Indian Management Studies Journal 15 (2011) 155-172

Indian Management Studies Journal

Simulating a Model of Strategic Information System for Training Process Effectiveness in PSPCL

Sahil Raj*, Gaurav Sachdeva and Shivinder Kaur***

** School of Management Studies, Punjabi University, Patiala*

*** Jasdev Singh Sandhu Institute of Engineering & Technology, Patiala*

Abstract

An organisation's success depends on the skill sets possessed by it's human resources. In the present dynamic environment, the workforce requires consistent skill enhancement through training. However, there is a need to determine the effectiveness of the training process to evaluate its competence. A similar attempt has been made in this paper to examine the effectiveness of training process conducted at Punjab State Power Corporation Limited. Research was conducted using survey questionnaires which measured response on a five point Likert scale. The data was collected from 72 respondents and analysed with the help of SPSS 17.0. The study revealed that different categories of employees have different perspectives on training process. The findings of the study have important managerial implications. A human resource information system has been designed for each category of employees, which will aid the management of the organisation in improving training process and learning environment.

Key Words : Training process effectiveness, Training needs analysis, Learning Transfer Climate, Training design, Implementation of training, Training Evaluation, Training in Power sector

INTRODUCTION

The power sector is a dynamic sector, where the technological changes form a dominant external force. Hence, the workforce in this sector requires consistent skill upgradation, to remain competitive and fulfil the growing demand for energy.

Thus training is a dominant need for employees of electricity sector. And also, it is required to determine its effectiveness, to know whether it effectively fulfils the employee's needs and remain competitive. In this study, an attempt has been made to understand the employee's perspective on the training process conducted at PSPCL, and therefore know the pitfalls. Also, the study reveals important factors which help to create an effective learning environment at PSPCL.

To measure training is one of the key components on how a business will succeed. If a training program is proven to be effective, it will definitely yield to positive results, perhaps more than what is desired by the company. However, measuring the effectiveness of training is one of the biggest challenges of firms today. Training in itself is expensive and adding more components to it may not be a good idea in terms of financial capacity. Having a well-structured measuring system in place can help you determine where the problem lies.

REVIEW OF LITERATURE

Prasad (2006) reviewed the power sector reforms in Delhi from a human resource perspective. The restructuring of power sector of Delhi had led to privatisation of the distribution function. About four fifths of the total employees of erstwhile DVB had been transferred to BSES (Reliance) and NDPL (Tata Power). The present study of 200 employees was taken up to focus on the human resource adjustment issues. The results of the study show that employees of erstwhile DVB are not fully aware of the causes of reforms, they feel cheated at the hands of trade union leaders and feel alienated in the changed environment.

Schumaker (2004) : The study analysed a survey of municipal clerks and examined the extent to which perceived effectiveness of training is associated with organizational, trainer, and trainee factors. Regression analysis demonstrated an effectiveness model that includes predictors from the dimensions of the organization, trainer, and trainee: ability to incorporate new learning into the workplace, relatedness of curriculum to the job, and trainee commitment to apply learning to the job. Support of this training-effectiveness model demonstrates the need for greater involvement of municipal administrators in fostering a positive organizational environment and greater collaboration among municipal administrators, municipal clerks, and clerks' training directors in developing programs. Although limited in scope, this study gives some credence to the need to enhance planning and rational decision-making for public sector training.

Noe (1986) in his research proposed that trainee's attributes and attitudes have an influence on training effectiveness, which is often neglected. The past studies of the influence of trainees' characteristics on training effectiveness have

focused on the level of ability necessary to learn program content. Motivational and environmental influences of training effectiveness have received little attention. This research integrated important motivational and situational factors from organizational behaviour theory and research into a model which described how trainees' attributes and attitudes may influence the effectiveness of training.

Yamnill and McLean in their article reviewed theories and frameworks to determine the factors affecting transfer of training. LTSI (Learning Transfer System Inventory Scale) of Holton is used to assess the effectiveness of transfer of learning. Holton (1996) provided a model of training focused on individual performance. Thus Holton's factors which affect transfer of training are: motivation to transfer, transfer climate and transfer design.

Machin (2002) worked on methods to plan, manage and optimize transfer of training. the study proposed pre-training interventions to improve trainee motivation and self-efficacy. Also the research found that trainers have very little control over what happens after training. The study also shows that organizational climate have a strong impact on training and transfer outcomes. Finally, the study showed that training focus needs to shift from purely individual level to team or organizational level.

Siddiqui and Asghar (2008) in their research discussed the determinants for productivity, while stressing the strategic linkage between training, productivity and competitive strategy of the organization. The study suggested that training effectiveness acts as a moderating variable between training interventions and competitive strategic results. Based on the value chain model developed by the authors, three types of training needs have been identified viz. primary, secondary/ support and cross training needs.

Boucher and Smeers (2001) carried out this study to on wholesale energy market and on markets for infrastructure services and reliability requirements. The aim of the paper was to review models of the restructured electricity industry in terms of the degree of decentralization they allowed. The research showed that models requiring different institutional settings, lead to the same outcomes when the markets are perfect.

