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Understanding the relationship between trainers' qualification, learning success and satisfaction for agricultural capacity development in rural Bihar

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**University of Goettingen**

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# **Understanding the relationship between trainers' qualification, learning success and satisfaction for agricultural capacity development in rural Bihar**

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## **Abstract**

Within capacity development, the type and quality of the trainer can play a crucial role in promoting farmers' capacity. Hence, the main purpose of this paper is to examine the relationship between trainers' qualification and learning success and satisfaction of small-scale farmers during training activities in Bihar, India. Moderated mediation analysis is utilized to measure the direct and indirect effects of trainers' qualification on learning success and satisfaction. Therefore, the psychological constructs of attitude and perceived control from the Theory of Planned Behaviour (TPB) operate as mediators, subjective norms act as moderator, and gender and age serve as covariates. The results do not indicate a distinction of satisfaction among farmers regarding trainer qualification. However, learning success decreases with an academically educated trainer. The change of attitude during the training has a significantly positive influence on satisfaction. Subjective norms also influence the participants' satisfaction positively. Thus, we suggest for practical implications combining an expert trained on-the-job as the main trainer with an academically educated trainer integrated via modern technologies. In addition, the social environment has to be addressed within the training. Besides the professional background, it is important that trainer gets trained on teaching methods and other soft skills. The results further show that the behavioural constructs are relevant in the field of agricultural education and extension. Theoretical implications can be drawn regarding the improvement of this conceptual framework and other related studies. Whilst various studies have addressed the identification of farmers' capacity development preferences, few have investigated the relationship between trainer qualification, learning success and satisfaction.

## **Keywords**

Agricultural training, trainer qualification, moderated mediation, small-scale farmers, India

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## **1 Introduction**

Agricultural training activities are integrated into the programmes of international development organizations such as the FAO (Food and Agriculture Organization of the United Nations), which utilize training as the primary method to strengthen the capacities of actors - such as small-scale farmers – in the areas of agriculture, nutrition, food security and rural development (World Bank 2007; de Rosa et al. 2016). A wide range of agents is involved in the extension system for agricultural development including scientists, producers, managers, education staff, trainers, extension agents and staff of support services (Ludemann et al. 2012, 19–21). Extension agents play a major role in promoting farmers' capacity. Extension agents and trainers need expertise, a special skill set and experience with addressing the needs of small-scale farmers in order to work successfully (Hellin 2012; Höckert and Ljung 2013). Teaching of practical skills for agricultural purposes involve the use of accurate explanations to allow participating farmers to follow the processes and apply the skills. Therefore, teaching needs a high level of competency in a teacher to both disseminate knowledge and demonstrate precise step-by-step guidance (Swales and Roodhouse 2004).

The approach of teaching small-scale farmers by academics was used around 30 years ago and was declared as not successful in comparison to the participatory approach (Ferroni and Zhou 2012). However, researchers and scientists are seen as the most important source of information for extension services in developing countries (van den Ban 1997). The participatory approach, which is currently more often used, was developed to be more efficient, more sustainable regarding the duration of professional relationships, and more adaptable to local circumstances (Birner et al. 2009). Other approaches such as the 'agricultural knowledge and information system' create direct links between scientists and farmers via modern communication technologies to strengthen communication (Anderson 2007). Teachers' education has a crucial role in the improvement of educational systems around the world. In comparison, businesses worldwide have a certain level of 'professionalism,' meaning standard qualifications such as master's degree. 'Extension and Advisory Services' (EAS) for agricultural development have only recently begun to increase their level of professionalism. Hence, in 2016 the 'Global Forum for Rural Advisory Service' (GFRAS) conducted a scoping study to evaluate their regional networks and draw conclusions to improve their services. Additionally, it aimed to encourage information exchange regarding training, talent and career development, performance incentives, certification and standards (Terblanche 2017). According to Davis (2015), extension should be recognised as a profession and staff should be connected to

societies to allow for professional education and development. This also includes a better balance between technical and practical skills.

Relevant to the participation in training programs, farmers continually modify, revise and even set aside their personal beliefs and views as they learn more about the subject of interest, their own behaviours and social environments (Bhattacharjee and Premkumar 2004). To this end, the attitude and perceived control for participation in agricultural training can be expected to represent key determinants to learning success and satisfaction of agricultural training while acting to induce behavioural change in accordance with the training activity (Topalã 2014; Ko and Chung 2014; Chatman and Sparrow 2011; Bihler 2006).

