FACTORS CONTRIBUTING TO TRAINING EFFECTIVENESS

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ABSTRACT

This study is an attempt at examining the factors that contribute towards training effectiveness. The questionnaire survey method was used on a sample drawn from the staff of a multinational electronics company in Penang. The respondents had attended a course within 6 months of the study. The results of the study show that trainers' capabilities, suitability of methods of delivery, location of training; trainee's job characteristics and appraisal and reward systems significantly influence training effectiveness.

INTRODUCTION

In order to keep pace with accelerated technological advancement and intense global competition, the workforce has to be competent and flexible to adapt to rapid changes. Workplace performance constantly requires new knowledge, skills and attitudes. Literature points out that training and development play an important role in molding employees to meet the requirements of current and future job performance (Dessler 1994, Ivancevich 1995). A recent study by Papalexandris and Nikandrou (2000) found that training helps organizations achieve their objectives by making people capable of meeting new skill demands.

RESEARCH QUESTIONS

It is often assumed that by implementing a training program the employees will be well trained and the goals of an organization can be achieved. Little attention has been given to whether the training program achieves the objectives or has been effective because proper evaluation is seldom done. This could be due to the problem of the lack of understanding of the factors driving effectiveness. Relatively few empirical studies have been conducted to understand the factors contributing to training effectiveness.

McClelland (1994) states that the evaluation phase is the most overlooked aspects of training. Evaluation is often seen as getting participants' immediate reactions to a course without really assessing the overall training effectiveness.

This study is to investigate the phenomenon of training effectiveness. Why are some training programs more effective than others? The research questions addressed in this study are:

♦ What factors determine training effectiveness?

♦ Does the type of training affect effectiveness?

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- ◆ Do trainee characteristics affect training effectiveness?

- ◆ Do trainers' competence affect training effectiveness?

- ◆ Does training environment affect training effectiveness?

- ◆ Does work environment impact training effectiveness?

LITERATURE REVIEW

Crooks (1994) states that the success of any training program needs to be evaluated in relation to the stated training objectives. Bramley (1996) posits that the ultimate objective of training and development is to increase the effectiveness of the organization. Harrison (1994), however, opines that investing in people's learning and development cannot guarantee an effective contribution to the achievement of business goals. Line management must provide support, assistance and motivation towards the training programs. The managers should be involved in implementing the training.

Dessler (1994), Ivancevich (1995) and Noe and Hollenbeck (1994) point out that most training and development activities focus on the individual with the objective of enabling him or her to become more effective in the job. A human resource development program including training could be a brief workshop or an extended professional development project , which is supposed to introduce new or expand skills, knowledge or attitudes. After the participants attended the programs, the extent to which these skills, knowledge or attitudes changes have been achieved have to be measured to determine whether or not the objectives of the programs have been achieved.

Bedingham (1997) indicates that while many organizations have performance appraisals, some have blind spot when it comes to evaluation of training. Performance review is carried out once a year and appraisers usually play a dominant role in determining training and development to be undertaken by the employee. The employee, though, might not share the same perspective as the appraiser or managers.

Tracey and Tews (1995) point out that an individual's ability to learn and acquire new knowledge and skills have a direct influence on training effectiveness. Learning will be relatively quick and efficient if trainees possess critical-reason, problem-solving and decision-making abilities. Al-Khayyat and Elgamal (1997) raise the issue that trainees'characteritics play an important role in determining whether training objectives are achieved.

Boyce (1996) mentions that adults are quickly frustrated and develop poor attitudes towards training, especially if they feel that their time is wasted on material that is not useful. Warr and Bunce (1995) affirm that even though trainees view a training program as enjoyable, their reaction might not be associated with either learning achievement or changes in work behaviour.

Simpson (1994) advises against conducting training in the office during regular business hours due to frequent disruptions. According to Kovach (2000) people are better able to relax, open up and feel secure enough to try new ideas and risk new behaviour when they are away from their performance - based work environment.

