



A REVIEW ON ANTECEDENTS OF TRAINING EFFECTIVENESS AND THEIR ROLE IN TRANSFER OF TRAINING

¹Dr. Karan Masta, ²Dr. Yasmin Janjhua

¹PhD, ²Associate Professor

²Department of Business Management

²Dr. Y. S. Parmar University of Horticulture and Forestry, Nauni, Solan, India

Abstract: Training has been an area of researcher's interest for several decades. Researchers have focused on understanding the complexity of the process and identifying the factors to acknowledge their impact on training process. However, agriculture trainings have had the least progress as the emphasis has been laid only on gain in knowledge as a result of training and its application. Such trainings have failed to incorporate other imperative elements that attribute towards a successful transfer of training. The key however is to identify generic factors that contribute in the gain in knowledge and application. This review paper suggests the role of different factors that should be incorporated in the agricultural trainings. The paper facilitates a new direction for studying the transfer of training in all together a different setting and suggest directions for future research investigations.

Index Terms - Training, Transfer of training, Trainee characteristics, Trainer characteristics, Training design, Environmental conditions.

I.INTRODUCTION

Ajayi (1995) stated that training is acquisition of the best way of utilizing knowledge and skill. Training is the process of acquiring knowledge, skill and ability, building competency through informing and educating people to help them become qualified and proficient in performing their duties. It is an initiative that improves and hones human skills in their way of thinking and execution to max out the potential (Khan et al. 2015). Institutions earmark huge amounts which are dedicated solely for training individuals so as to build desired workforce essential for survival. In India the corporate spending on training amounts up to 200 crore annually (Pareek and Lynton 2011). This realization of the significance of training has led India towards formation of the Ministry of Human Resource Development in 1985 (Rao 2004). The prominence of the subject transfer of training is evident from the scholarly interest in regular publications (Baldwin and Ford 1988, Ford and Weissbein 1997, Cheng and Ho 2001, Russ-Eft 2002, Bates 2003, Alvarez et al. 2004, Merriam and Leahy 2005, Bruke and Hutchins 2007, Cheng and Hampson 2008, Blume et al. 2010, Grossman and Salas 2011).

The need for training, the need for skills, knowledge and attitude helps individual trounce their problems and also avoids creating problem situation. A tool that aims to bridge gaps of deficiencies in an individual, leading to empowerment. It is a well-planned and organised activity that is designed to bring a change in knowledge, skill and ability. The bridging of deficiencies gaps with respect to skills, knowledge and attitude and its application in the workplace is known as transfer of training. Through training an individual gets the opportunity to learn after which the learnt knowledge is generalised and applied to jobs, this entire process of generalisation and application is known as transfer of training. Extending the understanding of transfer of training, the concept of positive transfer is the extent to which trainee are able to apply their learning to their workplace. The result of transfer of training is evident through results in the form of higher productivity, improved work quality, increased motivation and commitment, higher morale and teamwork, and fewer errors summing up to a competitive advantage (Salas et al. 2006). Individuals' who attended formal and non-formal education and training programmes are more likely to

operate efficiently, become aware, accept changes or practices for better and advance their attitude (Kilpatrick 1997a, 1996a).

The success of training is dependent on various influential factors that potentially determines the success of training. Training success or outcome can be evaluated by methodological means. Various evaluation models have been accounted for from past research one of which is Kirkpatrick model, being one of the simplest and most cited techniques to measure learning in terms of attitudinal, cognitive and behavioural learning. All the levels of the technique are related to each other. An expansion of this model was given by Tannenbaum et al. (1993) who added post training attitudes and divided behaviour into training performance and transfer performance. Learning is related to training performance, training performance is related to transfer performance and transfer performance is related to results. Another model of evaluation was proposed by Holton (1996), who included learning transfer and result in his technique. The reason reaction was excluded from the technique was because it was not considered a primary outcome of training but a mediating factor between trainee motivation and actual learning. Baldwin and Ford (1988) in Merriam and Leahy 2005 developed three set of factors to influence training. These factors are professional/ trainee characteristics including ability, motivation and personality (b) content and design of the training and c) work environment which includes the opportunity to use the new innovation and support. Similar to this model Geilen (1996) in Lim and Johnson 2002 came forward with training design, training characteristics and work environment. Hucynski and Lewis (1980) in Lim and Johnson (2002) developed the model to show the relationship of the content of the training, individual motivation and work environment. The above listed research and various models on training are confined to a particular sectoral application. Other sectors fail to acknowledge a holistic view essential for training design and evaluation, agriculture is one of those sectors. Training plays a very important part in the growth and development of farmers and the sector. Agricultural trainings are disseminated through various channels and streams with involvement of various government and non-government organisations. The sole objective of these training is to educate and empower the farmers for their betterment. The drawback to such training is their failure to consider an integrated view. Agricultural trainings are still evaluated with a lopsided view and a holistic view is still ignored. This review aims primarily to facilitate future training practitioners in the field of agriculture to acknowledge the bearing of these factors in training success and also incorporate these elements in their assessment criteria.

II. Predictors of training effectiveness

Various studies have acknowledged the factors that affect transfer of training. In a study of Hutchins et al. (2013) motivation to transfer, training design, transfer performance expectations (better job performance on transfer of learning) were the strongest predictors of intent of transfer. A similar set of factors that is training design, performance self-efficacy, training retention and feedback were reported by (Velada 2007). Miirio et al. (2012) reported that personal capacity to transfer, training design, supervisor support and feedback were significant predictors of transfer. Muthoni and Miirio (2016) found personal capacity to be an important factor for transfer of training with additional factors such as motivation to transfer, training design, supervisor support, peer support, openness to change within the organisation, self-efficacy and positive feedback responsible to enhance transfer. According to Devos et al. (2007) factors that predict transfer of training are learner readiness, transfer design, transfer performance expectations, performance outcome expectation, motivation to transfer, self-efficacy and opportunity to transfer. Bates et al. (2007) motivation to transfer, personal outcomes, personal capacity to transfer (Extent to which individuals have time, energy, mental space in their work lives to make changes), content validity, peer support and learner readiness as significant predictors.

Various theoretical models that have focussed upon important factors affecting transfer of training have been laid down. Even with such extensive research the extent of successful transfer of learning to the workplace remains limited. Therefore, it becomes imperative to develop an awareness and understanding of the catalysts and to incorporate these factors that impact training. From the reader's comprehension point of view the catalyst antecedents can be explained further.

2.1 Trainee characteristics

Studies have reported trainee characteristics to have an influence on the transfer process. Amongst trainee characteristics motivation to transfer, self-efficacy and personality have been found to influence the transfer of training process directly and indirectly (Kontoghiorghes 2004, Cheng and Ho 2001).

2.2 Motivation is the persistent effort in learning oriented activities before, during and after Robbin and Judge (2009). It is a process that accounts for an individual's intensity, direction and persistence of effort toward accomplishment of a specific goal. Intrinsic and extrinsic factors of motivation both have been found to influence training transfer (Rouiller and Goldstein 1993, Santos and Stuart 2003, Taylor et al. 2005, Tracey et al. 1995) but

intrinsic motivation is favoured over extrinsic as trainee with intrinsic factors of motivation have high level of motivation to attend and learn. Also, extrinsic factors are not related to the pre-training motivation. In training process motivation can be further divided into two part that are motivation to learn and motivation to transfer. Grossman and Salas (2011) confirmed that motivation to learn is a very important predictor of effective transfer of training, together with motivation to transfer.

