Impact Assessment of Farmers' Self-efficacy on Successful Training: Evidence from Himachal Pradesh, India

ABSTRACT

Agricultural trainings have been fixated on transfer of knowledge which although is imperative but have failed to acknowledge the role that humans play in a successful training. The present investigation was carried out to assess the dynamics of self-efficacy, a social cognitive factor with respect to successful farmer training. The research was undertaken in the state of Himachal Pradesh with a total of 333 farmers who had been a part of training facilitated by Extension Education. The data was collected using a questionnaire through telephonic as well as face to face interviews. The data collected was analyzed using Statistical Package for Social Sciences. The reliability was measured using Cronbach's Alpha test. Statistical tools such as t-test, Correlation, Regression analysis and Sobel test was used to draw conclusion from the data. The results show that males have higher self-efficacy than females which determines their training experience. It was found that self-efficacy is positively correlated to learning and transfer of training of farmers to their farms. Regression analysis also supported the impact of self-efficacy on learning and extent of transfer. Finally, a mediating role of self-efficacy was also established between learning and transfer of training. The research findings presented in the paper holds relevance to a context wider than the research location of Himachal Pradesh where it was undertaken, and provides a new insight to the field of extension training. This research helps researchers and practitioners to view trainings from a different perspective that would ensures its success.

KEYWORD: Farmer training, Self-efficacy, Transfer of training,

INTRODUCTION

Agriculture, the backbone of the Indian economy, is one of the fastest growing sectors. In India, over half of the population lives in villages and 47 % of the workforce is in agriculture (Labour Bureau 2016). Primarily being an agrarian economy, agriculture and its allied sector has an improved contribution in total GVA (Gross Value Added) of 20.2 % for 2020-21 and 18.8 % for 2021-22 (Economic Survey 2021-22). This makes agriculture an imperative sector and farmers a dominant cog of the system. Given that there are 138 million agricultural holdings in India, out of which 85 % accounts for small and marginal farmers (Census 2014). Such extent of economic inequality among farmers is an indication of disparity in income and opportunity status for marginal farmers. To bridge this economic difference, the agriculture extension system has been working towards facilitating farmers with state-of-the-art information, knowledge and technology pertaining to agriculture. This directly helps promote farm productivity and enhance the economic status of farmers.

Extension has been playing an important role in agricultural development ever since the first green revolution (Babu et al., 2013). One of the mediums used by extension for capacity building is through facilitating farmers with training. Training is a method of attainment of knowledge, skills and attitude either as an introduction or improvement in a vocation (Sajeev et al., 2021). Training helps reduce the knowledge gaps which results in improved yield. The three-fold aim of training is to provide appropriate tools for improved work efficiency, to make individuals aware of recent developments and open up alternative ways to implement these social development programmes (Marsden and Peter 1998). There is a need to review technology

transfer mechanism in Indian agriculture, as the system stands weak, due to the limitations in the process. One such limitation in agricultural training is not giving due importance to the role and impact of farmers' psychological facets in a successful transfer of training. Amidst all the psychological variables, self-efficacy has its significance due to its relevance in the subject matter. Unfortunately, it still remains less dwelled upon in agricultural training. Self-efficacy is the assessment of a person's capacity to plan and carry out the actions necessary to obtain a certain outcome (Bandura 1997). People with higher self-efficacy establish challenging goals and are more motivated to use their newly acquired skills and knowledge in the workplace (Bandura 1986). Self-efficacy is also responsible for small indirect effect on behavioral intention to use technology (Koyu et al., 2021). It plays a vital role in transfer of training, also self-efficacy has been claimed to significantly and positively contribute towards the effectiveness of a training (Kumar et al., 2021). Self-efficacy being a subjective variable is a result of surroundings that influences performance, satisfaction and behaviour (Carleton et al., 2018). Self-efficacy determines whether a person is willing to assume a new behaviour (Compeau and Higgins, 1995), which under farmer’s context would help identify their willingness of adoption. The objectives of the research are as follows:

1. To assess the relation of demographic and farm factors to farmers' self-efficacy.
2. To evaluate how self-efficacy affects farmers' learning.
3. To evaluate the impact of self-efficacy on transfer of training.
4. To establish a mediating role of self-efficacy in the transfer of training.

METHODOLOGY

The study was carried out at the Dr. Yashwant Singh Parmar University of Horticulture and Forestry's Directorate of Extension Education in Nauni, Solan, Himachal Pradesh. The university's Extension Education department acts as a focal point for coordinating, planning, and overseeing all extension efforts with the main goal of bringing cutting-edge technology from university research labs to farmers' fields. A purposive simple random sampling technique was used for the study. A total of 28 trainings were selected purposively, the prerequisite for selection of these trainings was the details of trainee particulars which was their address and contact number. From the list of these trainings exactly 50 % respondents were selected randomly using a software 'Random' that generated a number, giving a total of 346 respondents. Out of which 13 were rejected given the biases in response. Thus, a total of 333 farmers were considered as the final sample to elicit the desired information. The data was collected using a mix of telephonic and face to face interviews. Data was collected using a questionnaire. A five-point Likert scale was used to collect responses for each item. Cronbach's Alpha test was used to evaluate the dependability of items of self-efficacy, learning and training transfer. Before the data analysis and interpretation, the information was organized and coded using a computer and then analyzed in Statistical Package for Social Sciences.