The aim of the present study is to examine whether there is a distinction in learning success and perceived satisfaction of agricultural training among farmers as a result of the trainer's educational qualification. For this purpose, we investigate whether the change of attitude and perceived control of farmers participating in training for agricultural capacity development mediate the effect of learning success or perceived satisfaction depending on the type of trainer. Finally, we test whether the relation between trainer type and the learning success or perceived satisfaction is moderated by farmers' social norms.

The results of this paper are expected to provide policymakers and providers of extension services with insight into the underlying psychological factors that influence participation in agricultural training. These insights can be used to adjust current policies and to develop new initiatives to stimulate knowledge transfer and participation in agricultural training programmes by small-scale farmers.

## **2 Literature review and present study**

Lack of information and knowledge is a frequently cited barrier to the adoption of new agricultural practices in developing countries (Aker 2011; Norton, Alwang, and Masters 2006). Often, farmers are simply not aware of new techniques and associated benefits, or they do not possess the necessary skills or know-how. Hence, active promotion - as well as provision of accurate information, extension and education on technologies - are frequently identified as indispensable for building awareness and improving farmers' knowledge and skills (Knowler and Bradshaw 2007). Providing agricultural extension services to farmers can bridge the knowledge and capacity gap by educating farmers in agricultural production and management. Furthermore, extension is an opportunity to answer to farmers' needs concerning knowledge and skills. Extension serves as the intermediary between farmers and scientists (Anderson 2007). Depending on the farmers' knowledge, the trainer can fulfil different roles, from the

traditional role of an expert delivering answers to specific questions, to a facilitator engaging in a joint learning process together with the farmer (Ingram 2008; Leeuwis and van den Ban 2004). Therefore, trainer and extension agents should be qualified with regard to technical and functional skills (Anderson 2007; Davis 2015).

However, some actors within the extension system may have a vested interest in maintaining the status quo, hidden agendas or a reluctance to deal with more marginalized areas (Chowdhury, Hambly Odame, and Leeuwis 2014; Muyanga and Jayne 2008). This means a good working programme needs clear rules, education and training for staff and adequate financial resources. Otherwise, the system risks becoming relatively ineffective (Norton, Alwang, and Masters 2006).

The conceptual framework developed for the present study describes the relationship between trainer type and learning success (Figure 3.1) as well as learning satisfaction (Figure 3.2). For this study, attitude defines the respondent's unfavourable or favourable evaluation regarding the agricultural training programme. Perceived control describes the perceived ease or difficulty to behave in a certain way. Subjective norms denotes social pressure to act in a specific way or not (Ajzen 1991). There are various causes why farmers are affected by their social environment: they aspire for respect, they want to demonstrate their commitment to family values, or they aspire to improve through advise and additional knowledge of a third person (Martínez-García, Dorward, and Rehman 2013).