Broucker (2007) focused on the measurement of transfer, which is the application of newly achieved knowledge in the workplace. The study examined whether the LTSI scale can be used within the Belgian public sector. The results revealed that not all factors are present in the Belgian administration. The main problem as found by the study were that the climate is passive or neutral towards transfer of training, the respondents are insufficiently prepared to enroll and that the training shows a gap between theory and practice.

SCOPE AND OBJECTIVES OF STUDY

Training is vital for the survival of any organisation. This study would help PSPCL to know the pitfalls in its existing process of training. Also, it would help PSPCL to understand the factors which enable effective transfer of learning at PSPCL and measures it can take to create and maintain an effective learning environment. The scope of the study is limited to the employees of PSPCL, working in different offices at Patiala. The project is of great significance for the employees as well as PSPCL management to understand the pitfalls in its training process; and also the measures to create a learning environment at PSPCL.

The study has the following objectives :

1. To identify the stage/stages where the training process of PSPCL is not satisfactory.
2. To identify the factors which enable effective learning transfer at PSPCL.
3. To develop an Information System for Training Programme.

RESEARCH METHODOLOGY

Sampling Design

Sampling technique - Stratified Random Sampling.

Table 1
Sampling Unit

Category	Universe	Sample
Assistant Engineers (AE)	75	18
Assistant Executive Engineer (AEE)	87	22
Additional Superintendenting Engineer (ASE)	39	9
Dy. Chief Engineer (Dy. CE)	68	17

DISCUSSIONS AND RESULTS

The study conducted to determine the training process effectiveness of PSPCL incorporates collection of responses on a five point Likert scale from different categories of employees at PSPCL. The respondents belonged to Assistant Engineers or AE category, Assistant Executive Engineer or AEE, Additional Superintendenting Engineer or ASE and Dy. Chief Engineer. The 72 respondents were placed at different offices situated in Punjab. The attempt of the study was to find the discrepancies

in the existing training process of PSPCL and design a human resource information system for management as per different categories. Discriminant analysis has been used to design the system.

Table 2 shows the different dimensions of Discriminant analysis. The factors of training need assessment which have been included in each dimension are highlighted. Thus dimension 1 contains the selection of trainees based on their job profiles. These dimensions are used to analyse the response of different categories.

Table 2

Standardised Canonical Discriminant Functions

Factors	Function		
	1	2	3
F1 - I feel the training programs conducted by PSPCL adequately fulfil the training needs of the employees.	.032	.657	-.971
F2 - Trainees are selected for a particular training program based on their job profile.	1.041	-.427	.111
F3 - Training program objectives usually have a tight link with the organisational objectives.	-.160	.657	.955

Table 3 maps the different categories on the above dimensions. A response in this table greater than '0', indicates a positive inclination to that dimension. Similarly a negative response implies a lack of that factor or dissatisfaction towards the same. This analysis forms the basis for construction of models or information systems for different categories.

Table 3

Functions at Group Centroids

Category		Function		
		1	2	3
1.	Assistant Engineers	.313	.123	.037
2.	Assistant Executive Engineers	-.225	.236	-.021
3.	Additional Superintendenting Engineers	-.425	-.260	.021
4.	Dy. Chief Engineers	.336	-.206	-.031

Discriminant Analysis on Training Need Analysis

Table 4 shows the different dimensions of Discriminant analysis. The factors

of design of training program which have been included in each dimension are highlighted. Thus dimension 1 contains overall design of the program and practical and theoretical content in the program. These dimensions are used to analyse the response of different categories.

Table 4

Standardised Canonical Discriminant Functions

Factors	Function		
	1	2	3
F1 - I feel the training program is well designed.	.850	-.821	.158
F2 - I feel the training content is relevant to objectives.	-.378	.053	-.151
F3 - A sufficient amount of both theoretical and practical content is included in training programs.	.965	.726	.918
F4 - The training program is well structured and sufficient time is allocated for each topic.	-.303	.445	-1.408
F5 - I believe the knowledge/skills and information gained from this training will me play bigger job than my current job.	-.839	.145	.546

Table 5 maps the different categories on the above dimensions. A response in this table greater than '0', indicates a positive inclination to that dimension. Similarly a negative response implies a lack of that factor or dissatisfaction towards the same. This analysis forms the basis for construction of models or information systems for different categories. Like assistant engineers are completely dissatisfied with the design of the program, because they have a negative response to all dimensions as shown in the table.

Table 5

Functions at Group Centroids

Category	Function		
	1	2	3
1. Assistant Engineers	-.740	-.062	-.080
2. Assistant Executive Engineers	.253	-.218	.118
3. Additional Superintendenting Engineers	.522	.052	-.219
4. Dy. Chief Engineers	-.004	.301	.126

Discriminant Analysis on Training Design Analysis

Table 6 shows the different dimensions of Discriminant analysis. The factors for implementation of training program which have been included in each dimension are highlighted. Thus dimension 1 contains gender of the faculty and maintenance of appropriate environment for the program. These dimensions are used to analyse the response of different categories.