Cheeseman (1994) finds that work environment may have a significant effect on the transfer of training to the job. Tracey and Tews (1995) outline three major components of work environment that may

support or impede training effectiveness i.e. job characteristics, social networks and formal organization systems. Employees must be given the opportunity to practice and refine the skills acquired.

Many writers view training evaluation as the gathering of information to make a value judgment about the program, such as the necessary changes in skills, knowledge and attitudes or the possible cessation of the program, (Gilley and Eggland 1989, Ivancevich 1995; Bramely 1996, Bernardin & Rosset 1998).

Just as there are varying definitions of evaluation , there are variations in the way writers describe the reasons for carrying out evaluation. Bee and Bee (1995) suggest that there are four main reasons for evaluation:

◆   To improve the quality of the training in terms of delivery (trainer, methods, length of training) and training objectives (content and level of training),

◆   To assess the effectiveness of the overall course, trainer and training methods,

◆   To justify the course, i.e., to prove that the benefits outweigh the costs, and

◆   To justify the role of training for budget purposes especially in cutback situations.

Kirkpatrick (1983) proposes a four-stage models or levels for measuring the effectiveness of work-place training programs. The four levels are:

Reaction: The trainees' satisfaction with the course,

Learning: The focus is on the acquisition of declarative or procedural knowledge. This may be evaluated through a pencil and paper test or a demonstration of how to operate machinery,

Behavior: It measures behavior change on the job,

Result: It measures the financial benefits to the organization.

The value of information gathered at each level increases as the evaluation moves from measuring reaction to measuring results. Gilley and Eggland (1989) find that reaction evaluation is best when training costs are low and it is important to determine emotional responses of trainees. They list five steps for the process of evaluation:

◆   Collection of data (questionnaire, pretests, post-tests, work reports and records, interviews, observations and management's perception of the change),

◆   Arranging and analyzing the data,

◆   Interpreting and drawing conclusions,

◆   Comparing the conclusions to stated objectives,

◆   Recommending changes for then next program.

Hayes and Williams (1975) find that younger supervisors perceived training to be more effective indicating that trainee backgrounds have some bearing on training effectiveness. Karuppaiya (1996) and Khamis (2000) studied similar areas and found that trainee backgrounds have some bearing on training effectiveness.

David's (1997) study shows that work environment such as perceived superior support leads to training effectiveness. Training environment including location, level of comfort, absence of disruptions, etc, is another important element in making training effective (Simpson 1994, Kovach 2000).

THEORETICAL FRAMEWORK

The review of the literature indicates that training effectiveness is in part influenced by the following factors:

- Type of training, (technical or non-technical) (Khamis 2000),

- Trainee's personal characteristics (age, gender, marital status, level of education, work experience) (Hayes and Williams, 1975, Al-Khayyat & Elgamal, 1997),

- Trainers' competence: trainers' capabilities, styles and methods of training (such as lectures, role-play, case studies, demonstrations, group exercises) (Bedingham 1997),

- Training environment (location, appropriateness and comfort of the venue and facilities; length of sessions, breaks and opportunities for questions) (Simpson 1994, Kovach 2000),

- Work environment i.e. trainee's job characteristics, availability of role methods, opportunities to practice new skills, equipment and resources, support from superiors & peers, appraisal and reward system) (Tracey and Tews 1995, Bedingham 1997).

Training effectiveness can be divided into four dimensions namely relevance, job skills enhancement, knowledge improvement for the job attitude change. Boyce (1996) and Rosset (1997) assert that training effectiveness is dependent on content relevance. In order for this training to be effective, it must be relevant to the work situation of the trainee. The degree of relevance to the trainee as perceived by the trainee can be considered an effectiveness measure. What the trainee considers relevant might not necessarily match with what the trainee considers relevant. Dessler (1994), Ivancevich (1995) and Noe and Hollenbeck (1994) opine that training is meant to introduce new or expanded skills, knowledge and attitudes that are to be measured to determine whether training objectives have been achieved. Thus, the framework for this research may be schematically represented as in figure 1.

Hypotheses

On the basis of the literature review and theoretical framework this study will attempt to test the following hypotheses. The hypotheses are stated in the null form and will be tested as such.