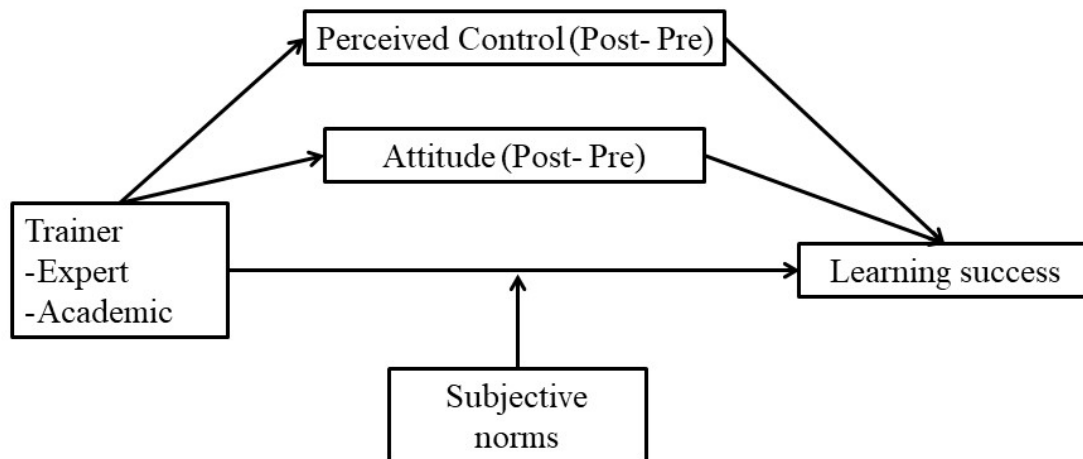
### **Learning success**

According to Gardner (2009), success means to improve the results of one's actions in a particular situation, e.g. learning success within an agricultural training as a purposeful activity to change one's own capacities. Learning can occur with the most varied results, and therefore it is necessary to measure learning success and to set precise learning goals. The learning control describes the outcome of the offered training. The acquisition of knowledge can be subdivided into declarative and percentage knowledge. Declarative knowledge involves the more factual knowledge as well as complex content. Percentage knowledge controls the execution of the skill. Therefore, it is important to integrate various types of knowledge acquisition methods to prevent conveying information that cannot be applied (Kirkpatrick and Kirkpatrick 2012).

A further distinction is made related to quantitative knowledge, which includes professional development, and qualitative knowledge acquisition describing a deeper discussion with interdisciplinary connections. In the context of learning success quantitative and qualitative knowledge increasement have emerged. Another important point which is influenced by further

training is the change of motivational factors. Individuals' interest arises when a person is concerned with specific learning objects. In this context, interest development should be directly related to the subjective experience that influences the experience (Bihler 2006).

**Figure 2.1: Research model 1 with y = learning success**



(Source: own depiction based on Hayes 2012; Ajzen 1991)

In the first research model (Figure 3.1), changes in attitudes and perceived control due to the training can potentially influence the relation between trainer type and learning success. The direct relationship between trainer type and learning success are also assumed to be moderated by farmers' subjective norms. Additionally, gender and age are introduced as covariates.

### **Perceived satisfaction**

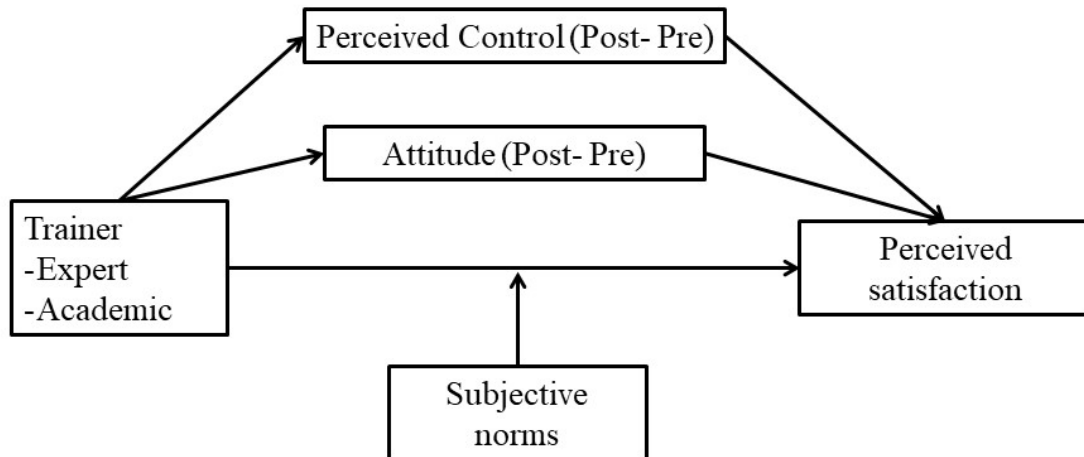
Satisfaction of training is described as a cognitive-evaluative attitude of the person related to his or her educational situation. Satisfaction is characterized by a subjective perception, which is a comparison of perceived and assessed characteristics of a training situation compared to personal expectations. If the individual expectations exceed the assessed training situation, dissatisfaction develops. In general, perceived satisfaction does not always lead to learning success and is not directly related to performance, but it is a value to compare and evaluate further training. Perceived satisfaction and learning success can be used as a reference variable to measure the quality of an agricultural training activity. The more demanding a situation or task the more important is the promotion of professional competencies among the trainers in further training measures (Bihler 2006).

In the second research model (Figure 3.2), perceived training satisfaction refers to outcome expectancies (i.e. a comparison between perception and evaluation of the learning situation). It is hypothesized that changes in attitudes and perceived control due to the training mediate the



relation between trainer type and learning satisfaction and the individual expectations. The direct relationship between trainer type and learning success are again assumed to be moderated by farmers' subjective norms.