2.3 Motivation to learn is the wish or desire to learn the content of the training (Noe, 1986) without which it is difficult to acquire knowledge from training. Motivation to learn was reported in studies in military settings to have an impact on training effectiveness (Noe 1986). Studies have shown learning motivation to have a moderate effect on the reaction and learning. Anxiety and self-efficacy have the largest effect on motivation to learn (Colquitt et al. 2002). Trainee motivation to learn was significantly related to facts or information stored in the memory and skill acquisition (Colquitt et al. 2000). Best results were obtained when the trainee is motivated and has a positive reaction to the training. Therefore, it becomes important to ensure that an individual is motivated to learn.

2.4 Motivation to transfer on the other hand is the intent of an individual to transfer his learning to work environment. Motivation to transfer will determine the extent to which an individual transfers his knowledge, skill and attitude to his workplace. Axtell et al. (1997) found motivation to transfer a significant predictor of positive transfer. Studies have found motivation to transfer being influenced by motivation to learn (Kontoghiorghes 2002) self-efficacy (Machin and Fogarty 2004), utility reactions (Ruona et al. 2002), or transfer climate factors (Seyler et al. 1998). Motivation to transfer is affected by the perception of the trainee regarding the relevance of the training and opportunities to use the learning on the job (Tracey et al. 1995)

2.5 Adult learning assumes that adults must know the reason for learning before actually learning it, should have the freedom to make their own decisions and will learn things based on a belief of application to their situation (Knowles 1990). Learning for an adult is contingent upon various factors such as fear of failure, greater expectation of transfer of learning, diminishing speed of retention, physical, life experience, possession of different self-image. Adults should be included in the planning and implementation of their learning as they tend to have a self-image of being self-directing responsible, mature and independent learner. Similarly, every individual has his life experiences and that should be used as a base for new learning. Mediums such as group discussion, debates, demonstrations, role-plays and group projects should be used to incorporate learning. Holding on to past experiences can also impede the new learning. Older individuals may be less confident in their ability to learn a new technology and would only devote effort if they can see positive expectations that the skills are achievable. The factors that affect the adult learning also have an impact on transfer of training.

Personality traits

2.6 Self-efficacy is the judgement one makes about his competency to perform a task (Gist et al. 1989, Bandura 1982). Self-efficacy is an important determinant of motivation to transfer (Madagamage et al. 2014, Chiaburu et al. 2010 and Ford et al. 1992). Countless studies have shown relationship between pre-training self-efficacy and training mastery (Harrison et al. 1997, Hollady and Quinones 2003, Mathieu et al. 1993). It has its importance in the transfer process because individual with high level of self-efficacy are likely to exert considerable effort than those with low self-efficacy. It is also a predictor of future performance of an individual. Self-efficacy depends on the past experiences related to that task. Various strategies have been suggested to increase self-efficacy. Vicarious learning, verbal persuasion and performance accomplishment during practice of skills are few of the strategies outlined to improve self-efficacy. Self-efficacy is significantly related to reduction in absenteeism (Frayne and Latham 1987, Latham and Frayne 1989), acquisition of skills (Gist et al. 1989, Martocchio and Webster 1991) and idea generation (Gist 1989) Self-efficacy has been related to coping and perseverance at difficult obstacles (Bandura, 1986) with complex interpersonal tasks which requires mobilization of intellectual resources. Individuals with low self-efficacy are more angry, frustrated and anxious which was reported in case of learning to use a software program (Gist et al. 1989, Martocchio and Webster 1991). Individuals with prior task experience make attributions about the causes of past performance to ability, luck, effort, problem difficulty (Kelley and Michela 1980) which influences the subsequent perception and performance. Those with high self-efficacy attribute their failure to bad luck or insufficient effort which might lead to difficulty in retaining skills. Whereas on the other hand lack of ability is attributed to individuals with low self-efficacy. Self-efficacy and expectancy are linked to motivation. An individual's belief to execute a task successfully and the return or outcome expected from that performance may influence the motivation to learn.

2.7 Ability to retain/ Retention ability/ Trainees retention ability

For a training to be successful the skill should be learnt and retained (Baldwin and Ford 1988). Retention is similar to cognitive ability to retain the knowledge, skill and abilities learnt in a training program for successful transfer (Velada et al. 2007). Retention is maintenance and generalization of training to workplace (Baldwin and Ford 1988) but as time passes by the trainee become incapable and less interested in keeping and utilizing the knowledge (Velada et al. 2007). Iqbal and Dastgeer (2017) found that those individuals who are high on retention are likely to be more motivated to transfer leading towards a higher transfer of training. Recall shortly after learning will reduce the amount of forgetting and recalling it further after a period of time further facilitates retention.

2.8 Dispositional variables

An individual's dispositional variables can also affect the trainee motivation (Herold et al. 2002), variables such as anxiety which is negatively correlated with training transfer and reduced training motivation (Colquitt et al. 2000, Webster and Martocchio 1993). Negative affectivity which is negative emotions are significant predictor of post training transfer implementation intentions (Machin and Fogarty 2004). Herold et al. (2002) stated that trainees with openness to experience will capitalize better on previous success from training and will learn faster.

2.9 Openness to experience and extrovert: The individuals with openness to experience are intellectually curious, flexibly accept change and adopt. The trainees who are extroverted are likely to perform better (Barrick and Mount 1991) as extroversion influences their motivation to learn and improve their performance (Naquin and Holton 2002). Lemke et al. (1974) suggested that better learning happens when there is a heterogeneous group than homogeneous as extroverts' presence would help low ability trainees. Conscientiousness has been shown to impact training proficiency (Barrick and Mount 1991) as well as trainee's confidence to learn (Martocchion and Judge 1997). However, in another study conscientiousness is found to be moderately correlated to transfer but did not impact every training outcome, including skill acquisition (Colquitt 2000).

2.10 Perceived value of training

Utility reaction is more associated with transfer than emotional reactions (Alliger et al. 1997). Individuals who believe in the utility of training and perceive training to be relevant are more likely to apply the skills learned in training (Baumgartel et al. 1984, Axtell et al. 1997). The perceived value of the training can be influenced by the credibility of the new skills, recognized need, belief that application of the learning will advance performance and practicality of the new skills (Ruona et al. 2002, Warr and Bunce 1995, Yelon et al. 2004).

2.11 Locus of control

The trainees with internal locus of control are more motivated to learn (Colquitt et al. 2000), likely to apply skill to work (Baumgartel et al. 1984) and exhibit high level of transfer when using post training intervention (Tziner et al. 1991). Therefore, locus of control becomes an addition to all other factors.

2.12 Socio economic variables

Vast literature has noted the influence of socio-economic variables on training and adoption decision (Rogers 2003, Pattanayak et al. 2003). Singh (2010) in his study reported age to have a significant influence on individual adoption. Older individual is lesser likely to have training needs than the younger one as they are less inquisitive and don't want to learn (Adesoji 2006, Ajayi 1995). Trainees above the age group of 35 years were found to be much unwilling to learn a new topic or method and rather they expect to continue with older methods with little alteration (Chandra et al. 2018). However the findings in other study by Adesina and Froson (1995) were opposite which noted older individuals to be more risk-averse than young farmers which makes the older ones more flexible and likely to adopt the technology.

Singh (2010) in his study reported that education and family income had a significant influence on the adoption. Having attained formal education has an influence on the adoption of innovation process. Farmers who are away from education feel threatened by formal training environment (Grannall 1995, Johnson et al. 1996). Sarker (2009) through logit model identified education of the farmer and the number of extension services received to be significant for adoption of organic agriculture. Khan (2017) in his research found that education is positively related to effectiveness of technology transfer meaning thereby high effectiveness is achieved with educated farmers than less educated or illiterate farmers. Similar results have been observed in (Rashid and Islam 2016, Kafura et al. 2016). Adesoji et al. (2006) found a negative but a significant relation between training needs and number of years of formal education implying more training needs of farmers if the years of formal education are less. Meagy (2013) found a significant positive relationship between education and perception on farmer's

information needs assessment program. The farmers who held primary and secondary education were more likely to believe the program to be effective than illiterate ones.

