Work Environment Factors and Implications for Transfer of Training

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ABSTRACT
The majority of research on training transfer is descriptive and identifies or describes factors that may influence transfer without examining how these factors could be changed or managed. The application of learned knowledge and skills from training programmes is an area of concern to both HRD practitioners and academicians. Research has demonstrated that training efforts are unlikely to result in positive changes in job performance unless the newly trained competencies are transferred to the work environment. The study presents an empirical test of impact of work environment on transfer of training. It is hypothesized that there is no significant relationship between opportunity for skill utilization and transfer of training and supervisor support and transfer of training. These hypotheses were tested by serving questionnaires to 201 workers working in 20 industrial units. The results showed that there is a significant relationship between opportunity for skill utilization and transfer of training but there is no significant relationship between supervisors support and transfer of training. Finally, the implications of these results for future research and practice are also discussed.

Key words: Work Environment, Opportunity for skill utilization, supervisor support, Transfer of Training.

INTRODUCTION
The transfer of learned knowledge and skills from training programmes continues to be an area of concern for both HRD researchers and practitioners. Training programmes are often designed and delivered without connecting training back to the work-environment. The majority of research on training transfer is descriptive and identifies or describes factors that may influence transfer without examining how these factors could be changed or managed (Holton and Baldwin, 2000). Although the literature on training transfer has increased over the last decade and has led to the identification of many factors that may influence training, transfer still remains an important topic for HRD persons. Moreover, investment in training activities has increased all over the world in recent years. As a result of the financial investments organizations make in training, it is important to provide evidence that training efforts are being fully realized (Dowling and Welch, 2005).

Research has demonstrated that training efforts are unlikely to result in positive changes in job performance unless the newly trained competencies are transferred to the work environment (Baldwin and Ford, 1988; Montesino, 2002; Rouiller and Goldstein, 1993). As a result there has been an increased effort to understand the antecedents and consequences of the transfer of training.

Theoretical Framework
Transfer refers to a trainee’s application to the job of what is learned in a training programme. Several researchers have developed theoretical frameworks to investigate training transfer. Baldwin and Ford (1988) define transfer of training as “the degree to which trainees effectively apply the knowledge, skills and attitudes gained in the training context to the Job” (P.63). This suggests that transfer of training first requires a trainee to learn new job-related competencies (Veleda and Caetano, 2007).
Despite the urgent need for a better understanding of the training transfer process, Baldwin and Ford (1988) realized that the available literature on training transfer has very little value to practitioners to maximize positive transfer. Among the early works on transfer of training, Noe (1986) and Baldwin and Ford (1988) are probably the most influential. Especially, the conceptual framework of the latter has attracted a lot of empirical studies to investigate how individual characteristics, job attitudes and work environment affect the transfer of training process.

Although several studies have been conducted to understand the transfer of training process, conceptual models for understanding this process are limited. Within the training literature, it is widely acknowledged that there exist a number of variables involved in the training situation upon which the effectiveness of training may be contingent, many of which may lie outside the actual experience of the training programme itself (Wexley and Latham, 1991). In response, a number of researchers have attempted to assist in guiding research efforts in the area by positing a range of theoretical frameworks to capture or map the training transfer process (Baldwin and Ford, 1988; Milheim, 1994). In 1988, for example, Baldwin and Ford building on earlier transfer work by Noe and Schmitt (1986) posited environmental favourability (or transfer climate) comprising (1) Social Support and (2) Opportunity to use, as two key dimensions of an overall construct suggested to influence the use of training on the job. However to date, researchers are still not able to determine precisely which aspects of the work environment mediate training transfer and in particular whether such aspects generalize across all organizational settings (Elangovan and Karakowsky, 1999). Thus, the study aims to test empirically the following model:

As depicted in Figure 1, it is hypothesized opportunity for skill utilization and supervisory support affect transfer of training. The following section provides a brief overview of the literature regarding the influence of work environment factors on transfer of training, giving special attention and theoretical justification to the relationships that will be tested in this study.

**INFLUENCES OF WORK ENVIRONMENT ON TRANSFER OF TRAINING**

Work environment variables have been investigated less often than training design and individual characteristics (Alwarez et al., 2004; Baldwin and Ford, 1988). However a number of studies have shown that environmental factors are important for understanding the transfer of training process (e.g. Baldwin and Ford, 1988; Lance et al., 2002).