**Figure 2.2: Research model 2 with y = perceived satisfaction**



(Source: own depiction based on Bihler 2006; Hayes 2012)

### 3 Materials and methods

#### Data collection and sample

This study is based on face-to-face interviews as part of a questionnaire that was developed following literature review, discussion with NGOs and related stakeholders in Bihar state in the North-East of India.

Bihar state has a population of 104 million people (2011), owing to a population growth of 25 per cent in the last decade. In India, Bihar is one of the poorest states in India, with a per capita Net State Domestic Product of USD 235 (Rodgers et al. 2013). In 2011, 62 per cent of the total population were literate. In rural areas of Bihar, the literacy rate for males and females stood at 70 per cent and 44 per cent. However, only 24 per cent of adults have a secondary education or higher. Agriculture is the most important employment sector in Bihar, since 81 per cent of the entire population work in the agricultural sector (Government of India 2008). Yet the agricultural share of the Bihar GDP decreased from 43 per cent in 1980-1981 to 18 per cent in 2009-2010 (Sharma and Rodgers 2015). In rural Bihar, agriculture remains the primary livelihood of individuals. The sector is dominated by small-scale farmers and is central in improving living standards (Rodgers et al. 2013).

During December 2016, a total sample of 217 randomly selected farmers from ten villages of Nalanda and Gaya completed the survey. The data collection and training carried out as part of the study were conducted in cooperation with the local NGO 'Preservation and Proliferation of Rural Resources and Nature' (PRAN). The focus of PRAN's work is to improve the standard of living regarding food security and to generate income through climate resilience technology (PRAN 2015).

Participants were recruited through stratified random sampling. A minimum of 100 farmers receiving agricultural training given by an expert trained on the job were interviewed. Likewise, a minimum of 100 farmers receiving a training by an academically educated trainer were interviewed. Both training covered 'good agricultural practices' and used a similar method to train on the management and intensification of wheat production.

The questionnaire first explored sociodemographic variables, attitude, subjective norms, perceived control before the training. Following a short introduction and after receiving a consent to participate, participants were randomly allocated to one out of a total of ten training sessions. Out of these ten sessions, five were given by a PRAN trainer who was trained on-the-job and five by an academically educated trainer. Each training session lasted approximately three hours. After the training, participants completed a follow-up survey detailing attitude, perceived control, and other aspects related to training experiences including satisfaction and learning success.

Out of the entire sample size, the proportion of male respondents is 34 per cent, while that of female respondents is 66 per cent, which is to be expected given that PRAN worked only with women until a couple of years ago. The age range of the participants is between 19 and 90 years with an average age of 44 years. The education is shown to be mainly low. A large percentage of the surveyed farmers have no degree (59 per cent). On the other hand, 24 per cent attended primary school, another 11 per cent secondary school, and five per cent graduated. Approximately 32 per cent reported having participated in one agricultural training course, 26 per cent having taken part in two agricultural trainings in the last 12 months, and 33 per cent have not attended a training session. The farmers focus mainly on crops, especially wheat, paddy and vegetables. The characteristics of the sample are described in Table 1.

**Table 1: Characteristics of respondent, and farms (per cent; N= 217)**

<b>Respondents</b>	<b>Per cent</b>	<b>Production focus</b>	<b>Per cent</b>
<b>Gender</b>		Only crops	46
Female	66	More crops than livestock	53
Male	34	<b>Crop type*<sup>1</sup></b>	
Average age (years)	44	Paddy	95
<b>Education</b>		Wheat	91
No degree	59	Vegetables	83
Primary school	24		
Secondary school	11		
Graduate	5		
No training experience	33		

(Description: \*<sup>1</sup> Yes/No answers; Source: authors own data and calculations)

## Measures

Measures for the psychological constructs of the TPB are adapted from items according to Ajzen (2006). The participants were asked how likely they were to agree about e.g. importance and usefulness of agricultural training using 5-point Likert scales, ranging from ‘strongly disagree’ (1) to ‘strongly agree’ (5). Similar statements are used to measure attitude towards information exchange, self-organization, application of training content and how instructive the session was. The same statements were asked before and after the agricultural training. The construct ‘attitudes’ (Cronbach’s alpha = 0.63) is created through factor analysis with the differences of equally asked statements before and after the training session.

The same process is applied for perceived control. Dimensions are adapted from other literature. The farmers were asked how much they would agree with statements regarding their ability to improve their income, their ability to acquire new agricultural techniques, their desire to develop themselves, opportunities for future agricultural training and the overall effect generated by agricultural training. The construct ‘perceived control’ (Cronbach’s Alpha = 0.39) is built by aggregating the different responses to the same statements before and after the training through factor analysis.

