Research Article

Indian Journal of Extension Education
Vol. 60, No. 4 (October–December), 2024, (73-76)

ISSN 0537-1996 (Print)
ISSN 2454-552X (Online)

Factors Affecting Training Effectiveness of Extension Personnel in PAMETI, Punjab

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HIGHLIGHTS

- Study reported moderate extent in terms of training effectiveness
- The factors explained 64.38 percent of variation in training effectiveness
- Only four factors contributed significantly towards training effectiveness

ARTICLE INFO

Keywords: Training, Training effectiveness, Extension personnel, Factors, Variations.

https://doi.org/10.48165/IJEE.2024.60413

Conflict of Interest: None

Research ethics statement(s): Informed consent of the participants

ABSTRACT

This study was executed for identifying the key factors that impact the effectiveness of training programs under the aegis of ex-post facto research design in 2023-24 timeline. The sample comprised trainees participating in a range of competency development training programs organized by the "Punjab Agricultural Management and Extension Training Institute" (PAMETI) during 2017–2018. Five training programs were selected in total with 24 trainees from each program chosen through random sampling constituting the sample of 120 respondents. Majority of trainees were predominantly perceived to fall within the moderate category regarding training effectiveness. Factors accounted for 64.38 per cent of the variation in training effectiveness among the trainees. Achievement motivation, job performance and satisfaction, self-attitude and mass media exposure of trainees were found to substantially influence the variation in training effectiveness.

INTRODUCTION

Historically, agricultural extension has been instrumental in improving farmers' productivity by consistently delivering essential information. The primary focus of agricultural extension services worldwide has been to communicate research findings and improved agricultural practices to farmers (Agbamu, 2007; Apantaku & Oyegunle, 2016). As the agricultural sector undergoes changes in environmental trends, the importance of dissemination of information and knowledge as crucial production factors has grown up, which has put extra pressure upon extension professionals to up their game in not only in technical areas but also in process-oriented skills (Slathia et al., 2009; Suvedi, 2015; Kobba et al., 2020). Ensuring the effective dissemination of information related to production and marketing in the field of agriculture and allied sectors is essential for broadening access to demand-driven services and elevating overall service quality (Babu et al., 2021). Therefore, it is crucial to develop strategies to enhance the quality of extension service delivery by improving the competencies of extension agents. Although expanding the workforce of extension agencies can positively impact service quality, training existing extension personnel can also yield substantial benefits (Olaoye et al., 2023). Training is instrumental in achieving high standards and excellence, enabling individuals to become more skilled and adept in performing specific tasks compared to their former competencies.

Extension personnel is considered an integral component of agricultural development. For this purpose, each state has been authorized to establish a "State Agricultural Management and Extension Training Institute" (SAMETI) to enhance the skills of extension staff. In the case of Punjab, this institute is referred to as "Punjab Agricultural Management and Extension Training Institute" (PAMETI). PAMETI offers a diverse range of training

Received 17-09-2024; Accepted 26-09-2024

programs aimed at improving the knowledge, attitudes, and abilities of extension workers. The effectiveness of a training program is determined by how well it accomplishes its intended objectives, including the desired enhancements in knowledge, skills, and attitudes. However, many training programs are implemented without a thorough assessment of the training needs, resulting in the inefficient utilization of human and material resources (Arun Kumar et al., 2021; Warris, 2015).

An effective training program is one that successfully accomplishes its goals, determining whether the desired changes in skills, attitudes, and knowledge have occurred (Haneef et al., 2020). The effectiveness of training programs is a complex issue shaped by numerous influencing factors. This research seeks to explore the significant elements that affect the training efficiency of extension personnel. Understanding these key elements is essential for developing targeted strategies that improve training outcomes. By identifying and analyzing these factors, this study aims to offer evidence-based recommendations for refining the design and implementation of training initiatives, which, in turn, will empower extension workers. Enhancing the capabilities of these professionals is critical for fostering agricultural development and ensuring that they are well-equipped to address the evolving challenges in the agricultural sector (Raji et al., 2024). Thus, a comprehensive investigation in this regard was carried out with an aim to make a significant contribution to the overall improvement of agricultural extension services.

METHODOLOGY

The investigation was conducted at boundaries of PAMETI, Punjab Agricultural University, Ludhiana where the selection of participants executed with the use of both random and purposing sampling methods. The sample comprised of individuals engaged in training programs aimed at developing and enhancing competencies organized by PAMETI in 2017-2018 as trainees. Purposive sampling was employed to choose five specific training programs for the study. From these programs, 24 trainees from each were selected randomly constituting to the sample of 120 trainees as respondents for investigation.