Studies which have predominantly included social support variables in the environment construct have for the most part demonstrated support for their role in mediating training transfer. In particular, trainees’ beliefs about the opportunities to use the knowledge or skills as a result of training, and the likelihood of feedback and support from peers and
supervisors, have been assumed to be of chief importance (Bates et al., 2000; Lim and Johnson, 2002). Positive results for the effects of social support on transfer of training were also found by Rouiller and Goldstein (1993).

Supervisor support:

Supervisor support can be described as the extent to which supervisors support and reinforce the use of newly learned knowledge and skills on the job (Holton et al., 2000). Although, there is some contradictory evidence (Russel et al., 1985), the dominant literature suggests that when trainees perceive that their supervisors support the application of newly developed knowledge and skills, they are more likely to transfer these competencies back to the job (e.g. Colquitt et al., 2000; Tracey and Tews, 2005). Seyler et al. (1998) examining factors affecting motivation to transfer from a computer-based training in a large petrochemical company, found supervisory support and opportunity to use were related to variations in trainees’ levels of motivation to transfer training. Lim and Johnson (2002) in a qualitative study found that supervisory support to be a significant factor influencing learning transfer among HRD professionals in South Korea. Thus, it is hypothesized the following:

**Supervisor support for training transfer is positively related to training transfer.**

Opportunity for Skill Utilization:

Research has consistently shown that positive transfer is limited when trainees are not provided with opportunities to use new learning in their work setting (Gaudine and Saks, 2004; Lim and Morris 2006). Ford et al., (1992) found that airmen obtained differential opportunities to perform trained tasks and that these differences were related to supervisory attitudes. In Clarke (2002), limited opportunities to perform skills on the job were the highest impediment to successful training transfer. Notably, opportunity to use the trained skills was rated as the highest form of support for learners and the lack of opportunity to use training was rated as the biggest obstacle to transfer (Lim and Johnson, 2002). Thus, it is hypothesized that:

**Opportunity for skill utilization is positively related to transfer of training.**

Measurements:

The dependent variable in this study is transfer of training and independent variables are Opportunity for skill utilization and supervisor support which are measured using 5 point Likert- scale with responses ranging from (1) “Strongly Disagree” to (5) “Strongly agree”.

Method

The sample units under the study conduct both on-the-job and off-the-job training programmes due to various certifications they need to obtain to capture foreign markets and orders from MNCs based in India. This has led to increased importance for workers training programmes to improve their skills which are instrumental in turning out best products.

The primary data are collected for the purpose of the study using questionnaire at the first stage and interviews at the second stage. The research instrument used for the study is a well constructed questionnaire. The questionnaire was pretested before the survey. As it is difficult to access the workers during or after production hours in most of the units, they were met personally at home on holidays after being convinced them through their leaders, friends and relatives about the purpose of the study. Hence, the study was conducted by selecting 201 workers, using convenience sampling method which is a non-probability sampling technique, employed in 20 Large and Medium scale industrial units operating in Mysore district, Karnataka state.

The table 1 displays the profile of the workers under study. The sample consists of only male workers since majority of the workforce consists of male population. 37.34 percent of the respondents are between 20-30 years and 12.93 percent of the workers are in the age group between 51-60 years. 62.18 percent of the respondents earn less than Rs.10,000 and only 5.49 percent earn income above Rs.20,000. Under education category 62.69 percent workers belong to general education category; while the rest 37.31 percent belong to technical education category like I.T.I., and Diploma.
About 79.61 percent have attended 10-15 productivity improvement training programmes over a period of 5 years between 2005-2009. 9.95 percent of the workers have attended more than 15 training programmes.