Respondents were asked to what extent family members expect them to succeed and improve their knowledge through agricultural training. Additionally, questions related to support of the family, close relatives and the overall social environment in relation to agricultural training were asked. The construct ‘subjective norms’ (Cronbach’s Alpha = 0.72) is developed by aggregating the statements through factor analysis.

The measurement of perceived satisfaction is particularly difficult due to differences in opinion, in that the same results cannot be expected despite the same survey instrument Žabkar, Brenčič, and Dmitrović (2010). To operationalize the construct ‘perceived satisfaction’, we use a set of various statements belonging to different criteria, such as reason to attend, knowledge transfer, training content, trainer and duration (Cronbach’s Alpha = 0.81).

Participants were asked ten questions related to the training content such as the quantity of seeds per land unit, the requirements for wheat seed sowing and information related to irrigation and fertilizer application. The respondents had the choice between four answers of which one statement is clearly correct. If a respondent answered all ten questions correct, a total score of 100 per cent is achieved.

### **Data analysis**

Statistical analyses are performed with the software programme SPSS 24. Descriptive statistics such as chi-square association tests and independent sample t-tests are applied to profile respondents according to their familiarity with agricultural training. The adequate internal reliability consistency of the multi-item scales is assessed with Cronbach’s alpha. Kline (1993) quotes that even values below 0.7 are acceptable regarding psychological constructs because of the construct’s diversity. Individual item loadings for constructs with a value greater than 0.5 are acceptable. Kaiser-Meyer-Olkin (KMO) measurements and Bartlett’s test of sphericity are also tested for scale reliability and validity (Field 2009).

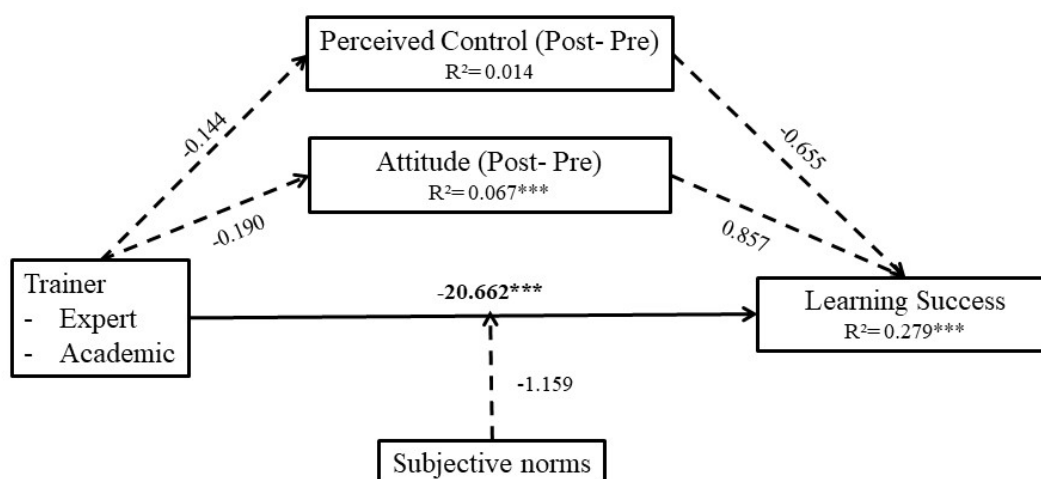
A general linear modelling approach was adopted to estimate the direct and indirect effects in Figure 3.1 and 3.2 respectively based on the literature on moderated mediation (Hayes 2012; Hayes and Preacher 2014; Preacher and Hayes 2004; Hayes 2015). Changes in perceived control and changes in attitude of farmers during the training were used as mediators.

## **4 Results**

### **Learning success**

Figure 3.3 shows the results from the moderated-mediation model one in which the trainers’ qualification predicts the dependent variable learning success. Learning success explains 27.9 per cent of the total amount of variance, which is described as medium effect size by Cohen (1992), and is highly significant (Table 2). The variable trainers’ qualification has a highly significant negative influence (Coeff. = -20.662; Table A1) on learning success, meaning that farmers’ learning success drops by 21 percent if they were taught by an academically educated trainer.

