

## **Mediation Test for Self-Efficacy on the Relationship between Individual-Related Factors and Knowledge Sharing Behaviour among Malaysian Farmers**

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### **Abstract**

This study is to investigate the predictors of knowledge sharing behaviour and mediating variable of self-efficacy among successful farmers in selected Malaysian states. In Malaysian agriculture context, knowledge sharing behaviour of successful farmers formally and informally occurs during training, farm visits and also through discussions. However, current practices among farmers in the sharing process are unstructured and lack clarity. To date, there is no certain mechanism or coordination, which can be followed and properly implemented, leaving the issue unclear and unresolved. Hence, examining how individuals' personal factors affect shape successful farmers' knowledge sharing behaviour is imperative in order to formulate a strategy towards encouraging knowledge sharing culture in the agriculture community. This study was quantitative in nature and involved a total of 241 farmers as the respondents. The findings indicates that self-efficacy mediates the relationship between prior experiences on knowledge sharing behaviour. In contrast, it was found that self-efficacy did not mediate the relationship between training and knowledge sharing behaviour. This study hopes to provide knowledge especially for extension agents and department of agriculture to give attention on individual-related factors which could influence self-efficacy and thereby provide practical means to improve knowledge sharing behaviour among farmers in Malaysia.

**Keywords:** Training, Prior Experience, Self-Efficacy, Agriculture Development, Farmers

### **Introduction**

In the Malaysian agricultural context, knowledge sharing behaviour of successful farmers occurred formally and informally during training, farm visits and also through discussions. However, though current practices of sharing process happen formally and informally, it is unstructured and lack clarity. To date, there is no certain mechanism or coordination, which can be followed and properly implemented, leaving the issue unclear and unresolved.

In spite of the voluminous number of knowledge sharing behaviour studies (e.g. Babalhavaeji & Kermani, 2011; Goh & Sandhu, 2013; Jeon, Kim & Koh, 2011; Tohidinia & Mosakhani, 2010) interestingly, not much light has been shed on the factors influencing knowledge sharing behaviour among successful farmers. The factors that influence successful farmers to participate in knowledge sharing activities are uncertain and still vague. According to Sandhu, Jain and Ahmad (2011), most research on knowledge sharing behaviour focus more on private organisations rather than the public sector.

Some researchers also report that the limited studies available are mostly focused on knowledge management and not knowledge sharing behaviour (McAdam & Reid, 2000). This has raised the concern to further examine the phenomenon of knowledge sharing in the agricultural context.

Contextually, available studies in the agricultural context are giving more attention to the role of mass media in the dissemination of agriculture technologies diffusion and technologies (e.g. Chhachhar, Hassan, Omar & Soomro, 2012; Farooq et al., 2007; Irfan, Muhammad, Khan & Asif, 2006), adoption among farmers (e.g. Agwu, Ekwueme & Anyanwu, 2008; Sinja et al., 2004; Tiraieyari, Hamzah & Abu Samah, 2014), and also the effectiveness of agriculture extension services and farmer field schools (Akinngbe & Ajayi, 2010; Chowa, Garforth & Cardey, 2013; Nathaniels, 2005). Therefore, there is a growing interest for further research on knowledge sharing behaviour in the agricultural context.

Furthermore, studies on knowledge sharing behaviour have employed samples such as senior managers (Lin & Lee, 2004), paddy farmers (Kamarudin, Aziz, Zaini & Ariff, 2015), Farmer Field School (FFS) graduates (Ebewore, 2012; Rola, Jamias, & Quizon, 2002), public sector employees (Sandhu, 2011), manufacturing employees (Fathi, Eze & Goh, 2011), university students (Wei, Choy, Chew & Yen, 2012) and bank employees (Tan, 2010). Hence, there is a lack of studies focusing on farmers, especially successful farmers.