The table 2 highlights the various training programmes conducted in order to improve the skills of the workers:

**Reliability of the variables:** the result of the reliability analysis of the instrument is provided in the following table using Cronbach’s alpha which

### Table 1: Profile of the respondents

<table>
<thead>
<tr>
<th></th>
<th>No. of .workers</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operators</td>
<td>Male</td>
<td>201</td>
</tr>
<tr>
<td>Age groups</td>
<td>20-30 years</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>31-40 years</td>
<td>64</td>
</tr>
<tr>
<td></td>
<td>41-50 years</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>51-60 years</td>
<td>26</td>
</tr>
<tr>
<td>Income</td>
<td>Less than 10000</td>
<td>125</td>
</tr>
<tr>
<td></td>
<td>10001-20000</td>
<td>65</td>
</tr>
<tr>
<td></td>
<td>Above 20000</td>
<td>11</td>
</tr>
<tr>
<td>Qualification</td>
<td>General education</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>Technical education</td>
<td>126</td>
</tr>
<tr>
<td>Frequency of training programmes attended</td>
<td>5-10 training programmes</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>10-15 training programmes</td>
<td>160</td>
</tr>
<tr>
<td></td>
<td>15-20 training programmes</td>
<td>20</td>
</tr>
</tbody>
</table>

### Table 2: Types of training programmes:

<table>
<thead>
<tr>
<th>Sl.No</th>
<th>Types of training</th>
<th>No of companies</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Total Productivity Maintenance (TPM) training</td>
<td>17</td>
<td>85</td>
</tr>
<tr>
<td>2</td>
<td>ISO 9000-2001</td>
<td>16</td>
<td>80</td>
</tr>
<tr>
<td>3</td>
<td>5 ‘S’ training</td>
<td>20</td>
<td>100</td>
</tr>
<tr>
<td>4</td>
<td>TQM training</td>
<td>13</td>
<td>65</td>
</tr>
<tr>
<td>5</td>
<td>ISO-14000</td>
<td>14</td>
<td>70</td>
</tr>
<tr>
<td>6</td>
<td>OHSAS training</td>
<td>10</td>
<td>50</td>
</tr>
<tr>
<td>7</td>
<td>7 Tools</td>
<td>9</td>
<td>46.7</td>
</tr>
<tr>
<td>8</td>
<td>Other training programmes-</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. Needs SF 103 training</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>b. Machines Level-2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>c. Preventive maintenance training</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>d. Overseas training(Japan, Singapore)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
determines the reliability based on internal consistency. Typically, items having a co-efficient of 0.70 are considered adequate (Cronbach, 1951, Nunnaly, 1978). The following table gives the Cronbach’s Alpha which shows the reliability of the scales used for the purpose of the study;

As seen in the table 3, the variables used in this study are reliable, with coefficients ranging from 0.715 to 0.915 which exceeded the minimum acceptance level of 0.70.

**Supervisor support:**

The independent variables Supervisor support and opportunity for skill utilization were measured using 5 point Likert-scale to study the influence of independent factors on the dependent variable of transfer of training. The following table highlights the mean score and standard deviation for measuring Supervisor support;

The above table depicts the mean score and standard deviation for the independent variable supervisor support. The factor ‘My participation in training is considered as an asset for the organization’ ranks first with a mean score of 3.82 and the variable ‘My supervisor lets me evolve ranks last with a mean score of 3.31. The aggregate mean score is very low with 3.49 and aggregate standard deviation is 1.13.

**Opportunity for skill utilization:**

The table 5 gives the mean scores for the independent variable highlighting the level of opportunity available to use the skills learned at the training in the organizations under study:

The table 5 indicates that the factor ‘I have sufficient time in my work place to use my new knowledge’ ranks first with a mean score of 3.99, and the factor ‘The equipment and facilities at my workplace are adequate for applying my new knowledge and skills’
ranks last with a mean score of 3.67. The aggregate mean score for the variable is 3.84 and standard deviation is 0.988 indicating a moderate level of opportunity for skill utilization.