**Figure 4.1: Path coefficient of the research model 1- learning success**



(Source: authors own illustration; \*\*\* p < 0.01; Note: solid lines represent statistically significant relationships)

The indirect effects of mediators and the behavioural constructs of attitude and perceived control cannot be confirmed respecting the score based and performance-driven variable learning success. This interpretation is based on the fact that the confidence interval produced by bootstraps includes the value of zero (Table A2).

The results in Table A3, show that the product of the trainers' qualification and the factor subjective norms does not have a significant influence on learning success. By this fact we cannot confirm a moderating role of subjective norms.

**Table 2: Model summary**

Construct	R	R-sq	MSE	F	df1	df2	p
Attitude	0.259	<b>0.067</b>	0.962	4.828	3	201	<b>0.003</b>
Perceived control	0.118	0.014	1.015	0.952	3	201	0.417
Learning success	0.528	<b>0.279</b>	307.408	10.894	7	197	<b>0.000</b>
Perceived satisfaction	0.589	<b>0.347</b>	0.671	14.925	7	197	<b>0.000</b>

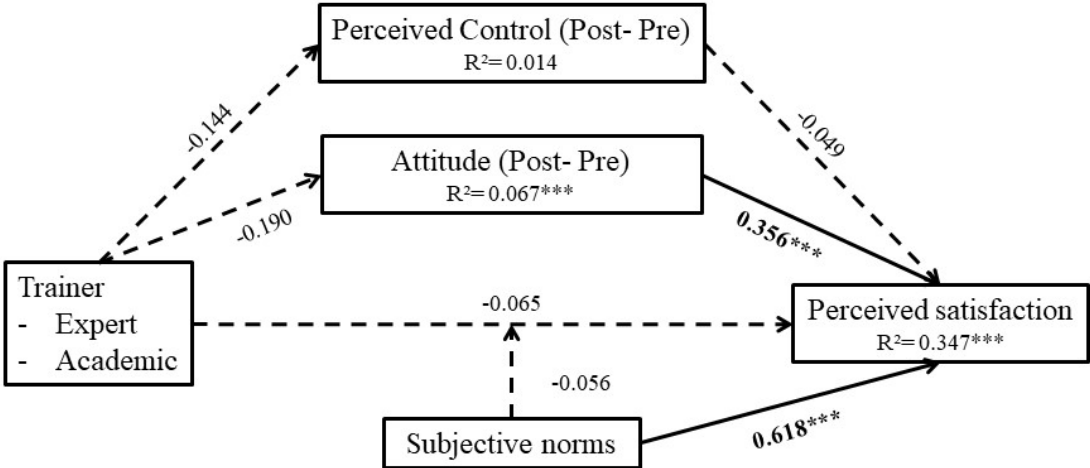
(Source: authors own data and calculations)

### Perceived satisfaction

Figure 3.4 presents the results from the moderated-mediation model two in which the trainers' qualification predicts the dependent variable perceived satisfaction, explaining a medium effective size (34.7 per cent). The perceived construct satisfaction is highly significant (Table 2) but is not driven by the trainers' qualification. However, the behavioural construct attitude

has a positive significant influence (Coeff. = 0.356; Table A1) on participant satisfaction. This means the change of respondents' attitude during the training has a positive influence on satisfaction. The mediator attitude is significant but only explains 6.7 per cent of the total amount of variance, which can be described as a small effect size magnitude but is still acceptable in social science (Cohen 1992).

**Figure 4.2: Path coefficient of the research of model 2 -perceived satisfaction**



(Note: \*\*\* p < 0.01; solid lines represent statistically significant relationships; Source: authors own data, calculations and illustration)

The indirect effects of attitude and perceived control cannot be confirmed regarding perceived satisfaction (Table A2). Perceived control is also not significant and explains 1.4 per cent of the total amount of variance. The moderator and independent variable subjective norms (formed for example by neighbours or colleagues) influence the satisfaction positively (Coeff. = 0.618). However, we cannot confirm a moderating role of subjective norms between trainers' qualification and satisfaction (Table A3).

With respect to the covariates, gender - more specifically being a male respondent - has a negative significant influence on perceived satisfaction (Coeff. = -0.255). The covariate gender also has a highly significant but positive influence (Coeff. = 0.483) on the construct attitude (Table A1). This means that being a male respondent has a positive influence on the change in attitude during the training.