Type of Training

H1: There will be no difference in the effectiveness of training between technical and non-technical programs.

Trainee Characteristics

H2.1: Age will not significantly affect the effectiveness of training.

H2.2: Gender will not significantly affect the effectiveness of training.

H2.3: Marital status will not significantly affect the effectiveness of training.

H2.4: Level of education will not significantly affect the effectiveness of training.

H2.5: Work experience will not significantly affect the effectiveness of training.

H2.6: Position level will not significantly affect the effectiveness of training.
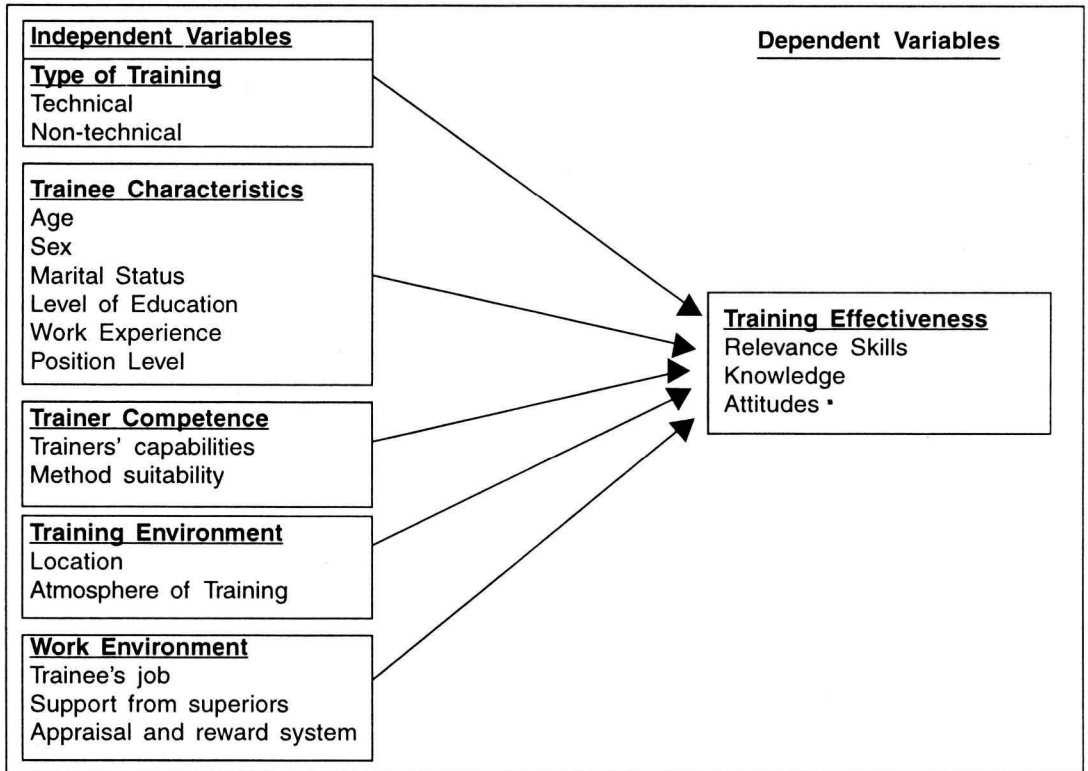
Trainer Competence

H3.1: Trainer's capabilities will not have an impact on training effectiveness.

H3.2: The suitability of delivery methods will not have an impact on training effectiveness.

Training Environment

H4.1: There will be no difference in the effectiveness of training between training held internally and externally.

Fig. 1 Theoretical Framework

Independent Variables	Dependent Variables
Type of Training Technical Non-technical	
Trainee Characteristics Age Sex Marital Status Level of Education Work Experience Position Level	**Training Effectiveness** Relevance Skills Knowledge Attitudes •
Trainer Competence Trainers' capabilities Method suitability	
Training Environment Location Atmosphere of Training	
Work Environment Trainee's job Support from superiors Appraisal and reward system	

H4.:2: There is no relationship between training environment and training effectiveness

Work Environment

H5.2: Trainee's job characteristics will not significantly affect training effectiveness.