Transfer of training:

Transfer of training is a 4 items’ scale used to measure the extent to which individuals transfer the knowledge and skills presented in the training sessions to their core jobs. The following table depicts the transfer variables used and their mean score and standard deviation:

<table>
<thead>
<tr>
<th>SL. No.</th>
<th>Factors</th>
<th>Mean</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>I have sufficient time in my workplace to use my new knowledge and skills</td>
<td>3.99</td>
<td>0.857</td>
</tr>
<tr>
<td>B</td>
<td>What I learnt in the training programmes is easily transferable to my work-environment</td>
<td>3.94</td>
<td>0.892</td>
</tr>
<tr>
<td>C</td>
<td>Follow-up activities after the training programmes occur back at the workplace</td>
<td>3.88</td>
<td>0.908</td>
</tr>
<tr>
<td>D</td>
<td>I am motivated to apply my new knowledge and skills in my job</td>
<td>3.82</td>
<td>1.003</td>
</tr>
<tr>
<td>E</td>
<td>My work environment provides me with opportunities to use my new knowledge and skills</td>
<td>3.92</td>
<td>1.001</td>
</tr>
<tr>
<td>F</td>
<td>There is no resistance to using new skills in the workplace</td>
<td>3.70</td>
<td>1.130</td>
</tr>
<tr>
<td>G</td>
<td>The equipment and facilities at my workplace are adequate for applying my new knowledge and skills.</td>
<td>3.67</td>
<td>1.131</td>
</tr>
<tr>
<td></td>
<td><strong>Aggregate Mean and Standard deviation</strong></td>
<td><strong>3.84</strong></td>
<td><strong>0.988</strong></td>
</tr>
</tbody>
</table>

The table 6 shows that the mean score for the variable ‘I have been using new skills to improve my performance’ is high with 3.96 and mean score for ‘I have been incorporating learned skills into daily work activities’ is the least with 3.62. The aggregate mean and standard deviation is 3.78 and 0.97 respectively, which again indicate a moderate level of transfer of training by the trainees to the job.

Testing of Hypotheses:

Firstly, to examine the relationship between Supervisory support and transfer of training, the
following null and alternative hypotheses are formulated:

H0: There is no positive relationship between Supervisory support and Transfer of training.

H1: There is a positive relationship between Supervisory support and Transfer of training.

Secondly, to examine the relationship between opportunity for skill utilization and Transfer of training, the following null and alternative hypotheses are formulated:

H0: There is no positive relationship between opportunity for skill utilization and Transfer of training.

H1: There is a positive relationship between opportunity for skill utilization and Transfer of training.

The hypotheses were tested using regression analysis. The result of regression analysis between the means scores of Supervisory support, Opportunity for skill utilization, and Transfer of training variables are given in the following tables:

The table -7 shows the correlation of the variables (0.265) indicating a moderate relationship as the supervisor support has a very insignificant relationship with the dependant variable transfer of training resulting in lower ‘ R square’ value (0.070).

Table 8 highlights that the beta co-efficient of Supervisory support (Independent variable) is mere 0.101, and the ‘P’ value (0.170) is greater than significance level of 0.05, indicating that the supervisory support is not significantly related to transfer of training (Dependant variable), which shows insignificant relationship between the supervisor support and the transfer of training, therefore, the decision is to accept the null-hypothesis and reject the alternative hypothesis. Thus, there is no significant relationship between Supervisory support and Transfer of training.

Similarly in second hypothesis, the beta co-efficient is 0.312 and the observed ‘P’ value (0.000) is less than 0.05 meaning that the independent variable i.e., opportunity for skill utilization, significantly predicted transfer of training. Therefore, the null hypothesis is rejected and alternative hypothesis is accepted. Thus, there is a significant relationship between opportunity for skill utilization and Transfer of training.

### Table 7: Model Summary

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R square</th>
<th>Adjusted R square</th>
<th>Std. error of the estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.265</td>
<td>0.070</td>
<td>0.061</td>
<td>0.398380</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant) OPP. Skill Utilization, Supervisor support

### Table 8: Co-efficients*

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardised co-efficients</th>
<th>Standardized co-efficients</th>
<th>‘t’ Value</th>
<th>Significance Value’P’</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Standard error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1. Constant</td>
<td>2.553</td>
<td>0.222</td>
<td></td>
<td>11.525</td>
</tr>
<tr>
<td>Supervisor Support</td>
<td>6.958E-02</td>
<td>0.051</td>
<td>0.101</td>
<td>1.378</td>
</tr>
<tr>
<td>Opportunity for Skill Utilization</td>
<td>0.252</td>
<td>0.059</td>
<td>0.312</td>
<td>4.238</td>
</tr>
</tbody>
</table>

a. Dependent variable: Transfer of training.  
p<0.05
DISCUSSION

The results of this research demonstrate the importance of influence of work environment on transfer of training. The impact of the work environment in terms of supervisory support and transfer of training were not significantly related to each other. It suggests that the supervisors do not play a significant role in ensuring transfer of skills to the job situation. The workers apply the learned skills, with a little support from their immediate boss.