Training effectiveness Index was created which is the degree to which the trainees are satisfied with the delivery and degree to which there is desirable changes in terms of knowledge gain, improvement in core competency, skills and change in attitude towards the job and are reflected in job performance of trainees based on their perception. Index was developed by Aiswarya (2018). Each parameter of Training Effectiveness Index comprised of multiple indicators and consequently occurred variation in the ranges of total scores obtained. As a result, using simple range and variance, the total score of each parameter was converted into a unit score, as shown below:

$$U_{ij} = \frac{Y_{ij\text{-}Min} Y_{ij}}{Max\, Y_{j\text{-}Min} Y_{j}}$$

Where, U_{ij} = Unit score of the i^{th} trainee on j^{th} parameter, Y_{ij} = Value of the i^{th} trainee on the j^{th} parameter, Max Y_j = Maximum score on the j^{th} parameter, Min Y_j = Minimum score on the j^{th} parameter

Thus, the index score of each parameter ranges from 0 to 1, i.e. when Y_{ij} is zero, the score is zero, and when Y_{ij} is one, the score is one. The total index score of all the indicators was used to ascertain the trainees' status. The range method was used to categorise trainees into low, medium and high categories.

Factors relevant to the study were chosen based on a comprehensive literature review, followed by the advisory of expert consultation. The a structured questionnaire was prepared with the help of scales taken up for the suitability to measure the concern factor as independent variable with a pre-testing exercise followed with modifications to make it adaptable for the concerned sample. Multiple linear regression analysis was employed to determine the relative contribution of the selected factors and their combined effect on the training effectiveness. This investigation was executed between October 2023 and May 2024 by utilizing the personal interview method under the aegis of relaxed informal setting with the aim to elicit genuine responses from the participants.

RESULTS

Extent of training effectiveness

Data pertaining in Table 1 depict the overall Training Effectiveness Index of the trainees. Nearly 60.00 per cent of the trainees found to lie in medium category of overall Training Effectiveness Index followed by 29.16 per cent in high category and 11.67 per cent in low category. The average index value for all the trainees was found to be 0.86 with a standard deviation value of 0.04 which speaks of considerate existence of effectiveness of the training programmes conducted till date. The information obtained from the table underscores a deficiency in the effectiveness of training programs for participants, indicating potential areas for enhancement in training specifically tailored for extension personnel. The findings elaborated in the subsequent sections may offer viable solutions by concentrating on the key elements or factors that could contribute to improving the training efficacy of these participants.

Table 1. Distribution of trainees according to overall training effectiveness index

Categories	Criteria	Percentage	Mean	SD
Low	(0.76-0.81)	11.67		
Medium	(0.82-0.87)	59.17	0.86	0.04
High	(0.88-0.93)	29.16		

Association between selected factors and training effectiveness of the trainees

As per the data depicted from Table 2, it can be said that variables like 'job experience', 'attitude towards self' and 'mass media exposure' had expressed positively significant relationship with training effectiveness index at 0.05 level of probability whereas the likes of 'achievement motivation', 'job performance and satisfaction' and 'time management' expressed positively significant relationship with training effectiveness at the probability of 0.01 level. 'Age' and 'Perceived workload' expressed negative relationship being significant at the probabilities of 0.05 level and

Table 2. Relationship of factors with the training effectiveness of the trainees

S.No.	Factors	Correlation Coefficient
1.	Age	-0.234*
2.	Education	0.119NS
3.	Job Experience	0.253*
4.	Perceived workload	-0.312**
5.	Achievement motivation	0.442**
6.	Self confidence	0.078NS
7.	Locus of control	0.142NS
8.	Attitude towards self	0.287*
9.	Attitude towards subject matter	0.075NS
10.	Attitude towards trainer	0.099NS
11.	Job performance and satisfaction	0.612**
12.	Mass media exposure	0.254*
13.	Organizational Climate	0.123NS
14.	Conveyance	0.067NS
15.	Time Management	0.412**

0.01 level respectively. The remaining variables comprising of 'education', 'self confidence', 'locus of control', 'attitude towards subject matter', 'attitude towards trainer', 'organizational climate' and 'conveyance' were reported to be non-significant relationship.

Endowment of factors towards training effectiveness

Multiple regression analysis was performed to assess the relative contribution of all the factors to the training effectiveness of the extension personnel. A regression equation was fit into the context where the calculated index values of training effectiveness of all the participants as dependent variable whereas the selected factors taken up as independent variables. In Table 3 data related to factors affecting effectiveness of training has been presented. Data given in Table 3 depict that all the selected independent variables

Table 3. Multiple regression analysis for the factors affecting the training effectiveness of the trainees