While the availability of numerous literatures speaks about knowledge sharing behaviour, the use of self-efficacy as a mediating variable in knowledge sharing research is still lacking. This study found out that not many studies have used self-efficacy as a mediating variable in knowledge sharing research (Endres et al., 2007; Tan & Md. Noor, 2013; Zhang & Ng, 2012). Review of literatures revealed that studies involving self-efficacy as mediating variables are in the area of academic motivation (Feyter, Caers, Vigna & Berings, 2012), career intention (Barnir, Watson & Hutchins, 2011), organizational citizenship behaviour (Mansor, Darus & Dali, 2013) and also in treatment adherence (Maeda, Shen, Schwarz, Farrell & Mallon, 2013). Some researchers have employed self-efficacy as a mediating variable but they focused on other criterion variables such as goal setting and performance (Appelbaum & Hare, 1996), ethical leadership (Ma, Cheng, Ribbens & Zhou, 2013), technological creativity for sports (Wu, Lee, & Tsai, 2012), and perceived academic climate (Abd-Elmotalieb & Saha, 2013). In addition to that, existing studies focus more on self-efficacy as a predictor for knowledge sharing behaviour (Bock, Zmud, Kim & Lee, 2005; Kankanhalli et al., 2005; Lin, 2007; Shaari, Rahman & Rajab, 2014; Tsai & Cheng, 2012). Therefore, in this current study, self-efficacy is employed as a mediating variable since there is little research testing the mediation effect of self-efficacy on knowledge sharing particularly in the agricultural context.

Inspection of previous studies has shown that the relationship between individual-related factors (training and prior experience) with self-efficacy had been given little attention (Endres, Endres, Chowdhury & Alam, 2007; Lin, Hung & Chen, 2009; Zhou, 2008). In addition to that, much knowledge sharing behaviour research is concentrated in Western and South-East Asian countries (Tohidinia & Mosakhani, 2010). Hence, there is a need to study about knowledge sharing behaviour particularly in the Malaysian agricultural context to bridge the gaps in the literature.

### **Review of Literature**

Self-efficacy Mediates the Relationship between Individual Related Factors and Knowledge Sharing Behaviour.

Considerable evidence has indicated that individual-related factors are associated with self-efficacy (Compeau & Higgins, 1995; Gist, 1989b; Li, 2013; Potosky, 2002; Tai, 2006; Torkzadeh & Van Dyke, 2002). In this study, training and prior experience were chosen to explain successful farmers' self-efficacy towards knowledge sharing behaviour.

### **Training and Self-efficacy**

Beas and Salanova (2006) pointed out that self-efficacy is an important variable that is located in the phase of pre-training or prior to training. Researchers in the past have also studied how individual self-efficacy may be improved through training (Cabrera et al., 2006; Gist, Schwoerer & Rosen, 1989; Gist, 1989). A study involving a sample of local senior high schools in Taiwan by Chou (2001) found out that behaviour-modelling training was positively associated with higher computer self-efficacy ( $r = .127$ ,  $p < .05$ ). Similarly, Torkzadeh, Chang and Demirhan (2006) investigated the relationship between training and self-efficacy using 347 samples of business undergraduates at a large State University in the Southwest region of the United States.

Using a paired t-test procedure, their results suggest that the mean score differences between pre and post training was relatively high, which indicated respondents' self-efficacy levels improved significantly after the course ( $t = -4.25$ ,  $p < .01$ ;  $t = -5.22$ ,  $p < .01$ ). Employing a sample of up to 140 workers using computer-aided technology in their jobs, Salanova, Grau, Cifre and Llorens (2000) argued that computer training seems to increase computer self-efficacy, but only when workers had high previous levels of computer self-efficacy. Their results show that frequency of usage and computer training are positively associated with computer self-efficacy ( $r = .23$ ,  $p < .01$ ).

In another study, Smith, Caputi and Rawstorne (2000) also indicated that computer confidence had a significant positive correlation with previous training in a sample of 179 psychology undergraduate students ( $r = .25$ ,  $p < .01$ ) while Tai (2006) found a significant relationship between framing and self-efficacy. According to Tai (2006), framing refers to pre-training information and preparation that would in turn increase trainees' motivation to learn and form higher self-efficacy. In this study, the term 'framing' is to reflect the relationship between training and self-efficacy.

