Training transfer intention and training effectiveness

Assessing the gender differences using multi-group structural equation modelling approach

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Abstract

Purpose – The purpose of this study is to further the current research on the topic of the intention to transfer training and training effectiveness by examining the gender-related training intention and work behaviour differences.

Design/methodology/approach – To assess the gender-related behavioural differences, a quantitative approach using surveys from employees in Saudi universities. Using the structural equation modelling multi-group analysis approach, this study analysed the data collected from 389 individuals, comprising 186 males and 153 females. Group invariance analysis was conducted before the hypotheses were tested.

Findings – The results showed that learning style and supervisor support are critical determinants of training transfer intention and the latter is critical determinant of training effectiveness across samples of males and females. Moreover, the variance explained by the model in the male sample was found to be more than that of the female sample. Interestingly, males are found to be different than females in their perception that the training effectiveness is determined by the learning style.

Practical implications – Findings suggest that both the learning style of employees should be considered when designing a training programme and a proper support to employees should be provided by their supervisors to get the best of training investment. This may guide decision-makers to enhance training effectiveness.

Originality/value – The majority of the studies concerning training effectiveness has overlooked its antecedents and much in-depth scholarly research endeavours are still required. This study attempted to provide valuable insights of the antecedents and consequences of training transfer intention and how this structure differs between males and females in a developing country context.

Keywords Gender, Training effectiveness, Supervisor support, Learning style, Self-efficacy, Training transfer intention

Paper type Research paper

Introduction

In Saudi Arabia, human capital is the core of the proposed development plan and of the achievement goals relating to this capital's development. Over a span of many years, the Saudi Government has focused on human resource development (HRD). Pioneering reports from Syneder (1963) showed that in the period spanning from 1952-1953, Saudi Arabia has shown a dynamic increase in the number of educational institutions and school

registrations, indicating greater government commitment to HRD. Quite recently, the Saudi Government has prioritized training and education programmes (Ministry of Economy and Planning, 2010). In particular, the National Commission for Accreditation and Assessment (2012) highlighted the standards for quality assurance and accreditation of higher education institutions in the kingdom. According to the Commission, training programmes are needed within the institution, and they should be provided to new and present teaching staff. Sufficient opportunities should be offered for the additional development of teaching and management staff at the level of professionalism and academics, and special attention should be provided for those facing challenges. Universities, such as other service organizations, are currently facing severe challenges, nationally and internationally. This phenomenon holds true not only in developed countries but also in other parts of the world.

The need to evaluate training effectiveness has increased because huge investments were made in HRD – but the payoffs for such investments were not evident. Therefore, many questions were raised as to the justification behind these significant investments (Aldolaimi, 2006; Al-Otaibi, 2008; Al-Qahtani, 2011; Collins and Kim, 2010; Cheng, 2001; Huang, 2001). Evaluation of training effectiveness and training transfer becomes a challenging issue because organizations in Saudi Arabia are failing to meet the global standard (Hesketh and Laidlaw, 2007). Evaluation is needed in the institutions of higher learning because most institutions use conventional forms of administration founded on various training programmes. Therefore, if a change in administration in Saudi Arabia's settings is a necessity, employees must understand how acquired skills and knowledge can be transferred by adopting and using modern technology; doing so will improve the services provided by important sectors such as education. An employee's intention to transfer training might determine how knowledge is imparted to learners. Training transfer is an important agenda in Saudi Arabia's government plan, according to the Ministry of Economy and Planning (2010), because various administrative services are expected to be used for economic diversification in Saudi Arabia's service sector.

Therefore, this paper aimed to contribute to the literature of training effectiveness by examining the joint effect of supervisor support, self-efficacy, learning style upon training effectiveness and how these effects are different because of the gender of respondents. These variables are interpreted through the intention to transfer training, in regards to the theory of planned behaviour (TPB) and the social learning theory.

Theoretical framework
Theory of planned behaviour
According to Ajzen (1991), the TPB says that intention is a direct antecedent of actual behaviour. The level to which a person is inclined to perform behaviours hinges on the resources available and the control the individual has over the behaviour. The perceived behavioural control of an individual, in the context of a decision-making situation (in this study the self-efficacy), affects his or her behavioural intentions. The TPB is commonly used and a well-supported theoretical framework, but its operations of employee behaviour, in regards to training transfer and effectiveness, are still largely unexplored. Subjective norms are generally referred to perceptions, with reference to individual desire to perform or not perform a behaviour. Subjective norms are explained by a variable such as organizational culture, and achievement norms relate to employee recruitment. Furthermore, intentions are defined as employee desire, sense of responsibility and self-prediction. All these variables, according to Carbery and Garavan (2011), contribute to employee participation behaviours in their particular training.

Hypotheses

Self-efficacy and intention to transfer training

Perceived behavioural control (PBC), as postulated in theory of planned behavior (TPB), is the understanding of constraints and/or opportunities that are associated with the particular behaviour (Ajzen, 1991). It refers to perceived ease or obstacles in performing any behaviour, and it describes difficulties and issues such as self-efficacy. PBC is the major difference between the theory of reasoned action and the (Beck and Ajzen, 1991). One of the major challenges that employees face after training is the need to overcome the negative belief about training being only an ideal situation, and that transferring new skills whole or in part to the actual workplace is rather difficult. It is usually assumed that constructive attitudes show positive perceptions (self-efficacy) in trainees and emphasize the need for performance after training; these positive perceptions, in short, can greatly increase training effectiveness (Billari *et al.*, 2009). Thus, perceived behavioural control tends to create certainties in trainees' self-efficacy and confidence, and the magnitude of the PBC-intention relation relies on the kind of behaviour and the nature of the situation. In the current research, PBC is manifested by self-efficacy and learning style. Bandura (1986, 2006) claimed that a sense of self-efficacy convinces trainees that they can competently perform tasks following their training. If individuals have the determination to be trained and to be developed adequately, this outlook adds to the meaning of both achievement and outcome expectations.

The relationship between self-efficacy and other variables, including transfer motivation and the intention to transfer training, has been addressed by researchers, and self-efficacy has been confirmed to maximize training transfer (Chiaburu and Marinova, 2005; Ford *et al.*, 1992; Kirwan and Birchall, 2006; Latham and Frayne, 1989; Mathieu *et al.*, 1992; Saks, 1995; Saks, 2002; Tannenbaum *et al.*, 1991; Velada *et al.*, 2007).

Thus, it is hypothesized that self-efficacy relates to training transfer through trainees' intentions to implement acquired knowledge (Mullins *et al.*, 1998):

H1. Self-efficacy has a significant relationship with the intention to transfer training.

Learning style and intention to transfer training

The integration of a potent learning style is very important when trying to achieve the maximum outcomes of training courses – especially because training requires substantial investments. Nowadays, Saudi Arabia's government is investing millions of dollars into academic training programmes and services; by doing so, Saudi Arabia is attempting to transform the economy and population, aiming to become fully integrated into the global economy (Chokri and Talal, 2013). The need to develop citizens, both economically and socially, becomes necessary as the KSA is committed to providing the skills, knowledge and learning opportunities to research and solve problems at various sectors and organizations. Yet, in trying to adopt various technologies to improve learning style capabilities, the majority of youths are not equipped with critical thinking skills, which became evident in a study carried out by Chokri and Talal (2013).

A learning style depends on trainees' levels of education and their skills, both of which help to determine effectiveness of training courses. As such, the majority of training programmes base a learning style on the context of educational levels and skills of trainees. In short, the preexisting skills and education of trainees help shape the learning style, which essentially is the most efficient manner in which knowledge can be most effectively disseminated or transferred to the workplace. However, many researchers have asserted that learning styles are often shaped in organizational training, and, therefore, the different abilities of trainees have to be sorted (Blanchard and Thacker, 2007).

Along the same line, Shariff and Al-Makhadmah (2012) revealed that demographic variables – such as age, experience, learning style and the number of attended training programmes – indirectly impact training effectiveness.