S. No.	Variables	Regression coefficient (b)	Standard error	t value
1.	Age	-3625.047	2221.23	-1.632NS
2.	Education	105.847	452.336	0.234NS
3.	Job Experience	831.219	1167.443	0.712NS
4.	Perceived workload	-469.621	503.345	-0.933NS
5.	Achievement motivation	39.686	9.14	4.342*
6.	Self confidence	2025.187	1756.45	1.153NS
7.	Locus of control	1159.492	867.234	1.337NS
8.	Attitude towards self	2705.569	453.422	5.967**
9.	Attitude towards subject matter	1.616	2.048	0.789NS
10.	Attitude towards trainer	136.991	87.984	1.557NS
11.	Job performance and satisfaction	546.392	55.342	9.873**
12.	Mass media exposure	237.041	87.34	2.714*
13.	Organizational Climate	-88.575	60.173	-1.472NS
14.	Conveyance	7.519	3.993	1.883NS
15.	Time Management	59.377	34.322	1.73NS
	R^2= 0.6438			

accounted for 64.38 percent of the variation in training effectiveness among the trainees (extension personnel). 'Attitude towards self' along with 'Job performance and satisfaction' significantly at 0.01 level of probability whereas 'achievement motivation' and 'mass media exposure' contributed positively at 0.05 level of probability.

DISCUSSION

The findings of Table 1 encompasses that Individual attributes are responsible for medium level of effectiveness. However, an equally critical factor in optimizing training outcomes is the proper identification and selection of trainees through a comprehensive training needs analysis (TNA). A well-executed TNA ensures that the right individuals, whose skill gaps align with the training objectives, are chosen for the program (Nain & Chandel, 2010). Despite the importance of this process, no formal allocation of trainees based on training needs is currently practiced. This oversight may limit the overall effectiveness of training initiatives, as participants may not fully benefit from the training or may not require it, leading to inefficient resource utilization which emboldens to the issue that there is potential to improve the effectiveness of training programs (McPheat, 2020). Correlation and regression analyses were conducted to identify the factors that can contribute to enhancing training effectiveness, providing a deeper understanding of key determinants affecting it.

Research illustrates a negative correlation between age and training effectiveness. As professionals mature, they acquire extensive formal and informal knowledge, prompting them to seek training that directly addresses their immediate needs rather than general programs. Increased responsibilities and resource constraints, such as limited manpower and time, further limit their capacity to engage in training, thereby exacerbating the perceived workload and its impact on training effectiveness. Conversely, with significant professional experience, extension personnel can better identify their training needs, fostering active participation and demonstrating a positive relationship between job experience and training effectiveness. Achievement motivation is crucial as it cultivates optimism and focus, encouraging trainees to absorb new information (Lorman, 2021). A positive self-attitude enhances confidence, which is vital for training effectiveness. Moreover, individuals exhibiting strong job performance and satisfaction are generally more motivated to learn, reinforcing the link between job satisfaction and training outcomes (Wang & Shi, 2024). Additionally, exposure to mass media can further enhance training effectiveness by providing timely updates and practical demonstrations, thus positively influencing learning experiences (Zwick, 2011).

The R^2 values in this study indicate that the examined factors significantly impact training effectiveness, demonstrating that the cumulative influence of these variables can elucidate some causes of training effectiveness. However, there may be additional variables related to the regression model that were overlooked by the researcher. Achievement motivation is a crucial factor in fostering a positive mindset among trainees, enhancing their focus and commitment throughout the training process, which facilitates effective knowledge acquisition. This finding aligns with the work of Vasishtha (2016). A positive self-attitude serves as a catalyst that encourages individuals to engage in training seriously and

confidently, thus improving training efficacy. Job performance and satisfaction also play a vital role, as individuals who excel and find satisfaction in their work tend to exhibit greater motivation and enthusiasm for acquiring new skills. This intrinsic motivation is essential for the success of training initiatives. Exposure to mass media helps extension personnel stay informed about advancements in agriculture and rural development, fostering a desire for knowledge beneficial to the farming community. Such exposure verifies the training content and confirms its relevance in various contexts, consistent with the findings of Jagdale (2004). Furthermore, the integration of achievement motivation and a strong self-concept significantly enhances job performance and satisfaction, leading to increased engagement in training and improved outcomes. Collectively, these factors establish a foundation for optimizing training effectiveness and promoting long-term professional development.

CONCLUSION

Training plays a vital role in equipping extension workers with the essential knowledge and skills needed to tackle the dynamic challenges within the agricultural sector, which is crucial for fostering sustainable agricultural development. Extension personnel serve as a critical link between researchers and farmers. By improving their competencies and addressing the elements affecting their training effectiveness, we can empower them to better assist the farming community, thereby boosting agricultural growth and enhancing food security. As the agricultural environment continues to change, it is essential to adapt training methods to meet the sector's evolving demands. While the training effectiveness index is currently moderate, enhancements can be made by analyzing key influencing factors through correlation and regression analyses. The factors, found to be significantly affecting, must be taken into consideration with respect to extension personnel while designing a training programme to ensure its better and proper effectiveness in fulfilling its objectives.

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