### **Prior Experience and Self-efficacy**

Prior experiences play an important role in forming individuals' self-efficacy when he or she becomes familiar with a particular behaviour (Compeau & Higgins, 1995). In Management

Information System (MIS) studies, several researchers have suggested that prior computer experience have significant effects on computer self-efficacy. Ajzen (2002) examined and compared the unique influence of the eight types of computer experiences on computer self-efficacy beliefs. His findings illustrated that experience with programming languages ( $\beta = .18$ ,  $p < .01$ ) and graphics applications ( $\beta = .20$ ,  $p < .03$ ) had the strongest significant impact on computer self-efficacy beliefs.

An empirical study by Potosky (2002) involving 56 newly hired computer programmers which explored potential antecedents of post training computer self-efficacy beliefs regarding trainees' programming capabilities, showed that prior computer knowledge and experience were positively related to post training efficacy ( $r = .28$ ,  $p < .05$ ). Subsequently, the result was then in agreement with a cross-sectional study conducted by Ineson, Jung, Hains and Kim (2013) which employs 326 undergraduate hospitality students in three higher education institutions in the United Kingdom, Australia and Switzerland. Their findings revealed that prior knowledge in hospitality was positively related to self-efficacy ( $r = .31$ ,  $p < .001$ ).

In regards to motivational influences on computer-related affective states, Coffin and MacIntyre (1999) discovered that previous experience with computers was an important factor in determining self-efficacy among students. Their study concluded that as students gain more experience with computers, their perceptions of computer-related self-efficacy increases ( $r = .28$ ,  $p < .05$ ). Lu and Hsiao (2007) on the other hand, examined behavioural motivations underlying individual intention to keep using blogs in Taiwan. Using a randomized survey data collected from 155 bloggers, they discovered that experience of sharing information on blogs, significantly and directly affected knowledge self-efficacy ( $\beta = .38$ ,  $p < .01$ ). As suggested by Lu and Hsiao (2007) suggested that knowledge sharing experience has a significant relationship with knowledge self-efficacy. In this study, it should be noted that the term knowledge sharing experience is referred to prior experience.

## **Methodology**

### *Research Design*

This quantitative study adopted a descriptive cross-sectional design. A self-administered structured questionnaire was used for data collection.

### **Population and Sampling**

The targeted population of this study is successful farmers under the supervision of the Department of Agriculture, Malaysia. This research focused on successful farmers with monthly income of RM3,000 per month. Within the scope of this study, successful farmers were chosen as they actively participated in knowledge sharing activities. The states that recorded the highest number of successful farmers are Negeri Sembilan (257) followed by Selangor (144) and Johor (110) and were selected as the population of this study. This study assumes that the statistics reflected the knowledge sharing activity among successful farmers. As pointed out by Kamarudin et al. (2015), farmers who actively participated in knowledge sharing activities possess higher knowledge sharing behaviour which will then lead to successful and more productive farmers.

Following Green (1991), there are two procedures used to determine multiple regressions sample sizes. He suggested a minimum sample size of  $50 + 8k$ , (where  $k$  is the number of IVs)

for testing a multiple correlation and minimum sample size of  $104 + k$  for testing the individual predictors. Therefore, with six factors (five independent variables and one mediating variable), this study needs a sample of  $50 + 8(6) = 98$ . For individual factors, the sample size required is  $104 + 5 = 109$ . For both methods, Green (1991) further suggested that it is advisable to use the largest value. Thus, following Green (1991) the minimum sample size for this study is 109. The second technique used to determine sample size for this study is by using Raosoft ([www.raosoft.com](http://www.raosoft.com)). By using Raosoft, the margin of error is set at 5% with the confidence level of 95% and population size of 805; the recommended sample size is 261.). Based on all the methods described above the minimum and maximum sample size for the study were 106 and 261 respectively. The suggestions by these scholars were in line with Hair et al. (2010), who accentuate on the range of sample size of 200-300 is mostly used in SEM application.

Via a proportionate random sampling technique, a total of 261 respondents among farmers in Negeri Sembilan, Selangor and Johor were selected. Negeri Sembilan was represented by 131 respondents, Selangor was represented by 74 farmers and Johor was represented by 56 farmers.

### **Instrumentation**

A structured survey questionnaire was employed to gather the data of this study. The questionnaire was developed in both Malay and English languages, taking into account that the respondents come from different backgrounds. In this study, respondents were asked for information that generated (primary) quantitative data. The instruments used in this study were taken from established instruments developed by past researchers. The wording of the items was adapted to the context of the agriculture.