More importantly, the amount of knowledge that trainees retain from a particular learning style is a critical factor that measures the success of a training course. To make sure that a training course is effective, the characteristics, abilities, intentions to transfer training and experiences have to be taken into account at the individual and the group level (Kemp *et al.*, 1998). Therefore, it is expected that learning styles are related to trainees' intention to transfer training:

H2. Learning styles have a significant relationship with the intention to transfer training

Supervisor support and intention to transfer training

According to Baron (2001), supervisors are the members of the working team who are contacted first in the issues related to training. In addition, training effectiveness is significantly linked to immediate supervisor support (Tennant *et al.*, 2002), indicating that immediate supervisors play a key role in determining the effectiveness of training courses. Ling (2007) supported this contention by stating that immediate feedback and support from supervisors assist the trainees in organizing and using the new knowledge and skills. In the context of Malaysia, correlation studies conducted for training effectiveness showed that the lack of supervisor support hindered the training effectiveness of training courses provided by various organizations (Karuppaiya, 1996). It has also been revealed that supervisor support directly impacts pretraining motivation (Facteau *et al.*, 1995; Mathieu *et al.*, 1992; Tannenbaum *et al.*, 1991). Similarly, Tennant *et al.* (2002) revealed that immediate supervisor support significantly correlated with training effectiveness, indicating the key role of supervisors in determining the effectiveness of training courses. Supervisors provide their support through feedback, encouragement and assistance; for instance, training transfer may fail if a supervisor fails to show his or her support for the transfer itself, which may discourage intentions to transfer training.

However, there are inconclusive findings as to the direct influence of supervisor support on training transfer. Chiaburu and Marinova (2005) found that supervisor support was not related to skill and training transfer, justifying the fact that transfer intention poses an actual issue. That is, for the accomplishment of training effectiveness and superior organizational performance, supervisor support is necessary. Organizations and employees can reach their goals if training is effectively transferred to workplace settings (Bhatti and Kaur, 2010). Thus, the following hypothesis is drawn for an empirical examination:

H3. Supervisor support for trainees has a significant relationship with the intention to transfer training.

Intention to transfer training and training effectiveness

Training effectiveness is defined by Lunenburg and Ornstein (2012) as the impact that results in change stemming from the achievement of objectives for decision-making. Similarly, Ling (2007) described effectiveness as the degree that students are able to achieve programme objectives, which is ascertained from the grades obtained and the production that is consistent with planning.

Based on Thayer and Teachout's (1995) model, training transfer indicates training effectiveness, and this indication is related to training outcomes, self-efficacy and learning styles. Other researchers (Machin and Fogarty, 2003; Tubbs and Ekeberg, 1991; Powell, 2009) contended that intention to transfer training is an antecedent of trainees' transfer initiation or transfer-related actions. Similarly, in their test of Thayer and Teachout's (1995) conceptual model, Machin and Fogarty (2003) revealed that the perceptions of trainees towards several intention-stimulating activities are linked to training transfer, and the link eventually informs training effectiveness. They also revealed that the intention to transfer training is linked to post-training efficacy (Machin and Fogarty, 2003).

Despite the later findings of Machin and Fogarty (2003), which revealed that successful learning is not guaranteed by intention, the level of post-training efficacy of trainees was found to strongly predict intention and hence predicts training effectiveness. Therefore, the intention to transfer training has deemed the main factor that determines training effectiveness:

H4. Intention to transfer training has a significant relationship with training effectiveness.

The mediating effect of intention on transfer training

A mediating variable is the variable that mediates the effect of an independent variable on a dependent variable. In general, the direct effect of some variables such as learning style, self-efficacy and supervisor support on training effectiveness could be direct or indirect through a mediating variable (Hair *et al.*, 2010).

According to Hawley and Barnard (2005), most previous research on training transfer examined various contextual factors, such as the influence of employee learning on effectiveness. Previous studies, however, tend to explore the factors to enhance the performance of employees by looking into developmental training options to equip employees with adequate knowledge to effectively function in their respective working environment. In the context of the present study, training transfer is used to explain the process of using knowledge and skills acquired in training to improve job performance (Bates and Khasawneh, 2005). In past research that focused on the interactions of variables, studies have shown that a relationship exists among the intention to transfer training, (Chokri and Talal, 2013) learning style (Rossi, 2010) and self-efficacy (Sherer *et al.*, 1982), and these interactions ultimately inform the effectiveness of a training course. In general, self-efficacy, learning styles and supervisor support are factors that assist in training transfer and training effectiveness, as evidenced in literature. These factors appear to be mediated by the intention to transfer training. Hence, a trainee having a greater degree of self-efficacy – and an adaptable style of learning and experience – is expected to efficiently transfer the taught skills to the workplace. In other words, employees who intend to remember and incorporate new skills taught in training courses are more likely to do so. Additionally, the intention to transfer training is also an indication of the strength of other factors that determine and influence training effectiveness. Some researchers (Chiaburu and Marinova, 2005; Saks *et al.*, 2004; Baron, 2001; Tennant *et al.*, 2002) contended that direct relationships exist among the particular factors – self-efficacy, learning styles, supervisor support, training effectiveness and the intention to transfer training. However, other researchers (Elangovan and Karakowsky, 1999; Tziner *et al.*, 2007) claimed that intention is the main mediator between the factors and the transfer process. It is, therefore, expected that intention plays a significant role in interpreting

the relationships among self-efficacy, learning styles and supervisor support, from one side. Training effectiveness, however, also plays a significant role in interpreting the relationships, from the opposite side of intention (Figure 1):

H5. Intention to transfer training mediates the relationship between self-efficacy and training effectiveness.

H6. Intention to transfer training mediates the relationship between supervisor support and training effectiveness.

H7. Intention to transfer training mediates the relationship between learning style and training effectiveness.

Methods and results

Participants

The study population included mostly managerial staff: deans, deputy deans, heads of departments, deputy heads of department, directors and deputy directors. Six universities were studied: University of Ummul Al-Qura in Mecca, Islamic University in Madinah, King Saud University in Riyadh, University of Al-Jouf, University of Najran and University of Dammam. These universities were chosen because they have consistently provided training to their managerial staffs. To examine the proposed model, a total of 500 employees were randomly selected from the list of employees in each university. Out of the number of questionnaires distributed, 388 were complete and usable, so these were used for the analysis.

Measures and instruments

The instruments used in the present study were based on previous research measurements and were chosen to suit the purpose of the study. Table I summarizes the operational definitions of the used constructs.

The questionnaire contained two sections. The first section included demographic information regarding qualification, age, gender, experience, position, university specification and the basic course of management. The second section included questions on training effectiveness, training-transfer intentions, learning styles, self-efficacy and supervisor support. All variables were measured using five-point Likert-type scale, where "1" signified "strongly disagree" and "5" signified "strongly agree".
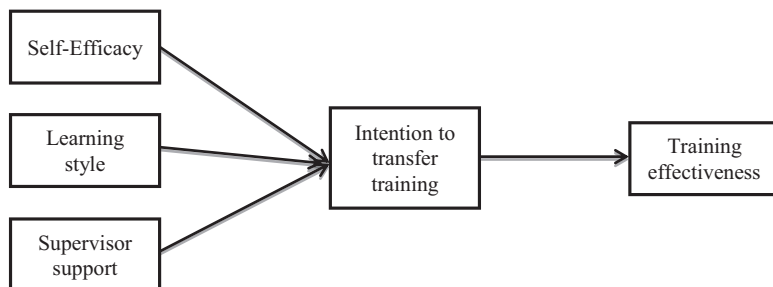

Figure 1.
Conceptual model

Model evaluation criteria
In structural equation modelling (SEM) literature, the goodness-of-fit – the match between a model and the data – is usually examined and based on various indexes. One of the first indexes was the χ^2 test, which was described as having a high sensitivity to the sample size. To have less of an effect from this sensitivity, the ratio of χ^2 to its degree of freedom was considered (χ^2/df). This ratio is thought to follow the standard, normal distribution, where a value more than 3.0 indicates a bad match between the hypothetical model and the sample data (Hair *et al.*, 2010). With the ratio index, some other indexes are used when comparing the model to a baseline model. Following the suggestions made by several researchers, the root mean square error of approximation (RMSEA) was used as a measure of absolute fit (Hooper *et al.*, 2008; Kline, 2005; Schreiber, 2008). The comparative fit index (CFI) and Tucker–Lewis index (TLI) were used as indexes of goodness-of-fit (Hu and Bentler, 1999; Schreiber *et al.*, 2006). According to the SEM literature, if CFI and TLI have values more than 0.90 and RMSEA has values less than 0.08, this indicates the goodness-of-fit of the model. In carrying out the invariance test, if the null model is not rejected, this indicates that the restrictions did not produce a worse model than the unconstrained one, and hence the invariance test is assumed (Hair *et al.*, 2010).