H5.2: Supportive work environment will not significantly affect training effectiveness.

H5.3: Appraisal and reward systems will not significantly affect training effectiveness.

METHODOLOGY

This research was conducted as a cross-sectional study in which data was collected at one point in time i.e. in April 2001. The data gathered were from a survey feedback using questionnaire from individuals in a non-contrived environment. Respondents were required to answer questionnaires based on category scale and 5-point scales. The respondents answered the questionnaire on the basis of how they felt about each question. A letter of instructions was given with each questionnaire.

The unit of analysis in this study is the training program organized by his or her department either in the company premises or outside.

SAMPLE

Data was gathered from staff members of a multinational manufacturing company in Penang. One company was chosen to ensure that the company environment is a constant. The target sample size was 200

with approximately equal number of respondents having attended technical and non-technical training programs. The total staff population of this company was 500. The respondent was asked to evaluate the most recent training program he/she attended.

DATA COLLECTION

Initially, a series of focused group interviews were conducted to determine prominent perceptions that respondents had towards training. Data was collected using structured questionnaire formulated on the basis of the theoretical framework and sample questions from related studies, (David, 1997; Khamis, 2000; Karuppaiya, 1997). A pilot study was conducted on 15 respondents to test the validity of the questionnaire.

QUESTIONNAIRE DESIGN

The questionnaire contains five sections. Part A has questions soliciting trainee's particulars to determine trainees' characteristics such as age, gender, marital status, qualifications, etc. Part B contains questions pertaining to trainee's perception of training, relevance of content in relation to the achievement of training effectiveness (6 questions), knowledge (5 questions) and skills gained (4 questions) and attitude changes (5 questions). Part C asks the trainee to assess trainers' competence (8 questions). Part D and E of the questionnaire seek to gather information on the training environment (9 questions) and work environment (10 questions) respectively and their impact on training effectiveness. Respondents were asked to fill in the questionnaire to indicate the degree to which they were satisfied with the trainer, subject matter, content, materials, training environment and work environment. The questions are on a scale of 1 to 5, with being "totally disagree" and 5 "totally agree".

QUESTIONNAIRE ADMINISTRATION

An internal e-mail was sent to all the staff of the company to inform them about the exercise. After that, managers and supervisors in all departments were asked to distribute the questionnaire to 50% of their staff on all shifts. They were to collect them back within one week.

Of the 250 questionnaires distributed 206 were returned. Forty-three were incomplete and had to be rejected. One hundred and sixty three questionnaires were usable for analysis. This gave a response rate of 65.2%.

Profile of Respondents

Table 1: Regrouped data of Profile of Respondents

Items of Demography	Frequency	Percent
Age		
36 and below	140	85.9
37 and above	23	14.1
Qualifications		
Non-degree	107	65.6
Degree	56	34.4
Work Experience		
5 years & below	128	78.5
6 years & above	35	21.5
Position		
Exempt staff	99	60.7
Non-exempt	64	39.3
(non-supervisory) staff		
Departments		
Support group	31	19
Line functions group	132	81

The table shows that most of the respondents were 36 years of age or lower. The majorities were non-degree holders, with 5 years or less experience. Sixty percent were holding supervisory positions in the line function departments such as manufacturing, engineering, testing, quality

assurance and materials. The rest were from support groups such as human resource management, accounting, IT, etc.

RELIABILITY OF EFFECTIVENESS MEASURES

Training effectiveness is measured in terms of relevance, improvement in skills, knowledge and attitude. Initially, the reliability coefficient was computed for each dimension separately. Table 2 shows the Cronbach alpha of the four measures of training effectiveness ranging from 0.6376 to 0.8334, which are considered acceptable. The Cronbach alpha for the overall training effectiveness measure is then computed. A value of 0.9012 is obtained, which is very good.