Table 6

Standardised Canonical Discriminant Functions

Factors	Function		
	1	2	3
F1 - I feel the training programs are well implemented.	0.367	0.262	0.004
F2 - The activities and exercises used in the training help me know how to apply the learning from the training on the job.	0.243	-1.486	-0.03
F3 - The presentation techniques used in the class are effective.	-0.818	0.367	-0.362
F4 - The faculty presentation is satisfactory and easy to understand.	-0.023	0.077	0.044
F5 - I am more comfortable with male faculty for conducting training sessions.	0.647	0.143	0.774
F6 - The training program has appropriate environment in terms of - subject matter, comfort, hearing noise, visibility.	0.779	0.699	-0.645
F7 - The training program is well managed and the venue is comfortable.	-1.066	0.278	0.85

Table 7 maps the different categories on the above dimensions. A response in this table greater than '0', indicates a positive inclination to that dimension. Similarly a negative response implies a lack of that factor or dissatisfaction towards the same. This analysis forms the basis for construction of models or information systems for different categories. Like assistant engineers have a negative response to dimension 3, which means that they do not prefer male faculty and find the venue of training uncomfortable.

Table 7

Functions at Group Centroids

Category	Function		
	1	2	3
1. Assistant Engineers	0.697	0.653	-0.162
2. Assistant Executive Engineers	-1.018	0.161	-0.031
3. Additional Superintendenting Engineers	0.293	-0.719	-0.437
4. Dy. Chief Engineers	0.32	-0.265	0.598

Discriminant Analysis on Training Implementation Analysis

Table 8 shows the different dimensions of Discriminant analysis. The factors for evaluation of training program which have been included in each dimension are highlighted. Thus dimension 1 contains work environment support for application of learning. These dimensions are used to analyse the response of different categories.

Table 8

Standardised Canonical Discriminant Functions

Factors	Function		
	1	2	3
F1 - The skill and knowledge of training is scientifically measured before and after training.	0.265	1.228	-0.62
F2 - The feedback from trainees is used to improve ongoing training programs.	-1.311	0.024	0.991
F3 - The work environment of PSPCL encourages application of new knowledge and skills acquired from the training programs.	1.398	-0.525	0.416

Table 9 maps the different categories on the above dimensions. A response in this table greater than '0', indicates a positive inclination to that dimension. Similarly a negative response implies a lack of that factor or dissatisfaction towards the same. This analysis forms the basis for construction of models or information systems for different categories. Like deputy chief engineers are completely satisfied with the evaluation system of the training programs at PSPCL.

Table 9

Functions at Group Centroids

Category	Function		
	1	2	3
1. Assistant Engineers	-0.280	0.369	-0.027
2. Assistant Executive Engineers	-0.266	-0.264	0.059
3. Additional Superintendenting Engineers	0.198	-0.175	-0.145
4. Dy. Chief Engineers	0.466	0.105	0.081

Discriminant Analysis on Training Evaluation

Table 10 shows the different dimensions of Discriminant analysis. The factors from Holton's LTSI scale for learning transfer, which have been included in each dimension, are highlighted. Thus dimension 1 contains learner readiness, resource availability and workload flexibility. These dimensions are used to analyse the response of different categories.

Table 10

Standardised Canonical Discriminant Functions

Factors	Function		
	1	2	3
Before training, I have a good understanding of how it would fit my job related development.	0.686	0.352	0.019
I am confident in my ability to use newly learnt skills on job.	-0.080	-0.715	0.515
I am eager to use new learning on job.	0.259	0.465	-0.237
My job performance improves when I use the things that I've learnt from the training.	-0.172	0.523	0.265
My improved performance as a result of training is recognised by superiors.	0.273	-0.166	0.288
I believe that such training programs are useful for both employees and PSPCL.	-0.211	0.268	-0.232
Employees of PSPCL receive "perks" when they apply newly learnt skills on job.	-0.300	-0.315	0.139
If I do not use my training, I will be cautioned about it.	-0.428	-0.199	0.359

Table 10 (Contd.)

My colleagues encourage me to use the skills that I've learnt from the training.	-0.574	0.209	-0.477
People in my group/department are open to change the way things are done.	0.037	0.210	0.260
My supervisor sets goals for me which encourages me to apply the skills that I've learnt from the training.	-0.728	0.710	-0.139
The teachings of training closely correspond to my job requirement.	-0.354	-0.854	-0.272
Resources I need to implement my learning from training are available at actual workplace.	0.562	0.294	-0.308
My workload allows time to try application of new things.	1.109	-0.422	-0.550
I believe the training programs are scheduled in such a way that my general work is not hampered.	0.008	0.352	0.575

Table 11 maps the different categories on the above dimensions. A response in this table greater than '0', indicates a positive inclination to that dimension. Similarly a negative response implies a lack of that factor or dissatisfaction towards the same. This analysis forms the basis for construction of models or information systems for different categories. Like assistant engineers have a highly negative response (greater than '-1') to dimension 1.