Convergent validity
As suggested by Fornell and Larcker (1981), three procedures are required to establish the convergence validity. These procedures are item reliability of each construct, composite reliability, and the average variance extracted. The first step to confirm the convergent validity is the examination of the items' loadings. As illustrated in Table II, all the items have loadings more than 0.50, ranges from 0.67 to 0.94, which is the acceptable level

Construct	Source of the scale
Training effectiveness	Machin and Fogarty (2003)
Supervisor's support	Holton *et al.* (2000)
Learning style	Honey and Mumford (2000)
Intention to transfer training	Machin and Fogarty (2003)
Self-efficacy	Sherer *et al.* (1982)

Table I.
The operational definition of the constructs

	Whole sample ($n = 389$)					Males ($n = 186$)					Females ($n = 153$)				
Construct	ITT	LS	SE	SS	TE	ITT	LS	SE	SS	TE	ITT	LS	SE	SS	TE
Training effectiveness (TE)	0.83					0.88					0.85				
Intention to transfer training (ITT)	0.60	0.87				0.64	0.71				0.53	0.74			
Supervisor support (SS)	0.60	0.46	0.75			0.62	0.48	0.71			0.49	0.43	0.77		
Learning style (LS)	0.34	0.34	0.28	0.82		0.29	0.45	0.20	0.80		0.26	0.35	0.27	0.68	
Self-efficacy (SE)	0.20	0.22	0.27	0.11	0.73	0.21	0.26	0.30	0.32	0.84	0.20	0.17	0.27	0.03	0.78

Note: The diagonal numbers in italic are the square roots of AVE

Table II.
Discriminant validity

suggested in the multivariate-analysis literature (Anderson and Gerbing, 1988; Fornell and Larcker, 1981; Hair *et al.*, 2010). The second step was to examine the composite reliability (CR); it indicates the degree to which a set of items consistently indicates the latent construct (Hair *et al.*, 2010). As shown in Table II, the composite reliability values ranged from 0.839 to 0.928, which exceeds the recommended value of 0.70 (Fornell and Larcker, 1981; Hair *et al.*, 2010).

The last step was to establish the convergent validity, which is the examination of the values of the average variance extracted (AVE). Several scholars (Barclay *et al.*, 1995; Fornell and Larcker, 1981; Hair *et al.*, 2010) suggested that the AVE value be more than 0.50. In this study, all the constructs achieved values of more than 0.50, performing a good level of construct validity of the measures used (Barclay *et al.*, 1995; Fornell and Larcker, 1981; Hair *et al.*, 2010). As a result, the convergent validity of the measures of the study is adequate (Table III).

Discriminant validity
It is necessary to establish the discriminant validity to verify the construct validity of the measures. As defined by Fornell *et al.* (1982), the discriminant validity refers to the extent to which the ability of a set of items differentiates their construct from other constructs in the model. To examine the discriminant validity, this study followed the criterion suggested by Fornell and Larcker (1981). This criterion compares the common variance shared within a set of items measuring a particular construct with other items measuring other constructs. In doing so, the present study examined the square root of the average variance extracted with the correlations among constructs. Ideally, the square root of the average variance extracted should be greater than 0.50, meaning that 50 per cent or more variance is shared among the indicators of the respected construct.

Whole sample (*n* = 389) Construct	Items	FL	CR	AVE	Males (*n* = 186) FL	CR	AVE	Females (*n* = 153) FL	CR	AVE
Intention to transfer training	ITT2	0.91	0.86	0.7	0.92	0.87	0.8	0.94	0.84	0.7
	ITT4	0.82			0.84			0.76		
Learning style	LS1	0.80	0.89	0.7	0.64	0.80	0.5	0.76	0.82	0.5
	LS2	0.81			0.72			0.65		
	LS3	0.83			0.77			0.76		
	LS4	0.81			0.69			0.78		
Self-efficacy	SE1	0.72	0.72	0.5	0.71	0.75	0.5	0.73	0.81	0.6
	SE2	0.73			0.66			0.79		
	SE5	0.76			0.74			0.78		
Supervisor support	SS1	0.68	0.84	0.6	0.63	0.87	0.6	0.73	0.78	0.5
	SS2	0.78			0.79			0.67		
	SS3	0.76			0.88			0.58		
	SS4	0.82			0.87			0.75		
Training effectiveness	TE1	0.82	0.90	0.7	0.82	0.91	0.7	0.79	0.86	0.6
	TE2	0.87			0.89			0.82		
	TE3	0.75			0.77			0.68		
	TE4	0.86			0.88			0.83		

Table III.
Convergent validity results

Notes: FL: factor-loadings of the items on their respective constructs, CR: composite reliability which is computed as $(\sum \lambda)^2/(\sum \lambda)^2 + (\sum \delta)$, λ is factor-loading, AVE: average variance extracted is computed as $(\sum \lambda 2/n)$, n is the items' number for the construct

This step also provides the foundation to check if each construct is greatly related to its own measures than other constructs. Chin (2010) maintained that presenting average variances extracted with squared correlations has two advantages:

(1) It supplies a more insightful description because it signifies the percentage of overlap among constructs and constructs to indicators.

(2) It tends to be easier to differentiate.

The results in Table IV show that the diagonal elements were higher than the other elements of the row and column in which they are located; this confirms the discriminant validity of the measure. As a result, there is a significant evidence of the discriminant validity in the construct under investigation. Thus, having established the construct validity of the outer model, it is assumed that the obtained results pertaining to the hypotheses being tested should be valid and reliable.

Multi-group analyses of invariance
To carry out multi-group analyses, AMOS 21.0 was used (Arbuckle, 2006). The estimation was performed using the maximum likelihood estimation (MLE) approach, and the estimation was based on the covariance matrices. Tests for the measurements (configural, metric and scalar) and structural invariance were performed using the automated approach built in AMOS 21.0. The result for each invariance test is explained by the χ^2 difference, an indication of bad fit. The use of $\Delta\chi^2$ has been widely criticized in the literature for its sensitivity to sample size (Brannick, 1995; Cheung and Rensvold, 2002; Hair *et al.*, 2010; Kelloway, 1995). As an alternative, Cheung and Rensvold argued that ΔCFI was not prone to such a problem. Based on simulation studies, it is suggested that a ΔCFI value more than 0.01 indicates a significantly worsening fit. Before carrying out the invariance tests, the model fit for the pooled sample and separate samples for males and females were tested. The results reported in Table V provide evidence of a good match between the model and the data as assessed based on goodness-of-fit indexes. The next step was to perform several invariance tests as detailed in the following sections.