The size of farmers household is also noted to be related to training. Larger the size of household the more their training needs as most farmers look for ways to get enough money. The farmers who have a significant farm holding are likely to take advantage of the technology (Alamu et al. 2002). However findings of Meagy (2013) reported farmers who held small farm size were more motivated to identify problems and find solutions than big farmers. Annual income was also related to the perception. The farmers with medium income participated more in comparison to low-income farmers. The number of trainings attended in past by farmers has impact on training effectiveness. The more the trainings attended in the past higher are the training needs in order to fulfil the current gaps.

Agholor et al. (2013) gender also had an influence on the perception of effectiveness, female perception on the effectiveness of the extension delivery appears to have overall satisfaction than males. This is particularly correct for timely delivery, relevance, accuracy and ease of understanding of information. Davis (2006) gender has an influence on perception about extension programme delivery.

III. Trainer characteristics

Returns on training investment is determined by the effectiveness of the trainer (Galbraith 1998) and there is still paucity of research evidence as to what qualification and skills are required from a trainer (Ye 2000). A few attributes of trainers mentioned in the past research has an effect on the quality of training. The characteristics of the trainer identified as result of plethora of research studies are as follows providing feedback (Olson 1994, Jacobs 1987, Wlodkowski 1993, Heinzman et al. 1980), listening (Stolovich 1999), learning environment (Olson and Pachnowski 1998, Olson 1994, questioning (Galbraith 1998, Olson 1994), communication skills (Olson 1994, Towler and Dipboye 2001), relationship with trainees (Jacobs 1987, Knox 1979, 1986), knowledge of content (Olson 1994, Knowles 1980), ability to use teaching aids/media (Olson 1994, Jacobs 1987, Grabowski 1976) and problem solving (Bernstein et al. 1957). Identified excellent trainers had a teaching experience of 20 years (Leach 1991), whereas those with less than two years of experience in training weren't rated as excellent (Leach 1996). Effectiveness of the trainer is contingent upon the suitable qualification and experience for the role (Lindeman 1938, Knowles 1980, DiGeorgio 1982, Draves 1984, Hiemstra and Sisco 1990, Olson 1993, Birkenholz 1999, Thompson 2001, Walter 2002). Gauld and Miller (2004) in his study found that trainers with less than two years of experience rated themselves as less than satisfactory or poor. In the same study it was found that 73 per cent of trainers with less than 2 years and 69 per cent with less than 5 years of experience in training position considered excellent knowledge to be needed for effectiveness of role and 43 per cent with more than 10 years and 31 per cent with over 15 years of experience thought the opposite. Lieb (2001) cited four critical elements which should be possessed by trainers for effective learning of trainee which are motivation, reinforcement, retention and transference. Motivation is considered as the truest measure of teaching effectiveness. The teacher with a high degree of presence (physical movement, nonverbal behaviour, lesson pace, and voice quality) is visually and auditorally dynamic (Ishler et al., 1988). A trainer can facilitate learning using competencies such as adjustment to right way of performance which is reinforcement, demonstrate correct performance by practise that helps in retention and use of similarity, association, degree of original learning and critical attribute element for transference to the work place. Galbraith (1998) pointed to questioning as the most influential teaching competency, Stolovich (1999) considered listening to be influential as it helps in redirecting learners' attention or deepen their thinking and Wlodkowski (1993) considered feedback as the most important competency. A trainer can try and speak loudly and distinctly, write unusual words, names and strange expressions, use facial expressions and gestures to improve communication, repeat questions, modulate their pitch and encouraging those who cannot hear to speak out which will improve the quality of training (Kennedy 2003).

Ghosh (2015) found correlation between clarity in giving instructions and ability to use teaching aids effectively, participants comprehend better when teaching aids are used and an effective trainer is one who uses such aids with dexterity. A trainer should use his interpersonal skills, encourage participants to clarify their queries and should possess knowledge regarding the same. In the same study it was reported that trainee perceive greater satisfaction from a programme where the trainer has sound knowledge of the subject matter.

A credible instructor is noted to increase the chances of valuable training and reduce the risk of abandonment by the farmers (Kilpatrick and Rosenblatt 1998). Ifenkwe (2012) the factor like age, formal education, previous job experience, rural upbringing and reasons for joining extension service of the trainer were positively correlated to the field performance. For an extension system to perform successfully it is imperative to have a well-trained staff otherwise it would create hindrance in planning and implementation of effective educational program and technology transfer (Chizari et al. 1998). Educational needs and obstacles faced by the extension agents is a responsibility of an extension manger (Swanson 1990) According to Aphunu and Otoikhian (2008) extension

agents should be regularly trained in areas of adult learning principles so that it adds to their knowledge and enhance their effectiveness. Insufficient funds, time and motivators were obstacles perceived by agriculture educator in developing and delivering adult education programs (Chizari and Taylor 1991). Trainers should consistently learn to generate new ideas. In a research study Chi and Yamada (2002) identified factors such as credibility, good relation with farmers, intelligence, emphatic ability, sincerity, resourcefulness, ability to communicate with farmers, persuasiveness and development oriented essential for effective extension service. Trainers should try to use collaborative interaction to plan and organise, cultivate a climate for learning and encourage people to work together which is a cooperative communication style.

According to Reid and Johnstone (1999) approachability, clarity, depth of knowledge, interaction, interest and organisation are six components to good teaching. Feldman (1976) pointed out an effective instructor to be knowledgeable in terms of content, enthusiastic and well prepared and organised for the class. Aschenbrenner et al. (2010) in his study reported enthusiasm to be the construct for creative teaching. Also, effective teaching and creative teaching as perceived by the students to be positively correlated. There was a significant relationship between years of experience and instructors' creative teaching behaviour.

IV. Training design

Training design and delivery is a strong predictor of transfer. A training design would include dimensions such as well-planned and organised sessions that use interactive approaches and provide a conducive environment for learning. Grossman and Salas (2011) pointed towards the resemblance of both training environment and work environment to facilitate transfer. According to Salas et al. (2006), the training should be organized in such a way that the trainers are well prepared in terms of the content to be delivered and the training methods used should enable trainees to easily relate the content to their situation.

Feedback, reinforcement and remediation opportunities for learning mastery resulted in higher transfer to work task. Interactive training sessions that allows flow of information from fellow participants and experts encourages two way participatory learning (Kilpatrick and Rosenblatt 1998) Cognitive or mental rehearsal and behavioural practice strategies during training are positively correlated with transfer (Holladay and Quinones 2003, Warr and Allan 1998) Overlearning is an example of design strategy where a practice is repeated over and over even after its successful demonstration. This strategy helped in learner retention (Driskell et al. 1992) but overlearning had no significant relationship with intention to transfer skills. For a cognitive task effects of overlearning are strongest immediately after training and wears off after 38 days. A study has reported that a learner might experience cognitive overload with too much of irrelevant information to understand and interpret which decreases the learning and transfer outcome (van Merriënboer 1997) Another form of learning is active learning where the trainee is involved in the course material through the medium of activities (Myers and Jones 1993, Silberman 1998, Silberman and Auerbach 2006) which holds the adults attention (Middendorf and Kalish 1996, Stuart and Rutherford 1978). Active learning has been found to increase learning and reduce negative outcomes (Burke et al. 2006).