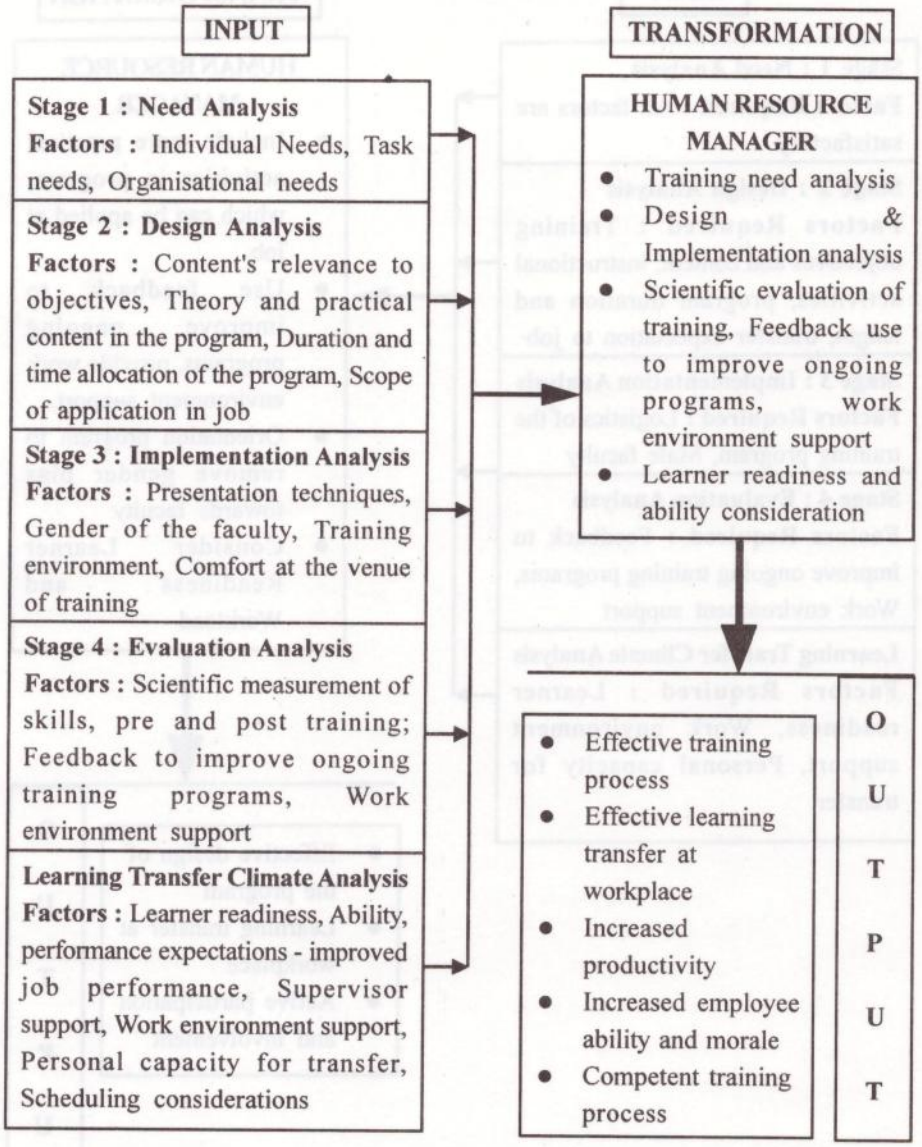
Table 11

Functions at Group Centroids

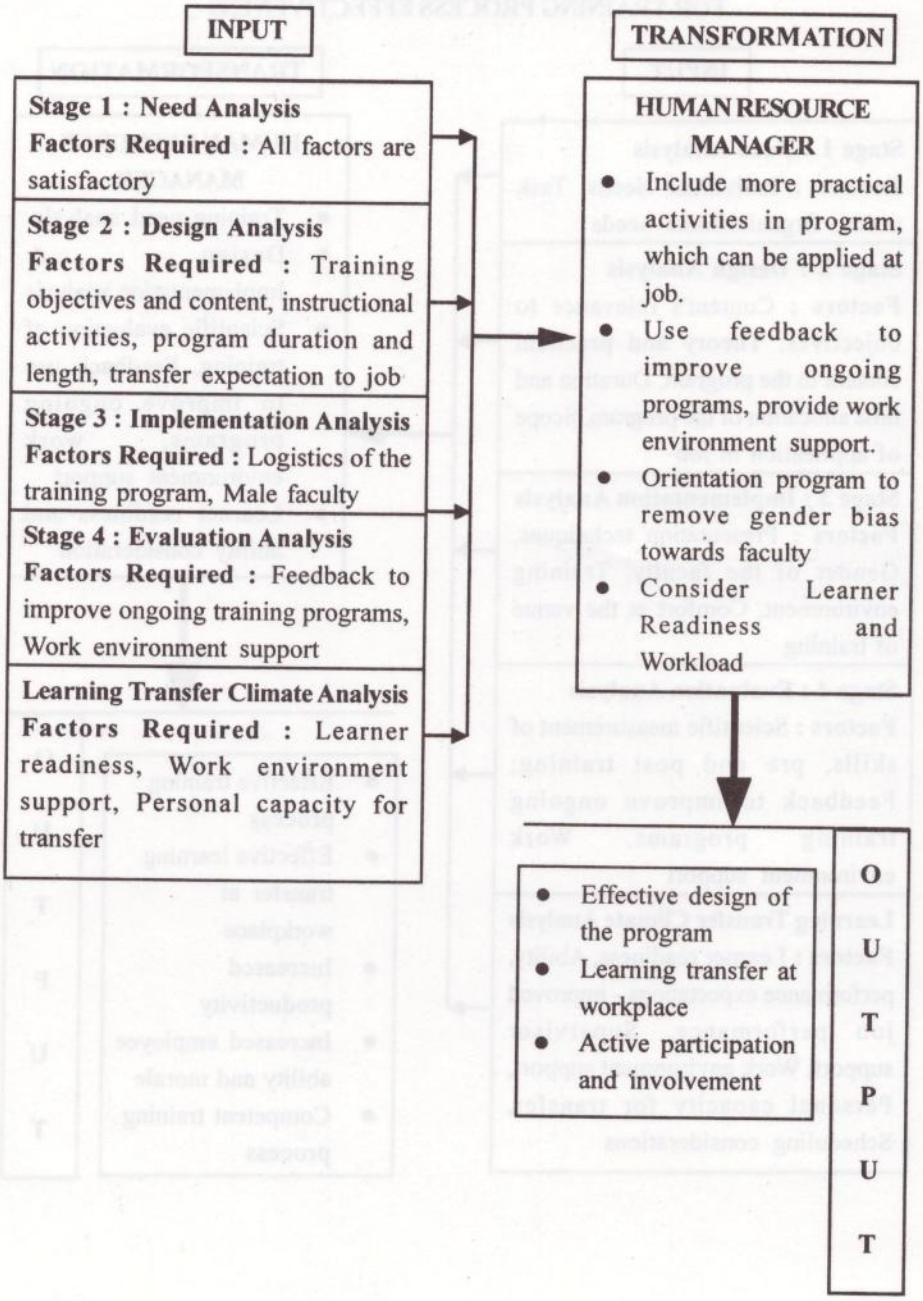
Category	Function		
	1	2	3
1. Assistant Engineers	-1.056	0.097	0.718
2. Assistant Executive Engineers	-1.169	0.016	-0.566
3. Additional Superintendenting Engineers	1.188	-0.946	0.029
4. Dy. Chief Engineers	1.581	0.711	-0.053