### **Knowledge Sharing Behaviour**

Knowledge sharing behaviour uses eight items from the scale developed by Jeon et al. (2011) and Hsu et al. (2007). This unidimensional scale measured the frequency of successful farmers engaging in knowledge sharing activities. Successful farmers are requested to indicate the extent to which they agree with the statements using response options ranging from 1 (strongly disagree) to 5 (strongly agree). Sample items included "I frequently participate in knowledge sharing activities with other farmers". The composite reliability of this scale is .92.

### **Self-efficacy**

Self-efficacy was measured using five items developed by Hsu et al. (2007). This unidimensional scale measured successful farmers' judgement of their capabilities to engage in knowledge sharing behaviour. This measure required successful farmers to indicate their level of self-efficacy using a five-point response option ranging from 1 (not at all confident) to 5 (totally confident). An example of item was "I am confident in sharing my agriculture experiences, insight or expertise with other farmers". The composite reliability of this measure is .93.

### **Training**

The measurement of training was adapted from Kang et al. (2008) and Tai (2006) which consists five items. This unidimensional scale measured successful farmers' perceptions on the benefits of training to them. This measure required successful farmers to indicate the

extent to which they agree with the statements using the five-point response options ranging from 1 (strongly disagree) to 5 (strongly agree). An example of item was "Agricultural training program would be helpful to my job as a farmer". The composite reliability of this item measure is. 95.

### **Prior Experience**

Prior experience was measured using four items developed by Tai (2006) and Lu and Hsiao (2007). The unidimensional scale measured successful farmers' experience in knowledge sharing activity. Successful farmers were requested to indicate the extent to which they agree with the statements using response options ranging from 1 (strongly disagree) to 5 (strongly agree). Sample items included "I have much experience in sharing valuable or interesting agriculture information with others via knowledge sharing activity". The composite reliability of this item measure is. 93.

### **Data Collection**

Data collection processes began after the written approval from the Director was obtained to support and encourage the sample's response in this research. A brief research proposal with a sample of the questionnaire was attached together with the permission letter. Each questionnaire was attached with a letter of appreciation for the respondent's contribution. All the questionnaires were sealed in an envelope. Data collection was conducted between February 2015 and April 2015. Before the data collection began, the objective of the research was explained to the head of the department and the District Agriculture Officers. The questionnaires were distributed accordingly to the respective respondents during a biweekly visit conducted by the District Agriculture Officers. Tokens were given to all respondents upon completing the survey. The response rate for this study is 92.3% (241), which is sufficient to conduct the PLS-SEM analysis.

### **Analysis**

This study utilized the SPSS (version 22) and Partial Least Square (PLS) approach of structural equation modelling via SmartPLS 2.0. The mediating effect of self-efficacy on the relationship between individual related factors (i.e., training and prior experience) and knowledge sharing behaviour was tested using the two steps approach by Hayes (2009), Iacobucci et al. (2007) and Mackinnon et al.(2007).

### **Results**

#### *Demographic Profiles*

Results show that 90% (217) of the respondents were male and 10% (24) were female. About 61.8% (149) of the respondents were Malays, 34.3% (83) Chinese and 3.7% (9) were Indian. This indicated that the majority of the respondents involved are Malays. In terms of their educational levels, about 54.8% (132) of the respondents were SPM holders, 25.7% (62) with PMR, 6.2% (15) bachelor's degree, 5.8% (14) with Pre-Uni/STPM, 4.6% (11) other qualifications (agriculture certificate) and 2.9% (7) with master's degrees. Hence, it shows that respondents for this study come from all levels of education and majority were SPM holders. The results also indicated that 33.6% (81) of the respondents are involved with vegetables cultivation, 26.1% (63) fruits, 13.3% (32) industrial crops, 8.7% (21) fruits and vegetables, 5.8% (14) herbs, 4.6% (11) floriculture, 1.2% (3) vegetables and industrial crops and others crops respectively and 0.8% (2) were involved in fruits and industrial crops and vegetables and crops

respectively. The result shows that most of the respondents were fruits and vegetables growers. A majority of respondents have agriculture experience and have been involved in agricultural activities 97.5% (235) whereas only 2.5% (6) of the respondents did not have any experience prior to involvement in agriculture activities.

