.019
Workshops	-0.092**	0.04	-0.022
Organization			
Training	0.039	0.03	0.009
Scale	0.587***	0.144	0.138
Northern area	-0.841	0.613	-0.198
Central area	-0.276	0.547	-0.065
Southern area	-0.478	0.538	-0.113
City-type	0.003	0.338	0.001
Mixed-type	0.724**	0.35	0.171
Constant	-1.538*	0.812	

Note: ***, ** and * denote significant at 1%, 5% and 10%.

Results reported in Table 4 are the maximum likelihood estimates for the model with the

second definition of group award, i.e., winning the golden extension award or the outstanding production-marketing-team award which is specifically awarded to individual extension personnel. In addition to the evaluation of the entire extension department, this definition of award also takes into account the individual-based evaluation of group performance.

The results for the second definition of award are similar to that obtained using the golden extension award as the only measure of group performance. However, there are some interesting differences revealing the importance to take account for the individual member's performance while evaluating the overall group performance. Notably, results in Table 4 indicate that there are three work-related attitude measures that can significantly affect the probability of winning outstanding extension award to the extension department or individual extension personnel.

The estimate of attitudinal contagion is statistically significant and negative, indicating that attitudinal contagion is a significant determinant that can have adverse effect on group performance. According to Sestak (2008), Bull Schaefer and Palansk (2013) and Sinha (2011), past empirical research found that colleagues' emotion or attitude at work, especially that of the leader's, is associated with employee work attitudes and performance. Our finding of negative influence of the attitudinal contagion on the extension department's group performance is actually consistent with previous studies.

The other two work-related attitudes found to significantly affect the extension department's probability of award winning are "number of projects involved" and "number of professional licenses". This result confirmed Judge et al. (2001) and others' contention that employees' positive work attitude can effectively promote better work performance since the two variables reflect the extension personnel's willingness to devote time and efforts to the extension work as well as a higher self-expectation for themselves and their work.

4.2 The Determinants of Individual Work Performance

Individual extension personnel's performance is measured by their self-reported change in the production and marketing teams' increase in yield or sales, respectively. The determinants of individual performance are reported in Table 5. Compared with our analysis of determinants of group performance, the determinants of individual extension personnel's work performance, measured in the yield or sales increment of the advised production and market team, is similar but with a couple of notable differences.

Results in Table 5 indicate that among the socio-economic variables, extension personnel with work experience lying between 6 to 9 years have a better performance, in terms of raising the percentage increment in sales of the advised production-marketing teams. This result suggests the presence of the learning effect, which concurs the results in our evaluation of the extension department's group performance. The other socio-economic variables that exhibit significant influence on individual extension personnel's performance are the marriage status and the number of children, the former of which exhibits a positive effect whereas the latter a negative effect, on individual extension personnel's job performance. The results indicate individual job performance varies with employee's socio-economic characteristics. The number of times the extension personnel attends workshops, which is found to mitigate group performance, however, is not a significant determinant of individual performance.

The results in Table 5, along with that in Tables 3 and 4, reveal the pronounced effect of work-related attitude on both group and individual performance. Two of the work-related attitudes of the extension personnel are found to be important factors that affect individual job performance. The two work-related attitudes are number of projects involved and professional licenses held by individual extension personnel. The two variables reflect the high self-expectation the extension personnel have for themselves as well as the extra time and efforts devoted to their extension work. The results, therefore, suggest that work-related

attitudes including high job involvement and self-expectation towards the work produce pronounced positive influence on extension personnel's individual performance. Nevertheless, attitudinal contagion that is found to significantly dampen the extension department's group performance, is not a significant determinant for individual job performance.

Table 5. Fixed Effect Estimates of Individual Performance

Variable	Yield	S.E.	Sale	S.E.
Work-related attitude				
Attitudinal contagion	-1.671	1.224	-2.324	2.135
Hours	-0.015	0.068	-0.071	0.071
Activities	-0.035	0.043	0.004	0.049
Projects	0.162*	0.095	0.125	0.102
Licenses	2.789*	1.556	2.801*	1.452
Social interactions				
Active peer interaction	-3*	1.741	-3.189	2.123
Passive peer interaction	0.948	1.681	4.524**	1.852
Neighboring interaction	-0.557	1.939	-3.285	1.992
Socio-economic characteristics				
Male	-0.364	1.669	-2.543	1.7
Children	-2.01**	0.839	-1.919*	1.051
Married	8.46**	3.238	7.281**	3.48
College and up	-1.503	1.394	0.873	1.543
EXP2	1.388	2.127	4.908*	2.716
EXP3	-2.374	1.617	-0.639	1.845
EXP4	-4.452**	2.083	-1.204	2.28
Organization				
Workshops	-0.131	0.143	-0.209	0.168
Training	0.714***	0.211	0.636***	0.219
Scale	-0.291	0.557	0.119	0.462
City-type	-3.348**	1.669	0.394	1.801
Mixed-type	0.765	1.982	5.48***	1.846
Constant	2.874	3.025	2.651	2.991

Note: ***, ** and * denote significant at 1%, 5% and 10%.

One of the notable differences in our analyses of the group and individual performances concern the significant influence of social interactions on individual extension personnel's job performance. Social interactions include active peer interaction, passive peer interaction and

interactions with the extension personnel from the neighboring farmers' associations, were not found to be significant determinants in the group performance analysis. However, results in Table 5 suggest the positive influence of peer interaction when the extension personnel receive assistance from their colleagues, whereas, active peer interaction which indicates the extension personnel's active attitude in initiating assistance to their colleagues is found to produce a negative influence on individual performance. This result reflects the crowding-out effect of work time due to the extension personnel's active peer interaction with the work colleagues.

5. Conclusions and Policy Implications

This study presents an in-depth study in identifying the determinants of the extension department's performance for TFAs. Through exploring the association of employee attitude and/or social interactions to the non-profit organization's performance, the present study can render important policy implications.

The results in this study indicate that both the individual and group performance vary with the extension personnel's marriage status and number of children. Among the five measures of work-related attitude, those reflecting the extension personnel's willingness to devote time and efforts as well as their holding high self-expectation for themselves and work, are found to have positive influence on the group and individual performances. This result confirms the view that employees' positive work attitude can effectively promote better work performance even in a non-profit organization. Nonetheless, attitudinal contagion is found to have an adverse effect on group performance. As for the effects of social interactions, neither on-the-job interaction nor neighboring interaction is found to be a key factor to the performance of the extension department. However, the former is found to be significant determinants for individual performance.

Two important policy implications can be inferred from the present study. First, in order to improve the performance of extension personnel's service, the results in this study suggests paying full attention to employee work-related attitude since it is crucial for organization success even in a non-profit organization such as the farmers' associations. Second, due to the persistent influence of attitudinal contagion on the performance of the extension department, the findings in this study suggest the need for a routine monitor of the work atmosphere or one-by-one consultation with the extension personnel in order to improve their work performance.

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