**5 Discussion**

This study investigated how learning success and satisfaction of agricultural training participants were influenced by trainers' qualification and to what extent this influence was

affected by gender, age, attitude, perceived control and subjective norms. The results from this study, therefore, contribute to the existing literature on farmer training and agricultural extension by using psychological constructs from the TPB to explore the relationship between trainers' qualification and learning success as well as satisfaction. To our best knowledge, this is the first study providing such in-depth account of psychological constructs in the context of agricultural training. The paper shows that farmers' learning success is reduced if an academically educated trainer conducts the training. However, the reduced learning success in the first model confirms (e.g. Hellin 2012) that trainers need to be well educated and require a special skill set along with experience of working with small-scale farmers in order to achieve the desired effect of the training. This leads to the conclusion that, based on our study, the missing experience of the academic trainer related to the agent causes lower learning success of the participants. The change in attitude does not mediate the relation between trainer and learning success in a statistically significant way in the first model. The interpretation for this could be that farmers are not aware of their own learning performance. Furthermore, the change of perceived control did not mediate the relation between trainers' qualification and learning success. The most reasonable explanation for the low influence of perceived control could be that this behavioural construct does not change during the time of training. Also, subjective norms have no significant direct effect on learning success. A possible interpretation of the insignificant influence of the behavioural constructs is the low importance regarding learning success due to the fact that learning success is a score based and performance driven variable.

The results of the second model, including the dependent perceived satisfaction, do not show a distinction in the perceived satisfaction as a result of the trainers' qualification, even though the learning success decreases with an academically educated trainer. Training given by academics is declared as not successful in comparison to the participatory approach (e.g. Ferroni and Zhou 2012; Birner et al. 2009). Even if these arguments sound reasonable after analysis of the literature, it might not be the case from the small-scale farmer point of view in developing countries (e.g. van den Ban 1997). The second model also indicates that the changes of attitude over the training do not function as a mediator on perceived satisfaction. However, the change of attitude influences the perceived satisfaction positively and significantly. It is well known from social-psychology literature that attitudes are important determinants of subsequent behavioural change (Ajzen 1991). A positive influence towards satisfaction can be a sign that the trainer, at least to a certain extent, is able to reach the farmers with the content of the training, and this leads to a higher possibility of knowledge transfer as well as implementation and replication of what was discussed during the training. The prospect of improvement of

agronomic practice and farm management as a result of the training is an important factor. If farmers are not interested in improving their skills and knowledge, the training is superfluous and will likely not involve the farmers asking questions or starting a discussion. Farmers who do not want to learn new skills or gain from other associated benefits do not attend training at all. A positive attitude can be a driver for successful participation in an agricultural training. In this regard, opinions and behaviour of peers are important factors influencing the formation of the decision-maker's attitude (Rogers 1995).

Furthermore, the change of perceived control did not mediate the relation between trainers' qualification and perceived satisfaction. Possible explanations could be that perceived control is not important regarding perceived satisfaction, or the construct perceived control does not change during the training.

Next, subjective norms were found to have a significant direct effect on perceived satisfaction. However, subjective norms do not moderate the relationship between trainers' qualification towards perceived satisfaction or learning success. Subjective norms are important in individuals' behaviour and perception because individuals are not unbiased of cultural and social effects. Instead, they continuously refer their behaviour to individuals who are of fundamental importance (Burton 2004). In this way, peers can actively bias farmers' intention to participate in agricultural training courses by motivating them and making evident their positive attitude towards participation and application of the new methods. Even though a farmer holds a positive attitude towards the adoption of a certain technology such as the system of wheat intensification, social influence can inhibit this attitude from being presented in real behaviour (Burton 2004). However, the social environment can stimulate a farmer to adopt a new methodology, even while that farmer has a negative attitude towards the behaviour. These individuals can be used as central key to influence and motivate farmers to adopt a new methodology (Garforth et al. 2004; Martínez-García, Dorward, and Rehman 2013). In the context of the present case, farmers may be encouraged by individuals such as their spouse, village chief, farmers group, and extension workers to participate in agricultural training activities. Against this background, the social environment plays a pivotal role with regard to the quality of the training.