Results show that 45.2% (109) of the respondents are between 41 to 50 years old, 34% (82) are more than 51 years old, 18.7% (45) are between 31 to 40 years old and only 2.1% (5) of the respondents are below or aged 30. This implies that the respondents of this research are among the middle age farmers. Concerning their experience in agriculture, 44.4% (107) has 6 to 10 years' experience in agriculture, followed by 5 years and below at 24.1% (58), 11 to 15 years at 16.2% (39), 15 to 20 years at 10% (24) and 5.4% (13) of the respondent has more than 21 years of experience in agriculture. These results indicated that the majority of the respondents in this research already have knowledge about agriculture. A total of 75.1% (181) of the respondents have a monthly income between RM 3,000 to RM5,000 followed by 9.1% (22) with more than RM 10,000. Next is RM 5,001 to RM 7,000 and RM 7,001 to RM9,001 with 5.4% (13) respectively and 5.0% (12) with a monthly income of RM 9,001 to RM10,000. This indicates that the majority of the respondents' monthly income are within the range of RM 3,000 to RM5,000.

### **Descriptive Results of the Factors Studied**

#### *Knowledge Sharing*

The average mean score for knowledge sharing behaviour is 4.05 with a standard deviation of .52. Most of the respondents (73%) are perceived to engage in a high level of knowledge sharing behaviour followed by a moderate level of 27%. None of the respondents of this study demonstrated low level of knowledge sharing behaviour. Hence, it could be concluded that the level of knowledge sharing behaviour among successful farmers in Johor, Negeri Sembilan and Selangor is high.

#### **Self-efficacy**

In this study, the level of self-efficacy among successful farmers in the three states i.e. Johor, Negeri Sembilan and Selangor was at a moderate level ( $M = 3.97$ ,  $SD = .63$ ). The study concluded that most of the successful farmers in Johor, Negeri Sembilan and Selangor perceived themselves as having a high level of self-efficacy.

#### **Training**

The findings indicated that the majority of the respondents had high perceptions of training (78%), with moderate levels at 21.1% followed by 0.8% low level of perception towards training. The overall average score of training was 4.19 with the standard deviation of .69.

#### **Prior Experience**

The findings indicated that most of the respondents (83%) perceive high prior experience. This was followed by 17% of the respondents perceiving moderate level of prior experience in agriculture. None of the respondents of this study demonstrated low level of perceived prior experience. The overall mean for this variable was 4.19 with a standard deviation of .58.

### Mediation Results

#### *Results of Mediation Test for Self-efficacy on the Relationship between Training and Knowledge Sharing Behaviour*

Based on Table 1, the beta value for the relationship between training and self-efficacy was not significant ( $\beta = -0.30$ ). However, the relationship between self-efficacy and knowledge sharing behaviour was significant ( $\beta = .476$ ,  $p < .01$ ). According to Hayes (2009), Iacobucci et al. (2007) and Mackinnon et al.'s (2007) two steps approach, if one path is not significant, there is no mediation and further investigation is deemed unnecessary. Hence, it can be concluded that self-efficacy did not mediate the relationship between training and knowledge sharing behaviour.

#### **Results of Mediation Test for Self-efficacy on the Relationship between Prior experience and Knowledge Sharing Behaviour**

Based on Table 1, the beta value for the relationship between prior experience and self-efficacy was significant ( $\beta = .435$ ,  $p < .01$ ). This indicates that both paths were significant and satisfies the Step 1 of Hayes (2009), Iacobucci et al. (2007) and Mackinnon et al. (2007) method. The result of bootstrapping analysis in Step 2 revealed that the mediation effect was significant ( $\beta = .207$ ,  $p < .01$ ) and T value (4.358) exceeded the critical value of 1.96 at a 95% significant level. Since both the relationships between prior experience to self-efficacy and self-efficacy to knowledge sharing behaviour were significant and the mediation effect was significant with t-value of 4.358, it was concluded that self-efficacy mediates the relationship between prior experience and knowledge sharing behaviour.