The other independent variable the opportunity for skill utilization is significantly related to transfer of training. The result shows that when trainees get better opportunities for skill utilization, it leads to improved transfer of training. There are two methodologies to evaluate transfer of training. One methodology assumes that in order to evaluate transfer of training, one must have evaluations of changes in job performance as measured by persons other than trainees (Lance et al., 2002). These other persons could include supervisors, co-workers and customers. However, it is usually difficult to gain access to and collect from persons other than trainees (Veleda et al., 2007). The other methodology used in this study is to collect all data on the research variables from the trainees. Despite the fact that some argue against the use of self-report ratings of job performance, it is likely that the trainees are the most important and valid source of the measurement of job performance as their perceptions will drive their motivation and performance (Veleda et al., 2007).

THEORETICAL AND PRACTICAL IMPLICATIONS

Results from this study have potentially important implications for future research and practice. In general, the results of this research argue for examining all aspects of the training process when conducting training research on transfer of training. The results of this study do not support the dominant literature (e.g. Bates et al., 2000) which indicates that supervisory support is a critical variable in transfer of training. The results regarding the hypothesis in which it was predicted that supervisor support would not affect transfer of training could seem surprising at first because the previous literature has typically supported this relationship. (Baldwin and Ford, 1988; Lance et al., 2002). However some gaps persist in the literature regarding the specific supervisory factors that influence transfer. Like in prevalent literature, this study considered only some of the post-training dimensions. Perhaps more of supervisory interventions before and during training could have the stronger impact on transfer of training. Clearly, this is an avenue for the future research. The difference in the result may also be attributed to the cultural differences, as the present study is carried out in a country outside U.S.A. The interviews held with the respondents also disclosed that the supervisors do not show much concern about the problems of application of skills, there is a lack of mutual trust and understanding between supervisors and workers, and supervisors are perceived by workers as agents of Management.

Based on the results of this study we can argue that for organizations to maximize their return on investment on training and development, they need to focus on the work environment factors as important determinants of transfer of training. First, Organizations need to ensure that a well thought out and properly organized programmes focus on the following aspects:

1. Multiple skill development- Technical and Behavior skills;
2. Making training relevant to employees individual work situations;
3. Application of knowledge and skills accrued during training programmes.

Second, organizations can maximize transfer of training by reinforcing the workers’ belief that adequate opportunity for skill utilization and supervisor support will be provided to them. This will motivate the workers to successfully learn and utilize the new knowledge, skills and capabilities. Organizations should also conduct follow-up assessment and retraining after the training to ensure that training content is retained over the time.

LIMITATIONS

Several limitations of this study should be noted. First, the transfer of training was measured by self-report of the workers. Nevertheless, in addition to
the above-mentioned argument for using self-report performance ratings, utilizing specific items and anonymous and confidential surveys might have enhanced the accuracy of the self-report data. Also, previous research has used similar self-report measures of training transfer (e.g. Facteau et al., 1995; Chiaburu & Tekleab, 2005), showing evidence that trainees can accurately self-report their levels of training transfer. However, future research may be carried out using additional measures collected from different sources like supervisors and peers.

The second limitation is that as the data are collected from manufacturing organizations, these results may not generalize to the service or trading organizations as the nature of work, work-environment, and education levels among the workers in these sectors differ. Consequently, future study may focus on examining the generalizability of this study results in different sectors.

Finally, the research on transfer of training is carried out based on perceptions of workers. The objective evidence may be used to analyse the transfer of training.

CONCLUSIONS

Training practitioners and researchers have not yet extensively studied the effectiveness of training based on work environment determinants. This study attempted to fill this gap by analyzing the influence of these determinants on transfer of training. The findings of the study indicated that supervisor support is not significantly related to transfer of training and whereas the opportunity for skill utilization is significantly related to transfer of training. This suggests that it is important that training researchers and practitioners examine various work environment aspects of organizations vis-a-vis trainees while conducting research on transfer of training.

References


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