Error based examples is another instructional strategy where trainees are proposed with what can go wrong if the training skills are not applied back on the job. This form of negative pre training helps increase the trainee performance by increasing the perceived instrumentality of training (Smith-Jentsch et al. 1996).

Self-management strategies work to equip trainees with necessary skills to help them transfer successfully back to the workplace, such as the use of self-generated positive feedback. Having trainees set specific, but challenging goals (Brown, 2005, Locke et al., 1981, Richman-Hirsch, 2001, Wexley and Baldwin, 1986), use action plans (Broad and Sullivan, 2002, Foxon, 1997), and engage in self-regulatory/management behaviors (Frayne and Latham, 1987, Gist et al. 1990, Latham and Frayne, 1989) have found conceptual and empirical support for direct and indirect effects on trainee transfer.

The type of delivery method and media used by the trainer has an impact of training effectiveness. One of the study reported that effectiveness of a delivery method depends upon the audience's maturity, education level background and objectives (Obahayujie and Hilison 1988). Zeitlyn (1992) pointed out the importance of training materials and use of appropriate media for trainers in communication as not all adult or all individuals prefer to learn in a similar ways (Knowles 1990) which makes varied ways to deliver training a recommendation (Kilpatrick 1996a, 1997b). Chizari (1998) in his study found result demonstration and formal group meeting to be the most efficient medium of extension education teaching. Demonstration of concepts is one of the recommended methods that helps facilitate adoption (Leeuwis 2004). Pamphlets, leaflets and posters are very valuable training materials in delivery, likewise the use of audio-visual aids. Youdeowei and Kwarteng (1995) laid down the importance of audio-visual aids in making the learning process more interactive, guides trainees and trainers during training, serve as reference during and after training, facilitate learning by using illustrations, make learning interesting by

attracting and holding attention of trainees especially visual aids, convey messages which can be easily understood. All points to how important these aids are in effective training programmes.

Extended courses are perceived as generic in nature and those not specific to individual need Grannall (1995) are avoided as the information is perceived to be a waste of time. (Falk et al. 1997) that training programmes are time consuming process which provides a lot of information, but not all is of use. Martin (1999) adult motivation to participate and their level of satisfaction depend upon the relevance of the programme and important content. Content relevance means that the training goals and material should be relevant to the transfer task (Bates 2003) Theory of identical element helps in creating proximity with the training and transfer task. Axtell et al. (2007) found content relevance to be correlated to the transfer immediately after and at the one-month mark after training.

V.Environmental factor

Work environment factors have been considered important in the transfer of training in many contexts (Vignoli et al. 2018). All those situations that are either in favour or against the transfer of learning is called transfer climate (Rouiller and Goldstein 1993). A positive transfer climate consists of cues for applying skills, results for using and remedying if not used, support from peer and superior in form of incentives and feedback. Work environment consists of the opportunity to practise new innovation, incentives to transfer learning and support from institutions. Opportunity to practise is facilitated by the availability of resources at workplace (Merriam and Leahy 2005). Sseguya (2018) established work environment factors, specifically support from peers, extension staff/ supervisors and local institutions as significant predictors of transfer of training. (Facteau et al. 1995) also reported peer support to influence trainee transfer. A number of previous studies notably Salas et al. (2006), Blume et al. (2010), Grossman and Salas (2011), and Gil et al. (2016) suggest the importance of support to trainees as an important factor for transfer of training. Lim and Johnson (2002) in their studies of trainee perception found opportunity to use new innovation to job as a primary reason for transfer of learning and other factors such as lack of understanding, lack of equipment to use for the technology and difficulty in using the technologies at work places (Lim and Johnson, 2002). Positive transfer is limited in case there is no opportunity to use the learning (Brinkerhoff and Montesino 1995, Gaudine and Saks 2004, Lim and Morris 2006) Accountability is another variable under work environment which, though understudied is expecting the trainee to apply his learning to workplace and then holding them responsible for their actions (Brinkerhoff and Montesino 1995, Kontoghiorghes 2002) which makes trainee feel the importance of training (Baldwin et al. 1991).

Another facet to environmental factors reported by Kennedy (2003) was that individuals experience physical discomfort and fatigue due to inadequate furniture, heating, air conditioning, ventilation. Refreshments and regular breaks also help the learner relax and perform better. A classroom with proper lighting, walls painted in soft shades, windows with blinds or curtains will help in visual clarity to learner. Discussing new learning, participating in training, encouraging and coaching in the application of skills are behaviours in a manager that helps in positive transfer (McSherry and Taylor 1994, Smith-Jentsch et al. 2001, Tannenbaum et al. 1998). From farmers perspective availability of agricultural inputs or implements or support from extension agents by visits to farm can help snowball the transfer process. Govt of Malaysia 2006 Tools and equipment, timely availability and financial support are some characteristics of work environment that influence the motivation to learn and transfer. Lack of loan facilities and lack of money to purchase useful agricultural input affects the transfer. In the same study it was found that majority farmers and extension agents agreed insufficient funds to be a barrier for extension service. Similar factors were reported by Agbamu (2005) who stated inadequacy, instability of funds and poor logistics to affect extension services in Nigeria. Omotayo (2004) stated inadequate funds had led to virtual collapse of research and extension institutions in Nigeria. Naik et al. (2019) high cost of seeds, fertilizers and insecticides were constraints faced by farmers as agriculture dealers are mostly profit oriented. Farmers association to a professional organisation is another factor that makes them more predisposed to acquiring information, attending seminars and adoption of technology (Nzomoi et al. 2007).

VI.Conclusion:

All the above discussed factors are reported to be significant in the transfer of training. From the agriculture sector's point of view, training will have a higher probability of being successful when the above discussed factors are considered in designing and in evaluation of a training programme. A panoramic view should be encouraged to create generic training programs irrespective of a sector. Elements of the trainee characteristics such as impact of self-efficacy, motivation to learn, motivation to transfer, locus of control, retention etc. should be given due attention for their role and impact in training. Similarly, antecedents covered in training design, work environment that contribute or hinder in the smooth transfer of training during and post-training should be given due consideration. For effective dissemination it is important that the selection of trainer is done carefully as an effective trainer would displays good listening skills, good communication, knowledge about the subject matter,

teaching aid savvy and many more such abilities and to identify and select the best suited trainer will ensure the success in training. A successful transfer would mean development by bridging discrepancies and lead to favourable outcomes/situations for the individual as well as the economy. The goal is to extract the strongest most cited variables as it is not possible to incorporate every factor that has a bearing on the transfer of training. The research finally adds to the understanding of researchers with evidence suggesting the role of these factors and acting as a basic guideline in determining the important antecedents with regards to transfer of training.