Test of configural invariance. The configural invariance is considered to be confirmed if the basic model structure, the fixed and non-fixed parameters, is invariant across groups. The first step in conducting a multi-group analysis of invariance is to create the baseline model to which all the subsequent comparisons are to be made. The baseline model examines the existence of the same pattern of parameters across groups and the equivalence

Test	χ^2	df	χ^2/df	p	CFI	TLI	RMSEA (90% CI)
Pooled sample model	132.80	109.00	1.22	0.06	0.99	0.99	0.025 (0.00, 0.039)
Males sample	143.90	109.00	1.32	0.01	0.98	0.97	0.042 (0.02, 0.059)
Female sample	116.52	109.00	1.07	0.29	0.99	0.99	0.021 (0.00, 0.048)
Configural model	260.40	218.00	1.19	0.03	0.98	0.98	0.024 (0.009, 0.034)
Full metric invariance	275.80	230.00	1.20	0.02	0.98	0.98	0.024 (0.010, 0.034)
Full metric and scalar invariance	496.50	247.00	2.01	0.00	0.90	0.98	0.055 (0.048, 0.062)
Full metric and partial scalar invariance	293.90	237.00	1.24	0.01	0.98	0.98	0.027 (0.015, 0.036)
Full metric, partial scalar and full factor invariance	333.60	242.00	1.38	0.00	0.96	0.96	0.034 (0.024, 0.042)
Full metric, partial scalar and partial factor invariance	308.50	240.00	1.29	0.00	0.97	0.97	0.029 (0.018, 0.038)

Table IV.
Fit indices for measurement invariance tests

of factor structures across groups. This model is, also, called the unconstrained or totally free model (Hair *et al.*, 2010). The baseline model implies testing the entire measurement model using the pooled sample (including data for both males and females). The baseline model, which is also known as the configural model, is assessed based on the goodness-of-fit indicators to determine how good the model fits the data (Hu and Bentler, 1999). As shown in Table V, the configural model has a good fit. It produced a χ^2 value of 260.4 (χ^2/df = 1.19), CFI of 0.98, TLI of 0.98 and an RMSEA value of 0.024. These results, therefore, implied that the configural invariance is established, which supports that the number of factors and the pattern of fixed and non-fixed parameters in the model are identical for the male and female samples.

Test of metric invariance. If the metric invariance is established, it means that the mean groups responded to the items in the same way, so the comparison across groups is meaningful (Hair *et al.*, 2010; Steenkamp and Baumgartner, 1998).

To confirm that the metric invariance was maintained across the male and female groups, the factor-loading of all the items were constrained to be equal. The resulting model was then compared with the configural model. As illustrated in Tables V and VI, the applied constraints increased the χ^2 value from 260.40 to 275.8, freeing 12 degrees of freedom. As the full metric model was a nested model within the configural model, an χ^2-difference test was performed. According to this test, the χ^2 difference of 15.38 with 12 degrees of freedom was not statistically significant at a = 0.05, so full metric invariance was supported (Tables V and VI). Despite the popularity of the χ^2-difference test in comparing the fit of nested models, other researchers (Anderson and Gerbing, 1988; Marsh and Grayson, 1990; Steenkamp and Baumgartner, 1998) suggested the use of ΔCFI of not more than 0.01 as an indicator of invariance. The results in Table VI show that the full metric invariance across the male and female groups is supported.

Test of scalar invariance. Scalar invariance implies that the amount of the construct, the mean, has the same meaning across groups.

After the metric invariance had been established, the next step was to test the scalar invariance. Scalar invariance was performed by constraining the intercepts of all the items, 17 manifest variables, to be equal across the male and female groups. The χ^2-difference test was carried out to compare the scalar invariance model with the baseline model. As shown in Table VI, the χ^2 difference was statistically significant at α = 0.05 (χ^2 = 236, with 29 degrees of freedom); the results suggest that the intercepts are not equivalent across the two

Model comparison	df	$\Delta\chi^2$	p value	ΔCFI	Decision
Test of full metric invariance	12	15.4	0.220	0.001	Accept
Test of full scalar invariance	17	220.7	0.000	0.08	Reject
Test of partial scalar invariance	7	18.1	0.012	0.00	Accept
Test of full factor variance invariance	5	39.7	0.000	0.02	Reject
Test of partial factor variance invariance	3	14.6	0.002	0.01	Accept

Table V.
Results of χ^2-difference tests

Model	χ^2	df	χ^2/df	p	CFI	TLI	RMSEA (90% CI)
Structural model (Whole sample)	132.8	109	1.218	0.06	0.992	0.990	0.025 (0.000, 0.039)
Structural model (Male sample)	143.9	109	1.320	0.014	0.978	0.973	0.042 (0.020, 0.059)
Structural model (Female sample)	116.5	109	1.069	0.294	0.992	0.990	0.021 (0.000, 0.048)

Table VI.
Fit indices for the structural models

samples, indicating that the scalar invariance was not supported. The next step was to identify the indicators causing this non-invariance following the strategy suggested by Byrne (2001). The said criterion suggested the examining of the intercepts of each similar item across the two groups. As a result, some items were found to have non-invariant intercepts, and, therefore, their intercepts were freely estimated. As it is widely practiced in SEM literature and suggested by Byrne *et al.* (1989) and Steenkamp and Baumgartner (1998), multi-group analyses can also be carried out, even if the full metric and scalar invariance are not achieved, as long as partial metric or scalar invariance are supported. With this in mind and following Hair *et al.* (2010) suggestion, one can proceed to conduct an invariance analysis if at least two invariant items for each factor meet the requirements of partial invariance. As depicted in Table V, the partial scalar invariance model was compared with the full metric invariance model using an χ^2-difference test and ΔCFI test. Since the χ^2 difference (18.1 with 7 degrees of freedom) was not statistically significant at $\alpha = 0.01$, partial scalar invariance was supported.

Test of factor variance invariance. Next, the process was to test the factor variance invariance. The variances of the main factors were constrained to be equal across the two groups. The χ^2-difference test and ΔCFI test were performed to compare the full factor variance invariance model with the partial scalar invariance. Both the χ^2-difference test and ΔCFI test were not satisfactory, and the full factor variance invariance was not supported (Table VI). Additionally, for the full factor variance invariance, the CFI, TLI and RMSEA deteriorated substantially (Table V). By relaxing some of the non-invariant variances, the partial factor variance nested model was created, and it was compared to the partial scalar invariance model. Although this model was significant, it satisfies the ΔCFI test as suggested by (Anderson and Gerbing, 1988; Hair *et al.*, 2010; Marsh and Grayson, 1990; Steenkamp and Baumgartner, 1998).

Therefore, the partial factor variance invariance model was found to be supported. Having achieved the invariance analysis of the measurement model, the next step was to test the structural model and compare the hypotheses across male and female groups, to know how these relationships are mediated by the intention to transfer training.

Structural model and hypothesis testing

After the invariance test had been performed, the next step was to run the structural model and to test the hypotheses of the study. As illustrated in Table VII, the structural model for all samples, male and female, were found to have adequate fits according to the χ^2 values, the ratio (χ^2/df) less than 2, CFI of more than 0.95, TLI of more than 0.95 and an RMSEA values less than 0.05; all were within the acceptable limits reported in SEM literature (Hair *et al.*, 2010). Moreover, the structural model showed that the model fits the data well for the female sample more than that of the male's sample, as it is indicated by the non-significant χ^2 value ($p = 0.294$).

In addition to the good fit of the structural models for the whole sample and the separated male and female samples, the results in Table VIII also show that learning style and supervisor support have significant effects on intention to transfer training across the three models. In addition, the intention to transfer training was found to be a significant determinant of training effectiveness across the whole and the separated samples. Unexpectedly, self-efficacy was found to not have a significant effect on intention to transfer training across the whole and separated samples.

As mentioned earlier, a multi-group analysis was used to compare the differences between males and females, in regards to the relationships tested in the model, and the results are summarized in Table IX. The findings reveal that the behaviour of the two

	Whole sample (n = 339)		Males (n = 186)		Females (n = 153)	
Parameter	Standardized estimate	t value	Standardized estimate	t value	Standardized estimate	t value
Self-efficacy → Intention to transfer training	0.093	1.506	0.02	0.18	0.08	0.912
Learning style → Intention to transfer training	0.22***	3.737	0.37***	4.214	0.26***	2.813
Supervisor support → Intention to transfer training	0.38***	5.88	0.4***	5.104	0.34***	3.324
Intention to transfer training → Training effectiveness	0.37***	5.959	0.44***	4.978	0.38***	3.544
Self-efficacy → Training effectiveness	0.005	0.099	−0.03	−0.4	0.061	0.698
Learning style → Training effectiveness	0.103*	1.996	0.015	0.186	0.051	0.56
Supervisor support → Training effectiveness	0.4***	6.465	0.41***	5.234	0.29***	2.794

Table VII.
Parameters estimate of the structural model

Notes: ***$p < 0.001$; **$p < 0.01$; *$p < 0.05$

samples is similar, and there are no significant different-path coefficients, in regards to the factors meant to influence intention to transfer training – namely, self-efficacy, learning style and supervisor support. However, the results showed that there was a significant difference between males and females in regards to the effect of intention to transfer training on the training effectiveness: The males' sample tended to exhibit a stronger effect at 0.01 level of significance [β (difference) = 0.112, $t = 2.671$, $p < 0.01$].