Table 2. Reliability of Training Effectiveness Measures

		No. Of Items	Cronbach alpha	
Training Effectiveness	Relevance	6	.83	
	Skills	5	.63	
	Knowledge	4	.78	.90
	Attitude	5	.68	

Table 3. Reliability of Independent Variables

Items	No. Of Items	Cronbach alpha
Trainer's Capabilities	5	.85
Suitability of Methods of Delivery	3	.69
Training Environment	9	.56
Trainee's Job Characteristics	2	.67
Support from Superiors	4	.63
Appraisal & Reward System	3	.73

The Cronbach values for independent variables in table 3 show a range of between .56 to .85, which are acceptable.

DESCRIPTIVE STATISTICS

The means for the Likert-scaled dependent and independent variables were obtained as shown in tables 4 and 5.

Table 4. Mean for Training Effectiveness

Item	Mean	Std Dev.
Relevance	3.82	.57
Skills	3.65	.58
Knowledge	3.87	.52
Attitude	3.67	.54
Overall Effectiveness	3.75	.47

Table 5. Means for Independent Variables

Item	Mean	Std. Dev
Trainer's Capabilities	3.76	.57
Suitability of Delivery Methods	3.57	.73
Training Environment	3.51	.553
Trainee's Job Characteristics	3.70	.72
Superior & Peer Support	3.58	.57
Appraisal & Reward System	3.38	.66

Tables 4 and 5 show that the means for the dependent and independent variables are higher than the mid-value of 3 on the 1-5 scale.

TEST OF HYPOTHESES

Multiple linear regressions are used to test the hypotheses. Model 1 attempts to relate the overall training effectiveness as dependent variable to the independent variables. The overall training effectiveness measure is the aggregated mean for relevance, skills, knowledge and attitude. The results of the regression are shown in table 6.

Table 6. Model 1: Multiple Regression Results for Training Effectiveness

$R^2 = .654$
F value = 18.51
Sig. F = .00

Variables	β Coefficient	t	Sig
Training Type	0.007	.115	.909
Age	-.086	-1.583	.116
Gender	-.044	-.832	.407
Marital Status	0.81	1.450	.149
Education Level	.041	.637	.525
Work Experience	.043	.817	.415
Position Level	0.21	.306	.761
Trainer Capabilities	.350	5.141	.000
Methods Suitability	.155	2.60	.010
Location	-.200	-3.753	.000
Training Environment	.011	.171	.864
Department	.100	1.831	.069
Job Characteristics	.294	4.772	.000
Superior's & Peer Support	.047	.664	.508
Appraisal & Reward System	.128	2.126	0.35

The result of the regression show that model 1 has significant explanatory value of the dependent variable training effectiveness, with $R^2 = .654$, F = 18.51, p<=.00. The model is able to explain more than 65% of the variability in training effectiveness. The independent variables that significantly contribute towards the explanatory power of the model are: trainer capabilities β = .35, t=5.14, p<=.00; job characteristics β = .29, t = 4.77, p <=.00; location β = -.20, t = -3.75, p < = .00, methods suitability β = .155, t = 2.60, p <= .01 and appraisal and reward system β = .128, t = 2.13, p< = .04.

Hypothesis 1 states that there is no significant difference in the effectiveness of training between technical and non-technical training. The results in table 6 shows a β of .007, sig = .909, which indicates that there is no significant difference. Therefore, hypothesis 1 is supported.

Hypotheses 2.1 to 2.6 state that trainee's characteristics of age, gender, marital status, level of education, work experience and position level will not significantly affect training effectiveness. The results of analysis in table 6 show that none of these variables is significant. Thus, these hypotheses are supported.

Hypotheses 3.1 and 3.2 state that trainer's capabilities and delivery methods will not have an impact on training effectiveness. Both hypotheses 3.1 and 3.2 have positive beta weights of .350 and .155, which are significant at .000 and .010 respectively. Therefore, hypotheses 3.1 and 3.2 are not supported. It could be concluded that trainer's capabilities and delivery methods do have an impact on training effectiveness.

Hypothesis 4.1 states that there is no difference between the effectiveness of training held externally and internally. The results show β = -.200, sig = .000, which indicate that there is a significant difference between the effectiveness of training held externally and internally, in favor of those held externally. The hypothesis is not supported.