References:

- Adesina, A. A. and Forson, J. B. 1995. Farmers' perceptions and adoption of new agricultural technology', Evidence from Analysis in Burkina Faso and Guinea, West Africa. *Agricultural Economics*, 13(1): 1-9.
- Adesoji, S. A., Farinde, A. J. and Ajayi, O. A. 2006. Assessment of the training needs of fadama farmers for future agricultural extension work development in Osun State, Nigeria. *Journal of Applied Sciences*, 6(15): 3089-3095.
- Alliger, G. M., Tannenbaum, S. I., Bennett, W. Jr., Traver, H. and Shotland, A. 1997. A meta-analysis of the relations among training criteria. *Personnel Psychology*, 50: 341-358.
- Alvarez, K., Salas, E. and Garofano, C.M. 2004. An integrated model of training evaluation and effectiveness. *Human Resource Development Review*, 3(4): 385-416.
- Agbamu, J. U. 2005. Problem and Prospect of Agricultural Extension Services in Development Countries in Agricultural Extension. In: Nigeria S. F. Afolayan (Ed) Ilorin AESON, pp.159-169.
- Agholor, I. A., Monde1, N., Obi1, A. and Sunday, O. A. 2013. Quality of Extension Services: A Case Study of Farmers in Amathole. *Journal of Agricultural Science*, 5(2): 204-212.
- Ajayi, A. O. (1995) 'Identification of training needs of women farmers in Oyo state. Unpublished M.Sc. thesis agric. Extension and rural Sociology, O. A. U., Ile-Ife, Nigeria.
- Alamu, J. F. and Rahman, S. A. 2002. Agricultural Supply Response Evidence from four cereal crops in Nigeria. *The Nasarawa Journal of Humanities*, 1(1): 198 – 203.
- Aphunu, A. and Otoikhian, C. 2008. Farmers' perception of the effectiveness of extension agents of Delta State Agricultural Development Programme (DADP). *Afr. J. Gen. Agric*, 4(3): 165-169.
- Aschenbrener, M. S., Terry, R. and Torres, R. M. 2010. Creative and effective teaching behaviours of university instructors as perceived by students. *Journal of Agricultural Education*, 51(3): 64-75.
- Axtell, C. M., Maitlis, S. and Yearta, S. K. 1997. Predicting immediate and longer-term transfer of training. *Personnel Review*, 26: 201–213. <http://dx.doi.org/10.1108/00483489710161413>
- Baldwin, T. T. and Ford, J. K. 1988. Transfer of training: a review and directions for future research. *Personnel Psychology*, 41(1): 63–105.
- Baldwin, T. T., Magjuka, R. J. and Loher, B. T. 1991. The perils of participation: Effects of choice of training on training motivation and learning. *Personnel Psychology*, 44(1): 51–65.
- Bandura, A. 1982. Self-efficacy mechanism in human agency. *American Psychologist*, 37(1): 122–147.
- Bandura, A. 1986. *Social foundations of thought and action*. Englewood Cliffs, NJ: Prentice-Hall.
- Bates, R. A. 2003. *Managers as transfer agents: Improving learning transfer in organizations'*, San Francisco, CA: Jossey Bass.
- Barrick, M. R. and Mount, M. K. 1991. The big five personality dimensions and job performance: A meta-analysis. *Personnel Psychology*, 41: 1-26.

- Bates, R. A., Kauffeld, S. and Holton III. E. F. 2007. Examining the Factor Structure and Predictive Ability of the German-Version of the Learning Transfer Systems Inventory. *Journal of European Industrial Training*, 31(3): 195–211.
- Baumgartel, H. J., Reynolds, M. J. I. and Pathan, R. Z. 1984. How personality and organizational climate variables moderate the effectiveness of management development programmes: A review and some recent research findings. *Management and Labour Studies*, 9(1): 1–16.
- Bernstein, B. B., Goldbeck, R. A., Hillix, W. A. and Marx, M. H. 1957. Application of the half split technique to problem solving tasks. *Journal of Experimental Psychology*, 53: 330-338.
- Birkenholz, R. J. 1999. *Effective Adult Learning*, Interstate Publishers, Inc., Danville, IL.
- Blume, B. D., Ford, J. K., Baldwin, T. T. and Huang, J. L. 2010. Transfer of Training: A Meta-analytic Review. *J. Manage.*, 36(4): 1065-1105.
- Brinkerhoff, R. O. and Montesino, M. U. 1995. Partnerships for training transfer: Lessons from a corporate study. *Human Resource Development Quarterly*, 6(3): 263–274.
- Burke, L. A. and Hutchins, H. M. 2007. Training transfer: An integrative literature review. *Human resource development review*, 6(3): 263–96.
- Burke, M. J., Sarpy, S. A., Smith-Crowe, K., Chan-Serafin, S., Salvador, R. O. and Islam, G. 2006. Relative effectiveness of worker safety and health training methods. *American Journal of Public Health*, 96(2): 315–324.
- Birkenholz, R. J. 1999. *Effective Adult Learning*, Interstate Publishers, Inc., Danville, IL.
- Broad, M.L., and Sullivan, R. (2001) 'Improving performance in international settings: Strategies for transfer of learning. Paper presented at the ASTD International Conference and Exposition, Orlando, FL.
- Brown, T. 2005. Effectiveness of distal and proximal goals as transfer of training intervention: A field experiment. *Human Resource Development Quarterly*, 16(3): 369-387.
- Chandra, P., Bhattacharjee, T. and Bhowmick, B. 2018. Does technology transfer training concern for agriculture output in India? A critical study on a lateritic zone in West Bengal. *Journal of Agribusiness in Developing and Emerging Economies*, 8(2): 339-362.
- Cheng, E. W. and Hampson, I. 2008. Transfer of training: A review and new insights. *International Journal of Management Reviews*, 10(4): 327–341.
- Cheng, E. W. and Ho, D. C. 2001. A review of transfer of training studies in the past decade. *Personnel Review*, 30(1): 102–118.
- Chi, T. N. N. and Yamada, R. 2002. Factors affecting farmers adoption of technologies in farming system: A case study in OMon district, Can Tho province, Mekong Delta. *Omonrice*, 10: 94-100.
- Chiabura, D. S., Dam, K. V. and Hutchins, H. M. 2010. Social support in the workplace and training transfer: A longitudinal analysis. *International Journal of Selection and assessment*, 18(2): 188-203.
- Chizari, M., Mostafa, K. and Linder, J. R. 1998. Obstacles facing extension agents in the development and delivery of extension educational programs for adult farmers in the province of Esfahan Iran. *Journal of Agricultural Education*, 39(1): 48-54.
- Chizari, M. and Taylor, W. N. 1991. Agriculture teachers' perceptions of adult education programs: An examination of critical educational needs, obstacles faced, and support needed. *Journal of Agricultural Education*, 32(2): 23-28.
- Colquitt, J. A., LePine, J. A. and Noe, R. A. 2000. Toward an integrative theory of training motivation: a meta-analytic path analysis of 20 years of research. *Journal of Applied Psychology*, 85(5): 678–707.