To assess the overall variance explained by the model across male and female groups, a squared multiple correlation was used. The results revealed that while self-efficacy, learning style and supervisor support collectively explained 42 per cent of the variance in intention to transfer training using the males' sample and the females' sample explained only 31 per cent. Additionally, taking into account that training effectiveness is the ultimate phenomenon needed to be explained, the results regarding the effect of intention to transfer training were different across the male and female groups. While intention to transfer training explains 30 per cent of training effectiveness in the female sample, intention explains 46 per cent of training effectiveness in the male sample. However, all the R^2 are deemed moderate to large, according to Cohen (1988). Generally speaking, these differences of the variances accounted for, based on male and female samples, can be, in part, attributed to the unique social, cultural and behavioural differences between males and females in workplaces.

The mediating effect of intention to transfer training
To examine the mediating effect of intention to transfer training between self-efficacy, learning style and supervisor support on the one hand and training effectiveness on the other, bootstrapping procedures built in AMOS graphics were used (Byrne, 2001; Kline, 2011). As argued by Hayes (2009), bootstrapping procedures have been substantiated by simulation studies to show they are a powerful method in mediation and indirect-effect analysis (MacKinnon et al., 2007; Williams and MacKinnon, 2008). Therefore, bootstrapping procedures are very much preferred by researchers (Table X).

Parameter	Males		Females		Path difference			Decision
	Unstandardized estimate	Standard error	Unstandardized estimate	Standard error	Value	t value	p value	
SE → ITT	0.024	0.123	0.084	0.119	0.06	0.347	0.729	No difference
LS → ITT	0.366	0.205	0.26	0.175	0.106	0.385	0.701	No difference
SS → ITT	0.398	0.118	0.339	0.259	0.059	0.220	0.826	No difference
ITT → TE	0.442	0.035	0.379	0.028	0.063	1.368	0.172	No difference
SE → TE	−0.03	0.041	0.061	0.029	0.091	1.745	0.082	No difference
LS → TE	0.015	0.072	0.051	0.045	0.036	0.404	0.686	No difference
SS → TE	0.411	0.046	0.294	0.07	0.117	1.444	0.150	No difference

Notes: ***$p < 0.01$; **$p < 0.05$; *$p < 0.1$; $t = \dfrac{path_{sample_1} - path_{sample_2}}{\left[\sqrt{\frac{(m-1)^2}{(m+n-2)} \times S.E_{sample\,1}^2 + \frac{(n-1)^2}{(m+n-2)} \times S.E_{sample\,2}^2} \times \sqrt{\frac{1}{m} + \frac{1}{n}} \right]}$

Table VIII.
Results of path
coefficient
differences between
males and females

While the results showed that supervisor support has a significant direct effect on training effectiveness across the whole and separated samples, with a 0.001 level of significance, the direct effect of learning style on training effectiveness showed differing results. Specifically, the findings revealed that learning style has a significant effect on training effectiveness in both the whole and male samples, with 0.001 and 0.05 levels of significance, respectively. However, learning style was found to not have an effect on training effectiveness in the female sample. Unexpectedly, across the whole and separated samples, self-efficacy was found to not have an effect on training effectiveness.

As shown in Tables XI and XII, while the results showed that there were no differences in the indirect effects of self-efficacy, learning style and supervisor support on training effectiveness through the intention to transfer training, they differ in terms of the significance of each path. The results in Table XII showed that the indirect effects of learning style and supervisor support on training effectiveness through the intention to transfer training have stronger significance for the male sample than the female one.

Table IX.
Variance explained and squared multiple correlation

| | Squared multiple correlation (SMC) | |
Endogenous variable	Males	Females
Intention to transfer training	0.42	0.31
Training effectiveness	0.46	0.30

Table X.
Indirect effect results

| | Whole sample | | Males | | Females | |
Parameter	Standardized estimate	p value	Standardized estimate	p value	Standardized estimate	p value
SE →ITT → TE	0.035	0.155	0.011	0.799	0.032	0.349
LS → ITT → TE	0.082**	0.001	0.162**	0.001	0.099*	0.03
SS → ITT → TE	0.141***	<0.000	0.176***	<0.000	0.128*	0.012

Notes: ***$p < 0.001$; **$p < 0.01$; *$p < 0.05$

Table XI.
Indirect path differences

| | Males | | Females | | Path difference | | | |
Parameter	Standard path	SE	Standard path	SE	Value	t Value	p value	Decision
SE → ITT → TE	0.011	0.039	0.032	0.049	0.021	0.341	0.734	No difference
LS → ITT → TE	0.162	0.045	0.099	0.056	0.063	0.890	0.374	No difference
SS → ITT → TE	0.176	0.056	0.128	0.079	0.048	0.509	0.611	No difference

Table XII.
Variance accounted for by the indirect paths

Parameter	Whole (%)	Males (%)	Females (%)
LS → ITT → TE	41	92	66
SS → ITT → TE	24	30	30

In examining the variance accounted for (VAF) by the intention to transfer training between learning style, supervisor support and training effectiveness, the findings showed that most of the effect of learning style could be transformed through the indirect path 92 and 66 per cent for male and female samples, respectively. However, intention to transfer training can transform nearly one-third of the effect of learning style, supervisor support on training effectiveness in both male and female samples.

Discussion

To examine the differences between male and female in regards to the intention to transfer training and training effectiveness, a multi-group analysis structural equation modelling was used. To ensure that differences in the relationships among the constructs of the study were because of the gender-specific effect, an invariance analysis was used. The two gender groups showed an adequate level of configural, metric and factor variance invariance, according to Hair *et al.* (2010). The next steps were to examine the differences in the effects of antecedents and effectiveness consequence of the intention to transfer training.

The findings of the study showed that the hypothesized model is parsimonious and explains 42 and 31 per cent of the intention to transfer training, and also explains 46 and 30 per cent of the variance of the training effectiveness for the male and female samples, respectively (Table XIII). These results show that males are more inclined to transfer the training they receive, which increases the training effectiveness and ultimately enhances performance. These differences between males and females are possibly because of the different perceptions and attitudes among the male and female groups towards the intention to transfer training and training effectiveness.

Although having a similar significance pattern in regards to the effects of learning style and supervisor support on the intent to transfer training, male individuals in Saudi Arabia are more inclined to transfer training than their female counterparts. Prior research regarding the intention to transfer training and training effectiveness was carried out in Western and developed countries, but this area of research is poorly targeted by scholars in the Middle East. This study, however, attempted to tackle this important issue in Saudi Arabia, which used to invest heavily in training, but the outcome of this training did not match expectations. The findings of the present study provide important insights in regards to training and its effectiveness and the factors that affect employee performance and productivity.

In regards to self-efficacy, the findings of this study revealed that self-efficacy has no significant impact on the intention to transfer training or training effectiveness. These results do not reflect the findings in the previous research that asserted the importance of self-efficacy in determining the intention to transfer training and training effectiveness. For example, Colquitt *et al.* (2000) reported that self-efficacy increases the motivation to learn and that self-efficacy is linked with training motivation in a positive way. In other words, a

	Whole sample		Males		Females	
Parameter	Standardized estimate	p value	Standardized estimate	p value	Standardized estimate	p value
SE → TE	0.04	0.481	−0.02	0.809	0.093	0.318
LS → TE	0.185***	<0.001	0.178*	0.023	0.149	0.109
SS → TE	0.541***	<0.001	0.587***	<0.001	0.421***	<0.001

Notes: *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$

Table XIII.
Direct effect results

very confident trainee should have a greater potential to retain and apply the provided knowledge and skills after the completion of a training course. Machin and Fogarty (2003) claimed that the intention to transfer training is significantly affected by self-efficacy, and the relationship in turn affects the transfer process. They concluded that the intention to transfer training has been understudied in prior literature, and they called for further examination to clarify the promotion and enhancement of training-transfer success through training effectiveness. Moreover, the relationship between self-efficacy and other variables, including transfer motivation and training transfer, has been addressed by researchers, and self-efficacy has been confirmed to maximize the degree of training transfer (Chiaburu and Marinova, 2005; Ford *et al.*, 1992; Kirwan and Birchall, 2006; Latham and Frayne, 1989; Mathieu *et al.*, 1992; Saks, 1995, 2002; Tannenbaum *et al.*, 1991; Velada *et al.*, 2007). These findings should be interpreted in accordance with the uniqueness of the contextual factors of Arab businesses, and the bureaucratic nature of management and leadership practices should be considered in these interpretations as well. The lack of innovation in the work environment discourages even the most qualified and well-versed people in all business procedures – unless bosses and supervisors provide full support. In an innovative business and work environment, where all the employees are encouraged to try different work procedures, self-efficacy can be of great importance. However, this might not be the case in the Arab region, in general, and Saudi Arabia in particular.