RESULTS AND DISCUSSION

The sample consisted of 333 respondents out of which (75.1%) respondents were male and (24.9%) were female. The age of the sample comprised of 20-30 (26.2%), 30-40 (36%), 40-50 (25.5%) and above 50 years (12.3%) respectively. As far as the relationship status of the farmers was concerned (78.7%) of the sample size was married while (21.3%) of the sample size was single. Regarding the education level (30.4%) farmers were educated up to senior secondary (11-12), followed by secondary level (9-10) (26.1%), graduate (17.4%), middle school (6-8)

(10.2%), primary school (1-5) (9.9%), post graduates (3%) and illiterate (3%). With regards to the size of family (55.3%) respondents had 1-5 members in their family, (41.1%) had 6-10 family members, (2.7%) had 11-15 members and (0.9%) had more than 15 members in their family. It was reported that (60.7%) of respondents earned between 0-100000 followed by (14.7%) 100000-200000, (8.1%) 200000-300000, (3.6%) 300000-400000, (4.8%) 400000-500000, (1.8%) 500000-600000, (1.8%) 600000-700000, (0.3%) 700000-800000, (4.2%) above 800000. Majority (95.2%) of respondents owned their land while (4.8%) did not own a piece of land. Following was the size of land holding, less than 0.08 hectare (6.9%), 0.08- 0.40 hectare (46.5%), 0.40- 0.80 hectare (23.4%), 0.80-1.21 hectare (4.2%), 1.21- 1.61 hectare (4.5%), more than 1.61 hectare (10.8%). For majority farmers (79%) farming was their main occupation whereas (21%) respondents were invested in business, services and other vocations. The number of respondents who pointed agriculture as their primary occupation were (79%) while (21%) respondents were engaged in occupation other than agriculture out of which their primary occupation was business (4.8 %), services (6.3 %) and other activities (9.9 %). Result on years of farming experience revealed that (39.6 %) respondents had a farming experience of (0 to 10 years), followed by (24.3%) with (11 to 15 years) of experience, (17.1%) with (16-20 years), (8.4%) had farming experience between (16 to 20 years). There were also (10.5%) of respondents who reported of having experience more than 25 years. Only (6.3%) of respondents reported of having attended training in the past however the remaining (93.7%) respondents had no prior training experience.

Table 1. Relationship between farmers gender and self-efficacy

Trainee characteristics	Gender	Mean	SD	Levene's Test for Equality of Variances		t-test for Equality of Means	
				F	Sig.	T	Df
Self-efficacy	Female	3.53	1.12	16.60	0.00	-5.25	331
	Male	4.15	0.86	-	-	-4.61**	115.83

(SD- Standard Deviation, Sig.- Significance, Df- Degree of freedom)

H_0: There is no significant difference in self-efficacy of both male and female farmers.

H_1: There is a significant difference in self-efficacy of both male and female farmers.

The findings in Table 1 showed self-efficacy belief of male was higher (Mean= 4.15) than females (Mean= 3.53). The outcomes also showed that gender had a substantial impact on mean difference (t = -4.61, $p < 0.01$). Hence the null hypothesis that there is no significant difference in self-efficacy of both male and female farmers was rejected. Similar findings of (Sieverding and Koch 2009, West et al., 2002) have reported that self-efficacy is low among women.

Although the other demographic and farm factors had no significant relationship with the farmers' self-efficacy still there are findings from the past that suggest the opposite. For example, the old trainees are often less confident with their learning abilities, are sluggish, less driven and productive than trainees who are younger as reported by (Bausch et al., 2014, Maurer 2001). Also, higher mean values in the middle-aged group as compared to the youngest group shows that in comparison with the youngest group shows that the middle aged and older farmers have low self-efficacy for learning (Touron and Hertzog 2004). Similarly future researchers can investigate the relation of demographic and farm variables on self-efficacy. It is suggested that factors such as age, marital status, education, size of the family, income, land owned, size of the land, main occupation, past training experience is associated to self-efficacy.

Farmers' self-efficacy: A 4-item scale was used to assess the self-efficacy of farmers. The Cronbach alpha score of the scale was 0.91. The results on self-efficacy revealed that farmers had obtained a mean value of more than 3 for all the statements indicating higher degree of agreement and higher self-efficacy belief. Higher self-efficacy people are more inclined to set challenging goals and perform better in training. According to reports, higher levels of self-efficacy lead to a positive interpretation and attribution of behavioral outcomes (Gist and Mitchell 1992) and more successful performance outcomes (Schunk 1991).