- Davis, G. A. 2006. Learning style and personality type preferences of Community Development Extension Educators. *Journal of Agricultural Education*, 47(1): 90-97.
- Devos, C., Dumay, X., Bonami, M., Bates, R. and Holton, E. 2007. The Learning Transfer System Inventory (LTSI) Translated Into French: Internal Structure and Predictive Validity. *International Journal of Training and Development*, 11: 181–199.
- DiGeorgio, R. M. 1982. Training needs of people who do training. *Training and Development Journal*, 36(6): 16-25.
- Draves, W. A. 1984. *How to Teach Adults*, The Learning Resource Network, Manhattan, KS.
- Driskell, J. E., Copper, C., and Willis, R. P. 1992. Effect of overlearning on retention. *Journal of Applied Psychology*, 77(5): 615–622.
- Facteau, J. D., Dobbins, G. H., Russell, J. E. A., Ladd, R. T. and Kudisch, J. D. 1995. The influence of general perceptions of the training environment on pre-training motivation and perceived training transfer. *Journal of Management*, 21: 1–25.
- Falk, I., Kilpatrick, S. and Morgan H. 1997. *Quality Assurance in Agriculture: Promoting Access for Producers*. Launceston, Centre for Research and Learning in Regional Australia, University of Tasmania.
- Feldman, K. 1976. The superior college teacher from the student's view. *Research in Higher Education*, 5: 243–288.
- Ford, J. K., Quinones, M. A., Segó, D. J. and Sorra, J. S. 1992. Factors affecting opportunity to perform trained tasks on the job', *Personnel Psychology*, Vol. 45 No. 3, pp.511 - 527.
- Ford, J. K. and Weissbein, D. A. 1997. Transfer of training: An updated review and analysis. *Performance Improvement Quarterly*, 10(2): 22–41.
- Foxon, M. 1997. The influence of motivation to transfer, action planning, and manager support on the transfer process. *Performance Improvement Quarterly*, 10(2): 42–63.
- Frayne, C. A. and Latham, G. P. 1987. Application of social learning theory to employee self-management of attendance. *Journal of Applied Psychology*, 72: 387-392.
- Galbraith, M. W. 1998. Becoming an effective teacher of adults", in Galbraith, M.W. (Ed.), *Adult Learning Methods*, Krieger Publishing Company, Malabar, FL, pp.3-19.
- Gaudine, A. P. and Saks, A. M. 2004. A longitudinal quasi-experiment on the effects of posttraining transfer interventions. *Human Resource Development Quarterly*, 15(1): 57–76.
- Gauld, D. and Miller, P. 2004. The qualifications and competencies held by effective workplace trainers. *Journal of European Industrial Training*, 28(1): 8-22.
- Ghosh, P., Satyawadi, R., Joshi, J. P., Ranjan, R. and Singh, P. 2015. Towards more effective training programmes: A study of trainer attributes. *Industrial and Commercial Training*, 44(4): 194-202.
- Gist, M. E. 1989. The influence of training method on self-efficacy and idea generation among managers. *Personnel Psychology*, 42: 787-805.
- Gist, M. E., Bavetta, A. G. and Stevens, C. K. 1990. Transfer training method: Its influence on skill generalization, skill, repetition, and performance level. *Personnel Psychology*, 43(3): 501–523.
- Gist, M. E., Schwoerer, C. and Rosen, B. 1989. Effects of alternative training methods on self-efficacy and performance in computer software training. *Journal of Applied Psychology*, 74: 884–891.
- Grannall, D. 1995. *Rural Participation in Vocational Education and Training*', Sydney, Rural Training Council of NSW Ltd.

- Gil, J. A., Molina, J. A. and Ortega, R. 2016. Determinants of Training Transfer in the Wine Industry: Conceptual Hypotheses and Results for Rioja (Spain). *J. Wine Res*, 27(1): 65-83.
- Grabowski, S. 1976. *Training Teachers of Adults: Models and Innovative Programs*, National Association for Public Continuing and Adult Education, Syracuse, NY.
- Grossman, R. and Salas, E. 2011. The Transfer of Training: What Really Matters?. *Int. J. Train. Dev*, 15(2): 103-120.
- Harrison, A. W., Rainer, R. K. Jr., Hochwarter, W. A. and Thompson, K. R. 1997. Testing the self-efficacy-performance linkage of social-cognitive theory. *Journal of Social Psychology* Vol. 137(1): 79–87.
- Heinzmann, A. G., Komaki, J. and Lawson, L. 1980. Effect of training and feedback: component analysis of a behavioral safety program. *Journal of Applied Psychology*, 65: 261-70.
- Herold, D. M., Davis, W. D., Fedor, D. B. and Parsons, C. K. 2002. Dispositional influences on transfer of learning in multistage training programs. *Personnel Psychology*, 55(4): 851-869.
- Hiemstra, R. and Sisco, B. 1990. *Individualizing Instruction – Making Learning Personal, Empowering, and Successful*, Jossey-Bass Publishers, San Francisco, CA.
- Holladay, C. L. and Quinones, M. A. 2003. Practice variability and transfer of training: The role of self-efficacy generality. *Journal of Applied Psychology*, 88(6): 1094–1103.
- Holton, E. F. III. 1996. The flawed four-level evaluation model. *Human Resource Development Quarterly*, 7: 5-21.
- Hutchins, H. M., Nimon, K., Bates, R. and Holton, E. 2013. Can the LTSI Predict Transfer Performance? Testing Intent to Transfer as a Proximal Transfer of Training Outcome. *International Journal of Selection and Assessment*, 21(3): 251–263.
- Ifenkwe, G. E. 2012. Agent-Related Factors Affecting the Performance of Agricultural Extension Staff in Abia State, Nigeria. *Journal of Agriculture Sciences*, 3(1): 45-48.
- Iqbal, K. and Dastgeer, G. 2017. Impact of self-efficacy and retention on transfer of training: the mediating role of motivation to transfer. *Journal of Management Development*, 36(4): 00-00.
- Ishler, M., Kindsvatter, R. and Wilen, W. 1988. *Dynamics of Effective Teaching*, Longman, New York, NY.
- Jacobs, R. L. 1987. *Human Performance Technology: A Systems-based Field for the Training and Development Profession (Information Series No 326)*, ERIC Clearinghouse on Adult, Career, and Vocational Education, National Center for Research in Vocational Education, Ohio State University, Columbus, OH.
- Johnson, B., Bone, Z. and Knight, C. 1996. *Farmers and Learning: Attitudes to learning, tertiary education and recognition of prior learning*, Orange, Orange Agricultural College, The University of Sydney.
- Kafura, R. A., Afrad, M. S. I., Prodhon, F. A. and Chakraborty, D. B. 2016. Use of ICT as extension tool by the farmers of Gazipur district in Bangladesh. *Indian Research Journal of Extension Education*. 16(2): 1-5.
- Kelley, H. H. and Michela, J. L. 1980. Attribution theory and research. *Annual Review of Psychology*, 31: 457-501. <https://doi.org/10.1146/annurev.ps.31.020180.002325>
- Knox, A. B. 1979. *Enhancing Proficiencies of Continuing Educators New Directions for Continuing Education*, Vol. No. 1, Jossey-Bass, San Francisco, CA.
- Knox, A. B. 1986. *Helping Adults Learn*, Jossey-Bass Publishers, San Francisco, CA.
- Khan, I., Mufti, S. and Nazir, N. A. 2015. Transfer of training: A reorganized review on work environment and motivation to transfer. *International Journal of Management, Knowledge and Learning*, 4(2): 197-219.