The results of this study are expected to provide policymakers and NGOs with insights into the underlying psychological factors that influence the participation in agricultural training. These findings can be utilized to adjust current policies and to develop new activities to promote knowledge transfer and participation in agricultural training programmes among farmers. We



suggest combining the strengths of both trainer types. An expert trained on-the-job could be the main trainer, while an academically educated trainer could support or lead one of the number of training using modern ICT. With this method, the benefits of both trainer types could be utilized without increasing costs. Our results also indicate that farmers are influenced by individuals who are close to them, such as family, friends, neighbours as well as fellow farmers. Therefore, actors involved in the provision of extension should keep in mind that a good image and support among local stakeholders is of utmost importance in order to have quality participation among targeted farmers and encouragement of the social environment. Training activities in line with the preferences of farmers as well as, for instance, open days to promote the NGO approach can help in this regard. Besides the professional background, it is important that training of trainers is undertaken integrating cultural sensitivity, various teaching methods and other soft skills. In addition, policymakers can prioritize expanding training opportunities for extension workers in order to improve trainers' qualification and thus increase access to quality information among small-scale farmers.

## 6 Appendix

**Table A1: Direct effects of mediators, moderators and covariates on the dependent variables**

Dependent variable	Independent variable	Coeff.	se	t	p	LLCI	ULCI
Attitude							
	Constant	0.325	0.290	1.120	0.264	-0.247	0.896
	Treated	-0.190	0.143	-1.331	0.185	-0.471	0.092
	Gender <sup>1</sup>	<b>0.483</b>	0.148	3.257	<b>0.001</b>	0.191	0.775
	Age	-0.009	0.006	-1.534	0.127	-0.020	0.003
Perceived control							
	Constant	-0.196	0.298	-0.658	0.512	-0.783	0.391
	Treated	-0.144	0.147	-0.980	0.328	-0.433	0.145
	Gender <sup>1</sup>	0.010	0.152	0.066	0.947	-0.290	0.310
	Age	0.006	0.006	1.077	0.283	-0.005	0.018
Learning success							
	Constant	79.998	5.241	15.264	0.000	69.663	90.334
	Treated	<b>-20.662</b>	2.572	-8.032	<b>0.000</b>	-25.735	-15.589
	Attitude	0.857	1.422	0.603	0.547	-1.947	3.661
	Perc. control	-0.655	1.291	-0.507	0.613	-3.202	1.891
	Subjective norms	1.680	1.881	0.893	0.373	-2.031	5.390
	Int_1	-1.159	2.542	-0.456	0.649	-6.171	3.853
	Gender <sup>1</sup>	4.382	2.742	1.598	0.112	-1.026	9.789
	Age	-0.103	0.104	-0.987	0.325	-0.309	0.103
Perceived satisfaction							
	Constant	0.320	0.245	1.307	0.193	-0.163	0.803
	Treated	-0.065	0.120	-0.538	0.591	-0.302	0.172
	Attitude	<b>0.356</b>	0.066	5.366	<b>0.000</b>	0.225	0.487
	Perc. control	-0.049	0.060	-0.816	0.416	-0.168	0.070
	Sub. norms	<b>0.618</b>	0.088	7.028	<b>0.000</b>	0.444	0.791
	Int_1	-0.056	0.119	-0.475	0.636	-0.291	0.178
	Gender <sup>1</sup>	<b>-0.255</b>	0.128	-1.993	<b>0.048</b>	-0.508	-0.003
	Age	-0.005	0.005	-0.948	0.345	-0.014	0.005

(Note: <sup>1</sup>0= Female; 1= Male; Int\_1 : treated x FacSN; Source: authors own data and calculations)

**Table A2: Indirect effects of mediators on dependent variables**

<b>Dependent variable</b>	<b>Mediators</b>	<b>Effect</b>	<b>BootSE</b>	<b>BootLLCI</b>	<b>BootULCI</b>
Learning success	TOTAL	-0.069	0.376	-0.914	0.660
	Attitude	-0.163	0.320	-0.903	0.413
	Perceived control	0.094	0.271	-0.405	0.736
Perceived satisfaction	TOTAL	-0.061	0.050	-0.164	0.033
	Attitude	-0.068	0.050	-0.172	0.028
	Perceived control	0.007	0.015	-0.016	0.043

(Note: Boot= bootstrapping; Source: authors own data and calculations)

**Table A3: Test(s) of highest order unconditional interaction(s)**

<b>Dependent variable</b>	<b>Independent variable</b>	<b>R2-chng</b>	<b>F</b>	<b>df1</b>	<b>df2</b>	<b>p</b>
Learning success	X*W	0.001	0.208	1	197	0.649
Perceived satisfaction	X*W	0.001	0.225	1	197	0.636

(Source: authors own data and calculations)

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