Farmers learning: Learning is the gain in knowledge of the farmers as a result of the training programme. Farmers' learning was measured using a 11-item scale. The Cronbach's Alpha score of the scale was 0.88 which is good. The findings showed that farmers had reported a mean score of more than 3 on majority items which shows their agreement on the items and confirming that they have had gain in knowledge as a result of training.

Training transfer: Extent of training transfer is when a trainee transfers/ applies his learning to his work place and that can be measured using concrete results. Transfer of training was measured on a 7-item scale with an alpha score of 0.96 which is excellent. The results show that the mean scores on each item was below 3, therefore it can be inferred that the average extent of transfer was on the lower end of the spectrum. Although there are a variety of additional personal aspects that can account for the inadequate training transfer.

Correlation Analysis: Pearson correlation results are shown in the Table 2. The findings show that there is a positive and a significant correlation ($r = 0.57$, p is less than 0.01) between farmers self-efficacy and learning. Similarly, a positive and a significant association between self-efficacy and training transfer was discovered ($r = 0.55$, p is less than 0.01). Lastly, learning and

transfer of training was also found to have a positive and significant correlation (r = 0.75, p is less than 0.01).

Table 2. Correlation analysis

Correlations			
	Self-efficacy	Learning	Transfer of training
Self-efficacy	1		
Learning	0.57**	1	
Transfer of training	0.55**	0.750**	1
**. Correlation is significant at the 0.01 level (2-tailed).			

The justification for this is that more self-efficacy leads to greater learning among farmers and greater possibility for training transfer. Though higher learning does not always ensure successful transfer of training, which can be attributed to constraints that an individual farmer face.

Regression analysis: Regression analysis was conducted to see if self-efficacy had a significant impact on learning and training transfer. To measure the impact few hypothesis were formulated which were as follows:

H_0: There is a significant influence of self-efficacy on learning.

H_1: There is a significant influence of self-efficacy on the training transfer.

Table 3. Regression analysis

Hypothesis	Regression Weights	β	R^2	F	p-value	Hypothesis Supported
H_1	Self-efficacy – Learning	0.453	0.332	164.69	0.000	Yes

H_2	Self-efficacy –Training Transfer	0.602	0.307	146.29	0.000	Yes

The hypothesis investigates if self-efficacy has a substantial influence on farmers' learning. To test the hypothesis, the dependent variable learning was regressed on the predictive variable self-efficacy. The results found that self-efficacy predicted learning among farmers, F= 164.69, p is less than 0.001, which shows the influence of self-efficacy on farmers' learning (β = 0.453, p is less than 0.001). Moreover, the R^2 = 0.332 depicts that the model explains 33.2% of the variance in learning. Similarly, to test the second hypothesis dependent variable training transfer was regressed on predicting variable self-efficacy to test the hypothesis. The results found that self-efficacy predicted extent of transfer among farmers, F= 146.29, p is less than 0.001, which shows the influence of self-efficacy on training transfer (β = 0.602, p is less than 0.001). Moreover, the R^2 = 0.307 depicts that the model explains 30.7% of the variance in transfer of training among farmers.

Mediation analysis: It is clear from the above Tables 1, 2, 3 and their interpretation that self-efficacy significantly predicts both learning and transfer of training. Besides a plethora of variables that determine learning during training and eventually transferring that learning back to farm, we hypothesized that self-efficacy plays a mediating role between learning and training transfer. This mediation analysis was examined using the Sobel test.

Table 4. Mediation analysis

Independent variables	Dependent variable	B	Std. Error
Self-efficacy	Learning	0.45	0.03
Self-efficacy, Learning	Transfer of training	0.89	0.060
Indirect effect	0.40		
	Z	Std. Error	P value
Sobel Test	9.76	0.04	0
B- Beta, Std. Error- Standard Error			

The results show that the z value (9.76) which is significant at (p less than 0.05). The z value was more than 1.96 and the p value was less than the level. This indicates the facilitating part of self-efficacy exists among learning and training transfer. The test suggests that the point estimate of 0.40 is the indirect effect between learning and transfer of training through self-efficacy is statistically significant. Thus, the hypothesis was supported, as self-efficacy as a belief system helps an individual realize that they can use learned skills on the job and improve their performance (Bhatti et al. 2013).

CONCLUSION

From the study it can be concluded that self-efficacy does have a bearing on transfer of training among farmers. It was found that self-efficacy differed amongst male and female which from trainers' perspective is a very useful insight in designing a training programme. Though the other demographic and farm characteristics were found to have no relationship to self-efficacy, still future practitioners can hypotheses and probe into it. Self-efficacy was found to positively and significantly correlate to learning as well as transfer of training. The results of regression analysis show that self-efficacy accounts for change in both learning and transfer of training among farmers. Lastly, the self-efficacy was also found to act in the capacity of a mediator in the relation between the two study variables. Considering the results, it is clear about the significance self-efficacy holds in farmer training settings.

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