- Khan, M. S., Rahman, M. H. and Uddin, M. N. 2017. Effectiveness of Agricultural Information and Communication Center in Technology Transfer to the Farmers in Bangladesh. *Asian Journal of Agricultural Extension, Economics and Sociology*, 18(4): 1-11.
- Kilpatrick, S. and Rosenblatt, T. 1998. Information vs training: Issues in farmer learning. *The Journal of Agricultural Education and Extension*, 5(1): 39-51.
- Kilpatrick, S. 1996a. *Change, Training and Farm Profitability*, Canberra, National Farmers Federation.
- Kilpatrick, S. 1996a. *Rural Training Programs: Effectiveness and Profitability*, Launceston, University of Tasmania.
- Kilpatrick, S. 1997b. Education and training: Impacts on profitability in agriculture. *Australian and New Zealand Journal of Vocational Education Research*, 5(2): 11-36.
- Knowles, M. 1990. *The Adult Learner: a neglected species*, Texas, Gulf Publishing.
- Knowles, M. S. 1980. *The Modern Practice of Adult Education from Pedagogy to Andragogy*, Cambridge, Englewood Cliffs, NJ.
- Kontoghiorghes, C. 2002. Predicting motivation to learn and motivation to transfer learning back to the job in a service organization: A new systemic model for training effectiveness. *Performance Improvement Quarterly*, 15: 114–129.
- Kontoghiorghes, C. 2004. Reconceptualizing the learning transfer conceptual framework: Empirical validation of a new systemic model. *International journal of training and development*, 8(3): 210–21.
- Latham, G. P. and Frayne, C. A. 1989. Self-management training for increasing job attendance: A follow-up and a replication. *Journal of Applied Psychology*, 74: 411-416.
- Leach, J. A. 1991. Characteristics of excellent trainers: A psychological and interpersonal profile. *Performance Improvement Quarterly*, 4(3): 42-62.
- Leach, J. 1996. Distinguishing characteristics among exemplary trainers in business and industry. *Journal of Vocational and Technical Education*, 12(2): 5-18. Retrieved from <http://scholar.lib.vt.edu/ejournals/JVTE/v12n2/leach.html>.
- Lee, C. D. and Kahnweiler, W. M. 2008. The Effect of a Mastery Learning Technique on the Performance of a Transfer of Training Task. *Performance Improvement Quarterly*, 13(3): 125–139. doi:10.1111/j.1937-8327.2000.tb00179.x
- Leeuwis, C. 2004. *Communication for Rural Innovation: Rethinking Agricultural Extension*, (3rd ed.), Blackwell Science, United Kingdom.
- Lieb, S. 2001. *Principles of adult learning*, available at: www.hcc.hawaii.edu
- Government of Malaysia (2006) Ninth Malaysia Plan 2006-2010. Planning Economy Unit. Prime Minister Department, Putrajaya.
- Lemke, E. A., Leicht, K. L. and Miller, J. C. 1974. Role of ability and extroversion in concept attainment of individuals trained in heterogeneous or homogeneous personality groups. *Journal of Educational Research*, 67(5): 202–204.
- Lim, D. H. and Johnson, S. D. 2002. Trainee perceptions of factors that influence learning transfer. *International journal of training and development*, 6(1).
- Lim, D. H. and Morris, M. L. 2006. Influence of trainee characteristics, instructional satisfaction, and organizational climate on perceived learning and training transfer. *Human Resource Development Quarterly*, 17(1): 85–115.

- Lindeman, E. C. 1938. Preparing leaders in adult education”, speech to the Pennsylvania Association for Adult Education, 18 November (reprinted in *Training Teachers of Adults*, edited by S. Brookfield).
- Locke, E. A., Shaw. K. N., Saari, L. M. and Latham, G. P. 1981. Goal setting and task performance: 1969-1980. *Psychological Bulletin*, 90: 125-152.
- Machin, M. A. and Fogarty, G. J. 2004. Assessing the antecedents of transfer intentions in a training context. *International Journal of Training and Development*, 8(3): 222–236.
- Madagamage, G. T., Warnakulasooriya, B. N. F. and Wickramasuriya, H. V. A. 2014. Factors influencing motivation to transfer training: An empirical study of a government sector training program in Sri Lanka. *Tropical Agricultural Research*, 26(1): 12-25.
- Martin, R. 1999. Perceptions regarding Adult Learners Motivation to Participate in Educational Programmes. *Journal of Agriculture Education*, 40(4): 38-46.
- Martocchio, J. J. and Judge, T. A. 1997. Relationship between conscientiousness and learning in employee training: Mediating influences of self-deception and self-efficacy. *Journal of Applied Psychology*, 82(5): 764–773.
- Martocchio, J. J. and Webster J. 1991. Effects of feedback and playfulness on performance in microcomputer software training. Unpublished manuscript, University of Illinois, Champaign-Urbana.
- Mathieu, J. E., Martineau, J. W. and Tannenbaum, S. I. 1993. Individual and situational influences on the development of self-efficacy: Implications for training effectiveness. *Personnel Psychology*, 46(1): 125–147.
- McSherry, M. and Taylor, P. 1994. Supervisory support for the transfer of team-building training. *The International Journal of Human Resource Management*, 5(1): 107–119.
- Meagy, M. J. 2013. Effectiveness of Farmer Information Needs Assessment as Perceived by the Farmers. *Journal of International Agricultural and Extension Education*, 20(2): 34-50.
- Merriam, B. S. and Leahy, B. 2005. Learning transfer: A review of the research in adult education and training. *PAACE Journal of lifelong learning*, 14: 1-24.
- Middendorf, J. and Kalish, A. 1996. The “change-up” in lectures. *Teaching Resources Center Newsletter*, 5. Retrieved September 9, 2005, from <http://www.iub.edu/~teaching/changeups.shtml>
- Miir, R., Mazur, R. E. and Matsiko, F. B. 2012. Factors in the Transfer of Governance –Facilitation Skills Within Farmers’ Marketing Organizations in Uganda. *The Journal of Agricultural Education and Extension*, 18(3): 231–245.
- Myers, C. and Jones, T. 1993. *Promoting active learning: Strategies for the college classroom*. San Francisco: Jossey-Bass.
- Naik, D. V., Singh, A. K., Roy, H. and Padmaja. 2019. Assessment of constraints encountered by the Chilli growers of Khammam district in adoption of recommended Chilli production technologies along with suggestions. *International Journal of Current Microbiology and Applied Sciences*, 8(4): 2608-2613
- Naquin, S. S. and Holton III, E. F. 2002. The effects of personality, affectivity, and work commitment on motivation to improve work through learning. *Human Resource Development Quarterly*, 13(4): 357–376.
- Noe, R. A. 1986. Trainees’ attributes and attitudes: Neglected influences on training effectiveness. *Academy of Management Review*, 11(4): 736–749.
- Nzomoi, J. N., Byaruhanga, J. K., Maritim, H. K. and Omboto, P. I. 2007. Determinants of technology adoption in the production of horticultural export produce in Kenya. *African Journal of Business Management*, 1(5): 129-135.
- Obahayujie, J. and Hillison, J. 1988. Now hear this: Delivery methods for fanners. *Journal of Extension*, 26(1).

- Olson, S. J. 1994. Competencies of two-year college technical instructors and technical trainers: similarities and differences. *Journal of Industrial Teacher Education*, 32(1): 65-85.
- Olson, S. J. and Pachnowski, L. 1998. An experience in preparing technical instructors for the virtual classroom: lessons learned. *ATEA Journal*, 6-8.
- Olson, S. J. 1993. A new source for teachers: can business and industry fill the gaps in tomorrow's teacher pool?. *Vocational Education Journal*, 68(6): 36-7.
- Omotayo, A. 2004. Institutional arrangement for effective participation of the private sector and other non-government Service Providers – Extension Delivery in Nigeria. In: Adedoyin SF, Adekun OA (Eds.) *Institutional Frameworks and Processes for Enhancing Effectiveness of Extension Service*. Proceedings of the 1st South West AESON Workshop, pp.16-23.
- Pareek, U. and Lynton, R. P. 2011. *Training for development*, New Delhi, India: Sage.
- Pattanayak, S. K., Mercer, D. E., Sills, E. and Yang, J. C. 2003. Taking stock of agroforestry adoption studies' *Agroforestry Systems*, Vol. 57, No. 3, pp.173–186.
- Muthoni R. A. and Miir, R. F. 2016. What influences transfer of training in an African agricultural research network? *The Journal of Agricultural Education and Extension*, 23(1): 1-15.
- Rao, T. V. 2004. Human resource development as national policy in India. *Advances in Developing Human Resources*, 6(3): 288–296.
- Rashid, S. M. M. and Islam, M. R. 2016. Problems faced by farmers in application of e-Agriculture in Bangladesh. *Journal of Agricultural Economics and Rural Development*, 3(1): 79-84.
- Reid, D. J. and Johnstone, M. 1999. Improving teaching in higher education: Student and teacher perspectives. *Educational Studies*, 25(3): 269–281.
- Richman-Hirsch, W. L. 2001. Post training interventions to enhance transfer: The moderating effects of work environments. *Human Resource Development Quarterly*, 12(2): 105–120.
- Robbins, S. P. and Judge, T. A. 2009. *Organizational Behavior*. Pearson Prentice Hall, Upper Saddle River, NJ.
- Rogers, E. M. 2003. *Diffusion of Innovations* (5th ed.) Free Press, New York, USA.
- Rouiller, J. Z. and Goldstein, I. L. 1993. The relationship between organizational transfer climate and positive transfer of training. *Human Resources Development Quarterly*, 4: 377–390.
<http://dx.doi.org/10.1002/hrdq.3920040408>
- Ruona, W. E. A., Leimbach, M., Holton III, E. F. and Bates, R. 2002. The relationship between learner utility reactions and predicted learning transfer among trainees. *International Journal of Training and Development*, 6(4): 218–228.
- Russ-Eft, D. 2002. A typology of training design and work environment factors affecting workplace learning and transfer. *Human Resource Development Review*, 1(1): 45–65.
- Russell, J., Wexley, K. N. and Hunter, J. E. 1984. Questioning the effectiveness of behaviour modelling training in an industrial setting. *Personnel Psychology*, 37(3): 465-481.
- Salas, E., Wilson, K., Priest, H. and Guthrie, J. 2006. Design, Delivery, and Evaluation of Training Systems. In: "Handbook of Human Factors and Ergonomics", (Ed.): Salvendy, G. John Wiley and Sons, Hoboken, NJ.
- Santos, A. and Stuart, M. 2003. Employee perceptions and their influence on training effectiveness. *Human Resource Management Journal*, 13: 27–45.