Table 1:

#### *Results of Mediation Test for Self-efficacy on the Relationship between Individual Related Factors and Knowledge Sharing Behaviour*

<b>Indirect Path</b>	<b><math>\beta</math></b>
Training → Self-efficacy	-.030
Self-efficacy → Knowledge Sharing Behaviour	.476***
Mediation effect	-.014
T Value	-.417
Prior Experience → Self-efficacy	.435***
Self-efficacy → Knowledge Sharing Behaviour	.476***
Mediation effect	.207***
T Value	4.358

### Discussion

The results showed that the effect of training on knowledge sharing behaviour was not mediated by self-efficacy. This implies that the inclusion of self-efficacy did not contribute to the significance of knowledge sharing behaviour. Results further showed that training did not have a direct relationship with self-efficacy. Due to insignificant results of the variables to the mediating variable, there was no need to test for mediation as recommended by Hayes (2009), Iacobucci et al. (2007) and Mackinnon et al. (2007).

The result of this current study did not support the findings of previous studies such as Torkzadeh et al. (2006) who investigated the influence of training with self-efficacy among

university students in the United States. This is similar to Salanova et al. (2000) who used 140 workers from five different Spanish companies from the tile sector and public administration. The justification for the differences in the results could be due to different contexts of study. Gist (1989) supported this notion that self-efficacy levels would vary depending on the training method. The discrepancy in the results may be due to different setting, nature of respondents or time factor. Moreover, successful farmers may sometimes lack interest in training programs that they feel are inappropriate considering their needs and job as an agriculture entrepreneur. Hence, this may contribute to the insignificant results between training and self-efficacy.

However, findings revealed that self-efficacy mediates the relationship between prior experience and successful farmers' knowledge sharing behaviour. This implies that the inclusion of self-efficacy had contributed to the significance of knowledge sharing behaviour. Results further showed that self-efficacy not only had a direct relationship with knowledge sharing behaviour among successful farmers, but it also mediated the relationship between prior experience and knowledge sharing behaviour. Thus, successful farmers who had prior experience in knowledge sharing were more likely to perceive higher self-efficacy which links to higher knowledge sharing behaviour.

Precisely, these findings highlighted the importance of prior experience and self-efficacy in explaining knowledge sharing behaviour among successful farmers in Johor, Negeri Sembilan and Selangor. An important distinction to note is that the findings also supported Ineson, Jung, Hains and Kim's (2013) and Potosky's (2002) studies who found a significant link between prior experience and self-efficacy.

### **Recommendation for Future Research**

The study has identified several avenues for future research. The current study employed a self-report cross sectional survey among successful farmers in selected Malaysian states. It would be more interesting if future researchers could consider doing qualitative research, as this kind of research may generate knowledge based on personal experience related to knowledge sharing behaviour. This study triggers more empirical research in understanding the phenomenon of knowledge sharing behaviour. It is interesting to note that this study is limited to samples of successful farmers in the agricultural context. Hence, it is proposed that future studies should test whether the present findings can be generalized for other small farmers.

Apart from that, this study uses individual perceptions for knowledge sharing behaviour ratings. Respondents may not be willing to admit their experience in knowledge sharing behaviour. Therefore, it is suggested that future research could look into other sources of information such as small farmers who might provide a different perspective with less bias. Employing a diverse sample from various categories of farmers could also minimize the issues of common method bias and enhance generalizability of the results.

### **Conclusion**

The findings revealed that self-efficacy mediated the relationship between prior experience and knowledge sharing behaviour. It is suggested that prior experience as important as self-efficacy, which influenced knowledge sharing behaviour among successful farmers in selected

Malaysian states. It is suggested that the Department of Agriculture not only encourage knowledge sharing behaviour among farmers, but also improve farmers' self-efficacy levels toward knowledge sharing activities. Having faith in their performance will affect the choices they make and the devotion to specific tasks such as knowledge sharing.

Furthermore, it can be concluded that individuals were inclined to engage in knowledge sharing behaviour if they possess certain characteristics. Successful farmers with high levels of prior experience were more inclined to involve in knowledge sharing behaviour. The findings of the study also contributed to knowledge sharing literature from the perspectives of individual-related factors since there is a lack of research involving farmers in the agricultural context.

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