In examining the effect of learning style on the intention to transfer training, the results show that all participants, whether male or female, agreed that learning style has a significant effect on the intention to transfer training. That is, trainees with learning styles that are consistent with a certain training technique are more likely to show superior performance (Simon, 2000). According to Simon (2000), learning styles play a key role in the understanding of trainees' abilities and in predicting the effectiveness of a training course, and this connection is why management staffs of organizations (particularly high-ranking staff) should be concerned about understanding learning styles. Furthermore, if managers appreciate learning styles, they become better enabled to more effectively create and apply training budgets. Trainees' learning style identifications can be a first step in designing a training programme that is consistent with trainees' styles. Learning style, maturity level and interest are critical characteristics of learners, and they must be regarded to achieve successful outcomes in any particular training course or learning environment (Akkoyunlu and Soylu, 2006). More importantly, the level of learning achieved through trainees' learning style is one of the most critical factors that indicate training effectiveness. Interestingly, the male samples showed that the effect of learning style on the intention to transfer training is more than the female samples showed. This implies that females are more willing to learn new things, even though they are not fully consistent with their learning style and their desire to explore new things might help them to reflect that in practice.

As one of the most important training-effectiveness determinants, the results in Table VIII demonstrate that training effectiveness is an outcome of supervisor support and the intention to transfer training. This implies that to increase the effectiveness of training courses, supervisors should actively provide support. Besides the role of supervisor support has in shaping the intention to transfer training, it also significantly enhances training effectiveness. These findings reflect previous research that confirmed the importance of supervisor support and its impact on the intention to transfer training and the transfer process (Ford *et al.*, 1992; Huczynski and Lewis, 1980). According to Ford *et al.* (1992), supervisor support contributes to employees' willingness to implement the new skills after the completion of training courses. Past literature revealed various situational, contextual and trainee variables that influence the complex transfer process (Laker, 1990). In addition,

the findings of previous studies revealed that when trainees perceive a greater degree of supervisor support for training, they have greater intentions to acquire the advantages of new knowledge and new skills (Al-Eisa *et al.*, 2009).

Conclusion

Many previous studies focusing on HRD have investigated training transfer and training effectiveness in the context of Western culture, to develop and test the training transfer model (Thayer and Teachout, 1995). The present study, however, fills the gap regarding the re-examination of TPB in a unique cultural setting, where males and females are very much different in work environment, privileges, opportunities and behaviours.

The findings of this study could be of great value for the practice especially in the context of Saudi Arabia and culturally similar contexts. As noticed from the results, the learning style of the trainee has a great impact on his intention to have the content of training reflected upon the work environment. This puts a great responsibility on those in charge of training design and implementation. The training programmes should be designed in such a way to encourage and challenge all the trainees regardless of their learning style and inspire them to improve their work environment in a continuing basis.

Moreover, for organizations to have the most possible outcome of any investment in training and achieving their objectives, the efforts should be focused on the creation of desire to implement the ideas trainees may get on their work environment. This could not be done without the support of supervisors and their tolerance to all the new ideas related to the work procedures. Without such encouraging environment, the training related investment might be deemed loss.

From the theoretical point of view, this study contributes to training-effectiveness literature by using the intention to transfer-training gap to measure the extent of leverage or strength on the relationship between the individual factors and environmental factors mentioned above. The findings of this study provide some clarification on the much debatable issue of whether it is worth measuring the intention to transfer training to determine training effectiveness and whether these individual and environmental factors really matter when evaluating training effectiveness. The results of these findings pave the way for more future studies to be conducted in this area.

References

Ajzen, I. (1991), "The theory of planned behavior", *Organizational Behaviour and Human Decision Processes*, Vol. 50 No. 2, pp. 179-211.

Akkoyunlu, B. and Soylu, M.Y. (2006), "A study on students' views on blended learning environment", *Turkish Online Journal of Distance Education*, Vol. 7 No. 3.

Aldolaimi, A.H. (2006), "Investigating the effectiveness of training in the public sector in Saudi Arabia: case studies of the ministry of education and the institute of public administration", Unpublished Doctoral Thesis, Durham University, Durham.

Al-Eisa, A.S., Furayyan, M.A. and Alhemoud, A.H. (2009), "An empirical examination of the effects of self-efficacy, supervisor support and motivation to learn on transfer intention", *Management Decision*, Vol. 47 No. 8, pp. 1221-1244.

Al-Otaibi, M.M. (2008), "The need for training of supervisors in oganization in Saudi Arabia", Unpublished Doctoral Thesis, University of Al-Imam Muhammad bin Saud, Riyadh.

Al-Qahtani, M.M. (2011), "Evaluation of training in public institutions in Saudi Arabia", Unpublished Doctoral Thesis, University of Al-Imam Muhammad bin Saud, Riyadh.

Anderson, J.C. and Gerbing, D.W. (1988), "Structural equation modeling in practice: a review and recommended two-step approach", *Psychological Bulletin*, Vol. 103 No. 3, pp. 411-423.

Arbuckle, J.L. (2006), *AMOS 4.01 [Software]*, SmallWaters, Chicago.

Bandura, A. (1986), *Social Foundations of Thought and Action: A Social Cognitive Theory*, Prentice-Hall, Englewood Cliffs, NJ.

Bandura, A. (2006), "Toward a psychology of human agency perspectives", *Psychological Science*, Vol. 1 No. 2, pp. 164-180.

Barclay, D., Higgins, C. and Thompson, R. (1995), "The partial least squares (PLS) approach to causal modeling: personal computer adoption and use as an illustration", *Technology Studies*, Vol. 2 No. 2, pp. 285-309.

Baron, J.N. (2001), "Labor pains: organizational change and employee turnover in young, high-tech firms", *The American Journal of Sociology*, Vol. 106 No. 4, pp. 960-1012.

Bates, R. and Khasawneh, S. (2005), "Organizational learning culture, learning transfer climate and perceived innovation in Jordanian organizations", *International Journal of Training and Development*, Vol. 9 No. 2, pp. 96-109.

Beck, L. and Ajzen, I. (1991), "Predicting dishonest actions using the theory of planned behavior", *Journal of Research in Personality*, Vol. 25 No. 3, pp. 285-301.

Bhatti, M.A. and Kaur, S. (2010), "Factors effecting transfer of training: a fresh review", Paper Presented at the 12th International Business Information Management Conference (IBIMA), Kuala Lumpur.

Billari, F.C., Philipov, D. and Testa, M.R. (2009), "Attitudes, norms and perceived behavioural control: explaining fertility intentions in Bulgaria", *European Journal of Population/Revue Européenne De Démographie*, Vol. 25 No. 4, pp. 439-465.

Blanchard, P.N. and Thacker, J.W. (2007), *Effective Training: Systems, Strategies, and Practices*, 3rd ed., Pearson Education, Upper Saddle River, NJ.

Brannick, M.T. (1995), "Critical comments on applying covariance structure modeling", *Journal of Organizational Behavior*, Vol. 16 No. 3, pp. 201-213.