- Sarker, M. A. and Itohara, Y. 2009. Farmer's perception about the extension services and extension workers: The case of organic agricultural extension program by PROSHIKA. *American Journal of Agricultural and Biological Sciences*, 4(4): 332-337.
- Seyler, D. L., Holton III, E. F., Bates, R. A., Burnett, M. F. and Carvalho, M. A. 1998. Factors affecting motivation to transfer training. *International Journal of Training and Development*, 2(1): 6-17.
- Silberman, S. 1998. Ex Libris: The joys of curling up with a good digital reading device. *Wired*, 7: 98-104.
- Silberman, M. and Auerbach, C. A. 2006. *Active training: A handbook of techniques, designs case examples, and tips* (3rd ed.) San Francisco, CA: Jossey-Bass/Pfeiffer.
- Singh, K., Peshin, R. and Saini, S. K. 2010. Evaluation of the agricultural vocational training programmes conducted by the krishi vigyan kendras farm science centres in Indian Punjab. *Journal of agriculture and rural development in the tropics and subtropics*, 111(2): 65-77.
- Smith-Jentsch, K. A., Jentsch, F. G., Payne, S. C. and Salas, E. 1996. Can pretraining experiences explain individual differences in learning. *Journal of Applied Psychology*, 81(1): 110-116.
- Smith-Jentsch, K. A., Salas, E. and Brannick, M. T. 2001. To transfer or not to transfer? Investigating the combined effects of trainee characteristics, team leader support, and team climate. *Journal of Applied Psychology*, 86(2): 279-292.
- Sseguya, H., Bekunda, M., Muthoni, F., Flavian, F. and Masigo, J. 2018. Training transfer for sustainable agricultural intensification in Tanzania: Critical consideration for scaling-up. *Journal of Agriculture, Science and Technology*, 20(4): 661-671.
- Stolovich, H. (1999) 'Adult learning workshop', paper presented at Training 1999 Conference, Chicago, IL, January.
- Stuart, J. and Rutherford, R. J. 1978. Medical student concentration during lectures. *The Lancet*, 2: 514-516.
- Swanson, B. E. 1990. Report of the global consultation on agricultural extension. Rome: Food and Agriculture organisation of the United Nations.
- Tannenbaum, S. I., Cannon-Bowers, J. A., Salas, E. and Mathieu, J. E. 1993. Factors that influence training effectiveness: A conceptual model and longitudinal analysis (Technical Rep. No. 93-011) Orlando, FL: Naval Training Systems Center.
- Tannenbaum, S. I., Smith-Jentsch, K. A. and Behson, S. J. 1998. Training team leaders to facilitate team learning and performance', In J. A. Cannon-Bowers and E. Salas (Eds.), *Making decisions under stress: Implications for individual and team training*. (pp. 247-270) Washington DC: American Psychological Association Press.
- Taylor, P. J., Russ-Eft, D. F. and Chan, D. W. L. 2005. A meta-analytic review of behavior modelling training. *Journal of Applied Psychology*, 90(4): 692-709.
- Thompson, K. D. 2001. Adult educator effectiveness with the training context: a study of trainee perception of effective trainer characteristics', doctoral dissertation, Department of Adult Learning and Technology and The Graduate School of The University of Wyoming, Laramie, WY.
- Towler, A. J. and Dipboye, R. L. 2001. Effects of trainer expressiveness, organization, and trainee goal orientation on training outcomes. *Journal of Applied Psychology*, 86(4): 664-73.
- Tracey, J. B., Tannenbaum, S. I. and Kavanagh, M. J. 1995. Applying trained skills on the job: The importance of the work environment. *Journal of Applied Psychology*, 80: 239-252.
- Tziner, A., Haccoun, R. R., and Kadish, A. 1991. Personal and situational characteristics influencing the effectiveness of transfer of training improvement strategies. *Journal of Occupational Psychology*, 64: 167-177.

- van Merriënboer, J. J. G. 1997. Training complex cognitive skills: A four-component instructional design model for technical training', Englewood Cliffs, NJ: Educational Technology Publications.
- Velada, R., Caetano, A., Michel, J. W., Lyons, B. D. and Kavanagh, M. J. 2007. The effects of training design, individual characteristics and work environment on transfer of training. *International Journal of Training and Development*, 11(4): 282-294.
- Walter, D. 2002. *Training on the Job*, ASTD, Alexandria, VA.
- Warr, P. B. and Bunce, D. 1995. Trainee characteristics and the outcomes of open learning. *Personnel Psychology*, 48(2): 347–375.
- Webster, J. and Martocchio, J. J. 1993. Turning work into play: Implications for microcomputer software training. *Journal of Management*, 19(1): 127–146.
- Wexley, K. N. and Baldwin, T. T. 1986. Post-training strategies for facilitating positive transfer An empirical exploration. *Academy of Management Journal*, 29: 503-520.
- Wlodkowski, R. J. 1993. *Enhancing Adult Motivation to Learn: A Guide to Improving Instruction and Increasing Learner Achievement*, Jossey-Bass, San Francisco, CA.
- Vignoli, M., Mariani, M. G., Guglielmi, D., and Violante, F. S. 2018. Leadership and self-efficacy in determining transfer intentions of safety training. *Journal of Workplace Learning*, 30(1): 65–76
- Ye, R. 2000. The effects of teacher characteristics, beliefs, relations with students, and in-service education on student science achievement', doctoral dissertation, May, Texas Tech University, Lubbock, TX.
- Yelon, S., Sheppard, L., Sleight, D. and Ford, J. K. 2004. Intention to transfer: How do autonomous professionals become motivated to use new ideas? *Performance Improvement Quarterly*, 17(2): 82–103.
- Youdeowei, A. and Kwarteng, J. 1998. *Development of Training Materials in Agriculture: A Course Manual*', Hong Kong: Kolocraft.
- Zeitlyn, J. 1992. *Appropriate Media for Training and Development*', Bangladesh: UPL and Tool Publications.