Discriminant Analysis on Learning Transfer Climate

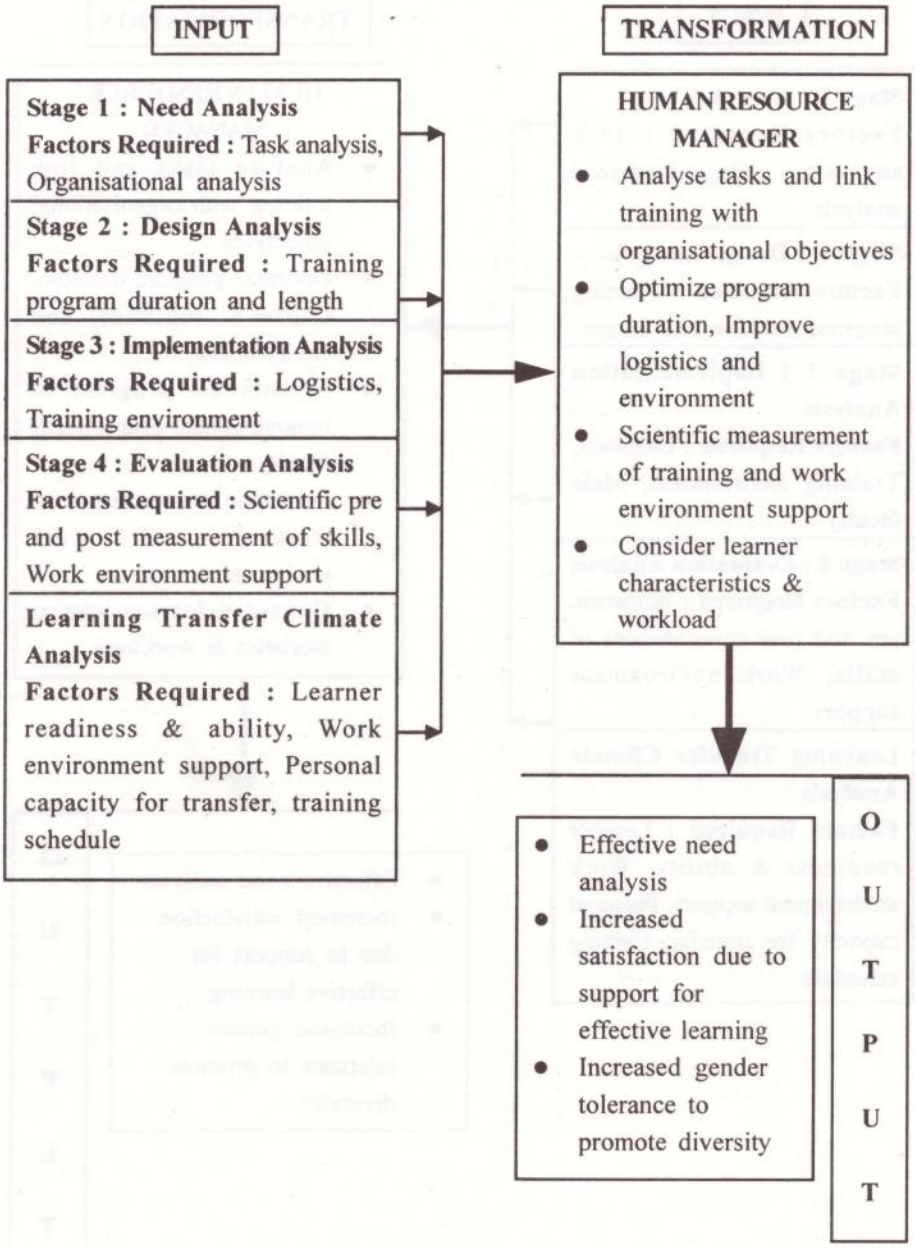
GENERAL HUMAN RESOURCE INFORMATION SYSTEM FOR TRAINING PROCESS EFFECTIVENESS



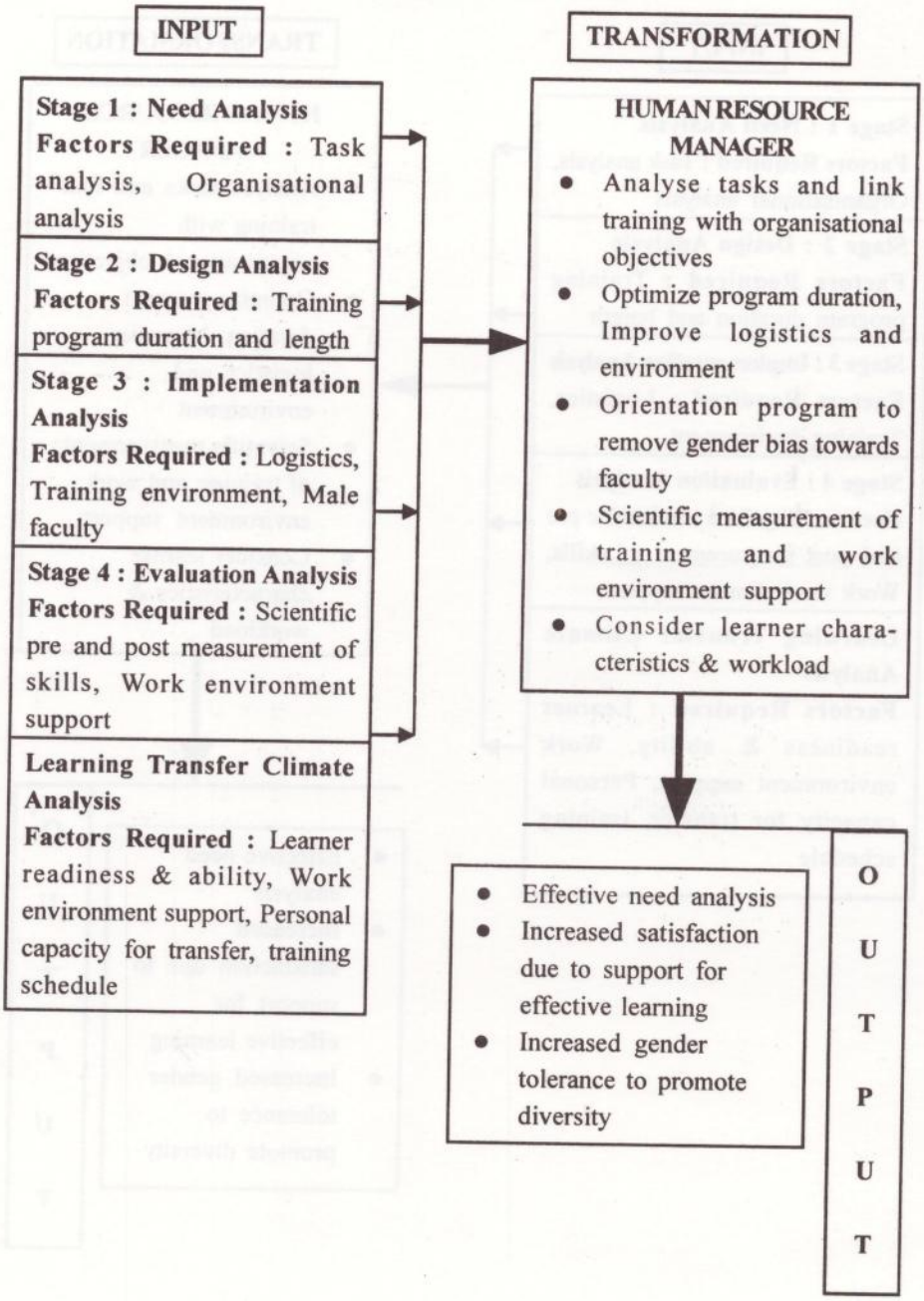
SPECIALISED HRIS FOR AE FOR TRAINING PROCESS EFFECTIVENESS



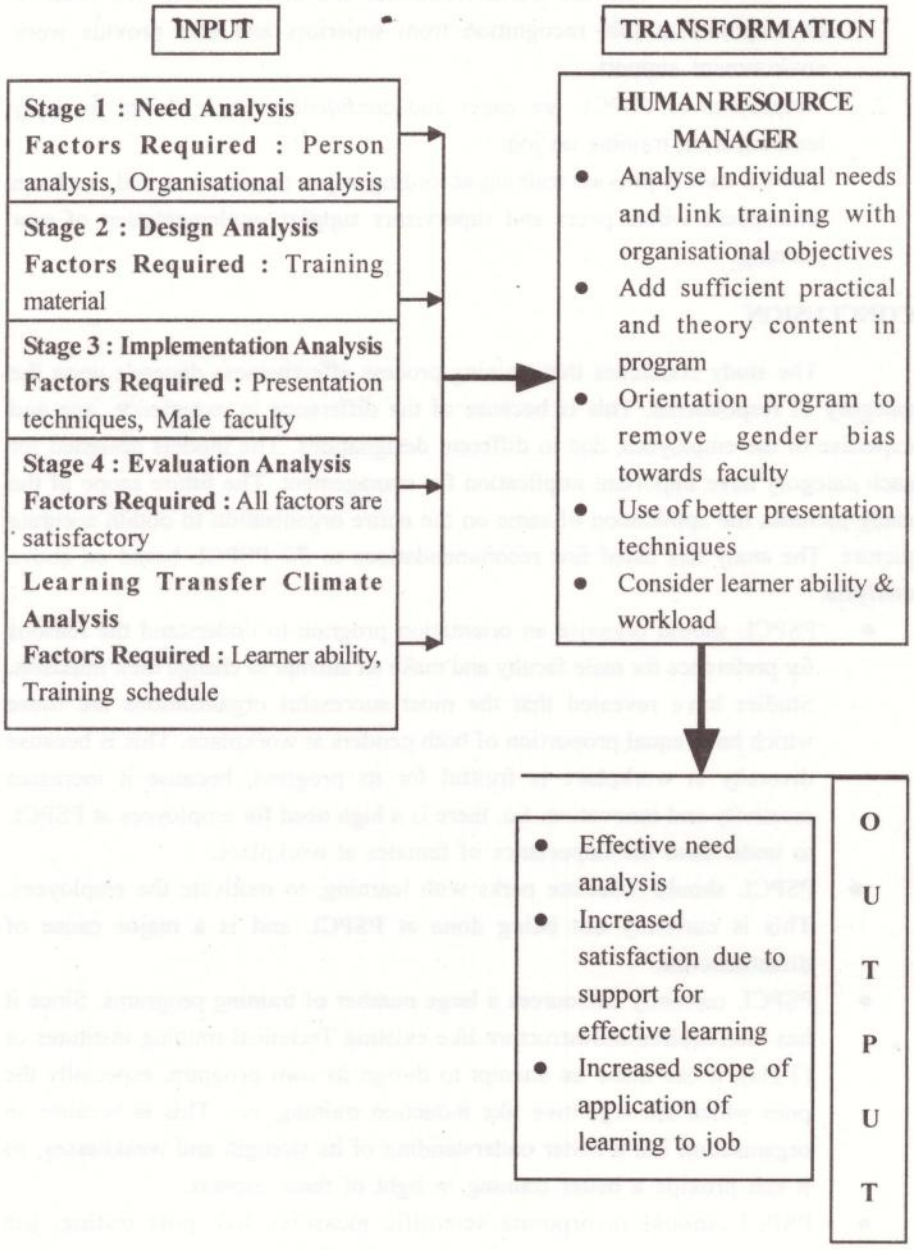
SPECIALISED HRIS FOR AEE FOR TRAINING PROCESS EFFECTIVENESS



SPECIALISED HRIS FOR ASE FOR TRAINING PROCESS EFFECTIVENESS



SPECIALISED HRIS FOR Dy. CE FOR TRAINING PROCESS EFFECTIVENESS



INTERPRETATIONS

1. PSPCL should consider learner readiness and offer training that leads to development at job, recognition from superiors and also provide work environment support.
2. Employees of PSPCL are eager and confident in their ability to apply learning from training on job.
3. PSPCL should provide training according to job requirement and create an atmosphere where peers and supervisors support implementation of new learning.