Byrne, B.M. (2001), "Structural equation modeling with AMOS, EQS, and LISREL: comparative approaches to testing for the factorial validity of a measuring instrument", *International Journal of Testing*, Vol. 1 No. 1, pp. 55-86.

Byrne, B.M., Shavelson, R.J. and Muthén, B. (1989), "Testing for the equivalence of factor covariance and mean structures: the issue of partial measurement invariance", *Psychological Bulletin*, 'Vol. 105 No. 3, pp. 456.

Carbery, R. and Garavan, T.N. (2011), "Conceptualising participation in formal training and development activities: a planned behaviour approach", *Springer Science & Business Media*, Vol. 5, pp. 27-45.

Cheng, E. (2001), "Research note: a review of transfer of training studies in the past decade", *Personnel Review*, Vol. 30 No. 1, pp. 102-118.

Cheung, G.W. and Rensvold, R.B. (2002), "Evaluating goodness-of-fit indexes for testing measurement invariance", *Structural Equation Modeling*, Vol. 9 No. 2, pp. 233-255.

Chiaburu, D.S. and Marinova, S.V. (2005), "What predicts skill transfer? An exploratory study of goal orientation, training self-efficacy and organizational supports", *International Journal of Training and Development*, Vol. 9 No. 2, pp. 110-123.

Chin, W.W. (2010), "How to write up and report PLS analyses", in Chin, W.W. (Ed.), *Handbook of Partial Least Squares Analysis: Concepts, Methods and Applications*, Springer, Heidelberg, pp. 645-688.

Chokri, B. and Talal, K. (2013), "The improvement of lifelong learning in Saudi Arabian university from individual learning to social constructivist e-learning environment based new educational technologies", *European Scientific Journal*, Vol. 9 No. 13, pp. 78-98.

Cohen, J. (1988), *Statistical Power Analysis: A Computer Program*, Routledge, Abingdon.

Collins, M.E. and Kim, S.H. (2010), "Empirical studies of child welfare training effectiveness: methods and outcomes", *Child and Adolescent Social Work Journal*, Vol. 27 No. 1, pp. 41-62.

Colquitt, J.A., LePine, J.A. and Noe, R.A. (2000), "Toward an integrative theory of training motivation: a meta-analytic path analysis of 20 years of research".

Elangovan, A. and Karakowsky, L. (1999), "The role of trainee and environmental factors in transfer of training: an exploratory framework", *Leadership & Organization Development Journal*, Vol. 20 No. 5, pp. 268-276.

Facteau, J.D., Dobbins, G.H., Russell, J.E.A., Ladd, R.T. and Kudisch, J.D. (1995), "The influence of general perceptions of the training environment on pretraining motivation and perceived training transfer", *Journal of Management*, Vol. 21 No. 1, pp. 1-25.

Ford, J.K., Quiñones, M.A., Sego, D.J. and Sorra, J.S. (1992), "Factors affecting the opportunity to perform trained tasks on the job", *Personnel Psychology*, Vol. 45 No. 3, pp. 511-527.

Fornell, C. and Larcker, D. (1981), "Evaluating structural equation models with unobservable variable and measurement error", *Journal of Marketing Research*, Vol. 18 No. 1, pp. 39-50.

Fornell, C., Tellis, G.J. and Zinkhan, G.M. (1982), "Validity assessment: a structural equations approach using partial least squares. *In Proceedings, American Marketing Association Educators' Conference*, pp. 1-5.

Hair, J.F., Black, W.C., Babin, B.J. and Anderson, R.E. (2010), *Multivariate Data Analysis*, 7th ed., Pearson Prentice Hall, Upper Saddle River, NJ.

Hayes, A.F. (2009), "Beyond Baron and Kenny: statistical mediation analysis in the new millennium", *Communication Monographs*, Vol. 76 No. 4, pp. 408-420.

Hawley, J.D. and Barnard, J.K. (2005), "Work environment characteristics and implications for training transfer: a case study of the nuclear power industry", *Human Resource Development International*, Vol. 8 No. 1, pp. 65-80, doi: 10.1080/1367886042000338308.

Hesketh, E.A. and Laidlaw, J.M. (2007), "Selling education events to health care professionals: twelve tips on the function and design of trigger leaflets", *Medical Teachers*, Vol. 19 No. 4, pp. 250-256.

Holton, E.F., Bates, R.A. and Rouna, W.E. (2000), "Development of generalized learning transfer system inventory", *Human Resource Development Quarterly*, Vol. 11 No. 4, pp. 333-360.

Honey, P. and Mumford, A. (2000), *The Learning Styles Helper's Guide*, Peter Honey, Maidenhead.

Hooper, D., Coughlan, J. and Mullen, M. (2008), "Structural equation modelling: guidelines for determining model fit: articles, 2", *Journal of Business Research Methods*, Vol. 6 No. 1, pp. 53-60.

Hu, L. and Bentler, P.M. (1999), "Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives", *Structural Equation Modeling: A Multidisciplinary Journal*, Vol. 6 No. 1, pp. 1-55, doi: 10.1080/10705519909540118.

Huang, T.C. (2001), "The relation of training practices and organizational performance in small and medium size enterprises", *Education and Training*, Vol. 43 Nos 8/9, pp. 437-444.

Huczynski, A.A. and Lewis, J.W. (1980), "An empirical study into the learning transfer process in management training", *Journal of Management Studies*, Vol. 17 No. 2, pp. 227-240.

Karuppaiya, S. (1996), "Work values, personality traits and career success", Dissertation Submitted in Partial Fulfilment of Requirements for the Degree of Doctor of Business Administration, Malaysia.

Kelloway, K.E. (1995), "Structural equation modelling in perspective", *Journal of Organizational Behavior*, Vol. 16 No. 3, pp. 215.

Kemp, J.E., Morrison, G.R. and Ross, S.M. (1998), *Designing Effective Instruction*, 2nd ed., Prentice Hall, Upper Saddle River, NJ.

Kirwan, C. and Birchall, D. (2006), "Transfer of learning from management development programmes: testing the Holton model", *International Journal of Training and Development*, Vol. 10 No. 4, pp. 252-268.

Kline, R.B. (2005), *Principles and Practices of Structural Equation Modeling*, 2nd ed., The Guilford Press, New York, NY, p. 105.

Kline, R.B. (2011), "Convergence of structural equation modeling and multilevel modeling", in Williams, M. and Vogt, W.P. (Eds), *Handbook of Methodological Innovation*, Sage, Thousand Oaks, CA, pp. 562-589.

Laker, D.R. (1990), "Dual dimensionality of training transfer", *Human Resources Development Quarterly*, Vol. 1 No. 3, pp. 209-235.

Latham, G.P. and Frayne, C.A. (1989), "Self-management training for increasing job attendance: a follow-up and a replication", *Journal of Applied Psychology*, Vol. 74 No. 3, pp. 411-416.

Ling, L.K. (2007), "Evaluating the effectiveness of a conceptual skill training: a quasi-experimental approach, Unpublished Doctorate Thesis" Malaysia.

Lunenburg, F.C. and Ornstein, A.C. (2012), *Educational Administration: Concepts and Practices*, Wadsworth Publishing, Wadsworth.

MacKinnon, D.P., Fritz, M.S., Williams, J. and Lockwood, C.M. (2007), "Distribution of the product confidence limits for the indirect effect: program PRODCLIN", *Behavior Research Methods*, Vol. 39 No. 3, pp. 384-389.

Machin, M.A. and Fogarty, G.J. (2003), "Perceptions of training-related factors and personal variables as predictors of transfer implementation intentions", *Journal of Business and Psychology*, Vol. 18 No. 1, pp. 51-71.

Marsh, H.W. and Grayson, D. (1990), "Public/Catholic differences in the high school and beyond data: a multigroup structural equation modeling approach to testing mean differences", *Journal of Educational and Behavioral Statistics*, Vol. 15 No. 3, pp. 199-235.

Mathieu, J.E., Tannenbaum, S.I. and Salas, E. (1992), "Influences of individual and situational characteristics on measures of training effectiveness", *Academy of Management Journal*, Vol. 35 No. 4, pp. 828-847.