Hypothesis 4.2 states that there is no relationship between training environment and training effectiveness. The results substantiated this hypothesis.

Hypothesis 5.1 states that trainee's job characteristics will not significantly affect effectiveness of training. Table 6 shows job characteristics have a β of .294, sig = .000, which indicates that this hypothesis is not substantiated. It can be concluded that

trainee's job characteristics (such as conduciveness for participation, ability to practice new skills, etc.) will significantly affect the effectiveness of training. The positive beta weight of .294 indicates that when the trainee's job nature is more conducive and allows for participation and application, the effectiveness of training will also increase.

Hypothesis 5.2 states that work environment will not significantly affect the effectiveness of training. The results in table 6 show that this hypothesis is substantiated (β=.049, sig = .508). Thus, there is no difference in training effectiveness due to superior and peer support.

Hypothesis 5.3 states that appraisal and reward system will not significantly affect the effectiveness of training. Table 6 shows that this hypothesis is not supported (β = .128, sig = 0.035) indicating that when the appraisal and reward system is integrated with the training and development system, the effectiveness of training also increases.

DISCUSSIONS

The study sets out to determine the factors contributing to training effectiveness in a multinational company. The independent variables include training type, trainee characteristics, trainer competence, training environment and work environment. The dependent variable is training effectiveness comprising relevance, skills, knowledge and attitude enhancement.

The findings of this study show that there is no significant relationship between training effectiveness and the type of training (technical and non-technical). This supports previous study by Khanis (2000) who found no significant difference in overall training effectiveness between technical, conceptual and attitudinal skills training.

Results of this study also show that trainee characteristics such as age, gender, marital status, level of education, work experience and position level bear no significant relationship with training effectiveness. This is in conflict to most literature, which found trainee characteristics to be important determinants.

However, this study supports David's (1997) study on supervisory level staff, which found that gender, education leave, and work experience do not have any effect on training effectiveness. Most of the sample in this study is also from the supervisory/ managerial group.

Trainer's competence and appropriate delivery methods are the most important determinants of training effectiveness. The trainers should not just teach, but should act as coaches and aid learning. This is in support of Bedingham's (1997) study.

In line with Simpson's (1994) study training location is found to be a significant determinant of training effectiveness. The training environment is evaluated as less conducive if conducted internally as compared to one conducted externally. Programs conducted outside the company's premises are preferred.

Work environment is another determinant of training effectiveness. An environment that encourages trainees to attend, participate, learn and apply new skills and knowledge on the job does contribute to training effectiveness.

Finally, training is seen as more effective if trainees' perceptions of training are aligned to performance requirements and linked to appraisal and reward systems. Tracey and Tews (1995) suggest that appraisal and reward system should be linked to performance and training and development.

IMPLICATIONS

Factors determining training effectiveness may vary depending on the situation. However, the results provided by this research could be used as a guideline to increase the effectiveness of future training programs. By working directly on those factors, training effectiveness could be improved significantly. It could be surmised that the right selection of trainers, the location of training the trainee's job characteristics will significantly contribute to training effectiveness.

LIMITATIONS

There are several limitations associated with this study. First, the measurement of training effectiveness is obtained only through reaction feedback. It is possible that respondents are biased, Other data or views such as those from immediate superiors were not taken for comparison.

Second, respondents are staff that had attended training programs, but might not have attended the same program. Having respondents who attended the same program conducted by the same trainer could produce more accurate results.

Third, the response to the questionnaire is based on the perception of training programs that respondents attended within the previous six months prior to the study. Opinion of respondents might differ depending on how long ago within the six months that they attended the course.

Fourth, the analytical technique used in the test of hypothesis was only simple multiple repression analysis. Hierarchical repression analysis would have provided better results isolating the effects of various factors.

CONCLUSIONS

Training must be seen as an ongoing process rather than discreet event. Training has to be constantly evaluated to keep up-to-date with the needs of the organization and to stay ahead of competitors. As the saying goes, if your competitors are not hiring your employees, it is time to review your training programs.

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