CONCLUSION

The study concludes that training process effectiveness depends upon the category of respondents. This is because of the difference in experience, age and expertise of the employees, due to different designations. The models designed for each category have important implication for management. The future scope of the study includes the application of same on the entire organisation to obtain accurate picture. The study has listed few recommendations to the PSPCL based on above analysis.

- PSPCL should organise an orientation program to understand the reasons for preference for male faculty and make an attempt to change their mindsets. Studies have revealed that the most successful organisations are those which have equal proportion of both genders at workplace. This is because diversity at workplace is fruitful for its progress, because it increases creativity and innovation. So, there is a high need for employees at PSPCL to understand the importance of females at workplace.
- PSPCL should associate perks with learning, to motivate the employees. This is currently not being done at PSPCL and is a major cause of dissatisfaction.
- PSPCL currently outsources a large number of training programs. Since it has the required infrastructure like existing Technical training institutes or (TTIs), it can make an attempt to design its own program, especially the ones which are repetitive like induction training, etc. This is because an organisation has a better understanding of its strength and weaknesses, so it can provide a better training in light of these aspects.
- PSPCL should incorporate scientific measures like post testing, job observation, behavioural changes, as applicable, for post and pre assessment of training.

- PSPCL should ensure that supervisors set challenging goals for employees, so that they can apply what they have learnt from the training programs.
- Most of the employees feel that training does not lead to improvement in job performance. PSPCL should take measures to understand the reasons for this mindset of the employees.
- PSPCL should make amendments in appraisal system, so that it takes into account the training which employee has undergone. Another alternative can be that PSPCL should associate perks with application of learning from training or associate some form of recognition from supervisors, if an employee applies newly learnt skills and practices.

The study is limited by several factors such as limited time span which restricts the number of respondents to be included in the sample. Since the sample size is very small, the study cannot be generalised to entire organisation, however, it provides a base for further and broader study which can encompass the entire organisation. The reluctance of the respondents and their busy schedules also inhibited the process of data collection. The findings and conclusion are based on experience of the respondents, which may be subject to bias. The analysis of the study is based on sample of techniques and statistical calculations only.

References

Boucher, Jacqueline; and Smeers, Yves (2001), "Alternative Models of Restructured Electricity Systems, Part 1 : No Market Power", *Operations Research*, Vol. 49 (6), pp. 821-838.

Broucker, Bruno (2007), "Measuring Transfer of Public Management Programmes : The Learning Transfer System Inventory in the Belgian Federal Administration", *Public Administration and the Management of Diversity : EGPA Conference*, Madrid, Spain.

Glance, Natalie S.; and Hogg, Tad; and Huberman, Bernardo A. (1997), "Training and Turnover in the Evolution of Organizations", *Organization Science*, Vol. 8 (1), pp. 84-96.

Greenberg, David H.; and Michalopoulos, Charles; and Robins, Philip K. (2004), "What Happens to the Effects of Government-Funded Training Programs over Time?", *The Journal of Human Resources*, Vol. 39 (1), pp. 277-293.

Lee, Sang M.; and Kim, Yeong R.; and Lee, Jaejung (1995), "An Empirical Study of the Relationships among End-User Information Systems Acceptance, Training, and Effectiveness", *Journal of Management Information Systems*, Vol. 12 (2), pp. 189-202.

Machin, Anthony M. (2002), "Planning, Managing and Optimising Transfer of Training", K. Kraiger (Ed.), pp. 263-301.

Noe, Raymond A. (1986), "Trainees' Attributes and Attitudes : Neglected Influences on Training Effectiveness", *The Academy of Management Review*, Vol. 11 (4), pp. 736-749.

O'Connell, Philip J.; and Byrne, Delma (2010), "The Determinants and Effects of Training at Work : Bringing the Workplace Back in", *European Sociological Review*, Vol. 0 (0), pp. 1-18.

Phadke, Amol; and Rajan, Sudhir Chella (2003), "Electricity Reforms in India: Not too Late to Go Back to the Drawing Board", *Economic and Political Weekly*, Vol. 38 (29), pp. 3061-3072.

Prasad, Asha (2006), "Power Sector Reforms in Delhi : Human Resource Perspective", *Indian Journal of Industrial Relations*, Vol. 42(2), pp. 203-226.

Quinn, Robert E.; and Rohrbaugh, John (1983), "A Spatial Model of Effectiveness Criteria : Towards a Values Approach to Organizational Analysis", *Management Science*, Vol. 29 (3), pp. 363-377.

Schumaker, Alice M. (2004), "Predicting Perceived Effectiveness of Training in Local Government : A Study of a Municipal Clerks Training Program", *Public Performance & Management Review*, Vol. 27 (3), pp. 51-59.

Siddiqui, Sulaman Hafeez; and Asghar, Waheed (2008), "Linking Training, Productivity and Competitive Strategy : Implications of Value Chain Model for Strategically Effective Training Programs", *International Review of Business Research Papers*, Vol. 4 (1), pp. 310-324.

Yamnill, Siriporn; and McLean, Gary N. (2001), "Theories Supporting Transfer of Training", *Human Resource Development Quarterly*, Vol.12 (2).