Ministry of Economy and Planning (2010), "Kingdom of Saudi Arabia", *Brief Report on the Ninth Development Plan (2010–2014)*.

Mullins, M.E., Fisher, S.L., Howell, A.W., Schmitt, N. and Kozlowski, S.W.J. (1998), "Motivational and contextual influences on training effectiveness: a field study", *Training Research Journal*, Vol. 4, pp. 11-26.

National Commission for Accreditation and Assessment (2012), "National commission for assessment and academic accreditation website", (accessed 20 October 2012).

Powell, J.L. (2009), "Transfer initiation and maintenance of training: employees' perception of the relative influences of transfer intentions, general self-efficacy (GSE) and supervisor support", *Unpublished PhD Dissertation of the Virginia Polytechnic Institute and State University*.

Rossi, P.G. (2010), "Intelligent agents supporting user interactions within self regulated learning processes", *JE-LKS, Journal of E-Learning and Knowledge Society*, Vol. 6 No. 2, pp. 27-36.

Saks, A.M. (1995), "Longitudinal field investigation of the moderating and mediating effects of self-efficacy on the relationship between training and newcomer adjustment", *Journal of Applied Psychology*, Vol. 80 No. 2, pp. 211-225.

Saks, A.M. (2002), "So what is a good transfer of training estimate? A reply to Fitzpatrick", *The Industrial-Organizational Psychologist*, Vol. 39, pp. 29-30.

Saks, A.M., Haccoun, R. and Laxer, D. (2004), "Transfer training: a comparison of self management and relapse prevention interventions", *Proceedings of Administrative Sciences Association of Canada (ASAC)*, Vol. 17, 81-91.

Schreiber, J.B. (2008), "Core reporting practices in structural equation modeling", *Research in Social and Administrative Pharmacy*, Vol. 4 No. 2, pp. 83-97.

Schreiber, J.B., Nora, A., Stage, F.K., Barlow, E.A. and King, J. (2006), "Reporting structural equation modeling and confirmatory factor analysis results: a review", *The Journal of Educational Research*, Vol. 99 No. 6, pp. 323-338.

Sherer, M., Maddux, J.E., Prentice-Dunn, B.M.S., Jacobs, B. and Ronald, W. (1982), "The self-efficacy scale: consideration and validation", *Psychological Reports*, Vol. 51 No. 2, pp. 663-671.

Shariff, N.M. and Al-Makhadmah, I.M. (2012), "Work environment factors influencing in achieving training effectiveness in Aqaba special economic zone authority Aseza", *Academic Research International*, Vol. 2 No. 3, pp. 598-609.

Simon, S.J. (2000), "The relationship of learning style and training method to end-user computer satisfaction and computer use: a structrual equation model", *Information Technology, Learning, and Performance Journal*, Vol. 18 No. 1, p. 41.

Steenkamp, J.B.E. and Baumgartner, H. (1998), "Assessing measurement invariance in cross-national consumer research", *Journal of Consumer Research*, Vol. 25 No. 1, pp. 78-107.

Syneder, H. (1963), "Community college education for Saudi Arabia", Unpublished Doctoral Dissertation, 164-180.

Tennant, C., Boonkrong, M. and Roberts, P. (2002), "The design of a training programme measurement model", *Journal of European Industrial Training*, Vol. 26 No. 5, pp. 230-240.

Tannenbaum, S., Mathieu, J.E., Salas, E. and Cannon-Bowers, J.A. (1991), "Meeting trainees' expectations: the influence of training fulfilment on the development of commitment, self-efficacy, and motivation", *Journal of Applied Psychology*, Vol. 76 No. 6, pp. 759-769.

Thayer, P.W. and Teachout, M.S. (1995), "A climate for transfer model", Interim Technical Paper No. AL/HR-TP-1995-0335, Armstrong Laboratory, AFMC, Brooks AFB, TX.

Tubbs, M.E. and Ekeberg, S.E. (1991), "The role of intentions in work motivation: implications for goal-setting theory and research", *Academy of Management Review*, Vol. 16 No. 1, pp. 180-199.

Tziner, A., Fisher, M., Senior, T. and Weisberg, J. (2007), "Effects of trainee characteristics ontraining effectiveness", *International Journal of Selection and Assessment*, Vol. 15 No. 2, pp. 167-174.

Velada, R., Caetano, A., Michel, J.W., Lyons, B.D. and Kavanagh, M.J. (2007), "The effects of training design, individual characteristics and work environment on transfer of training", *International Journal of Training and Development*, Vol. 11 No. 4, pp. 282-294.

Williams, J. and MacKinnon, D.P. (2008), "Resampling and distribution of the product methods for testing indirect effects in complex models", *Structural Equation Modeling*, Vol. 15 No. 1, pp. 23-51.

Further reading

Bandura, A. (2009), "Toward a psychology of human agency perspectives", *Psychological Science*, Vol. 1 No. 2, pp. 164-180.

Brown, T.C. and McCracken, M. (2009), "Building a bridge of understanding: how barriers to training participation become barriers to training transfer", *Journal of European Industrial Training*, Vol. 33 No. 6, pp. 492-512.

Campbell, J. (1989), "The agenda for training theory and research", in Goldstein, I.L. (Ed.), *Training and Development in Organizations*, Jossey-Bass, San Francisco, pp. 469-486.

Cheng, Y.C. (1996), *School Effectiveness and School Based Management: A Mechanism for Development*, Psychology Press, London.

Clemenz, C.E. (2001), "Measuring perceived quality of training in the hospitality industry", *Unpublished PhD Dissertation*, Virginia Polytechnic Institute and State University, Blacksburg, VA.

Elnaga, A. and Imran, A. (2013), "The effect of training on employee performance", *European Journal of Business and Management*, Vol. 5 No. 4, pp. 137-147.

Ford, J.K. and Weissnien, D.A. (1997), "Transfer of training", *Performance Improvement Quarterly*, Vol. 10 No. 12, pp. 22-41.

Ford, L. (2009), "Improving training transfer", *Industrial and Commercial Training*, Vol. 41 No. 2, pp. 92-96.

Foxon, M.J. (1993), "A process approach to the transfer of training part 1: the impact of motivation and supervisor support on transfer maintenance", *Australasian Journal of Educational Technology*, Vol. 9 No. 2, pp. 130-143.

Holton, E.F. III (2005), "The flawed four-level evaluation model", *Human Resource Development Quarterly*, Vol. 7 No. 1, pp. 37-54.

Kauffeld, S. and Lehmann-Willenbrock, N. (2010), "Sales training: effects of spaced practice and training transfer", *Journal of European Industrial Training*, Vol. 34 No. 1, pp. 23-37.

Kraiger, K., Ford, J. and Salas, E. (1993), "Application of cognitive, skillbased, and affective theories of learning outcomes to new methods of training evaluation", *Journal of Applied Psychology*, Vol. 78 No. 31, pp. 13-28.

Mathieu, J.E., Martineau, J.W. and Tannenbaum, S.I. (1993), "Individual and situational influences on the development of self-efficacy: implications for training effectiveness", *Personnel Psychology*, Vol. 46 No. 1, pp. 125-147.

Ministry of Higher Education of Saudi Arabia (2013), available at: www.mohe.gov.sa (accessed 23 march 2013).

Osama, S.T., Giulio, M.G. and Isam Yahia, A.F. (2012), "Smart development: the quest for a knowledge economy in Saudi Arabia", International Studies.

Petty, G.C., Lim, D.H. and Zulauf, J. (2007), "Training transfer between CD-ROM based instruction and traditional classroom instruction", *The Journal of Technology Studies*, Vol. 33 No. 1, pp. 9-23.

Podsakoff, P.M. and Organ, D.W. (1986), "Self-reports in organizational research: problems and prospects", *Journal of Management*, Vol. 12 No. 4, pp. 531-544, doi: 10.1177/014920638601200408.

Rossi, P.G. (2009), "Ambiente di apprendimento con elementi di artificial intelligence", *JE-LKS, Journal of E-Learning and Knowledge Society*, Vol. 5 No. 1, pp. 65-75.

Vygotsky, L.S. (1962), *Thought and Language*, MIT Press, Cambridge, MA.

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