Transfer Employability Skills through e-Training as Nonlinear Processes Carried Out in Organizations Networks

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Presentation Outlines

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1 -Introduction

During the recent years, the concept of electronic training (or e-training) has developed substantially, and emerges as a new alternative training tool that enables companies to efficiently transfer knowledge and employability skills in a more flexible and interactive environment without limitation of space, time or facilities, reduce a company's training costs, increase trainees' convenience and makes it easier to combine work and training in workplace compared with traditional face-to-face training.

2- Research problem & Objectives

Despite the positive impact of e-training on all levels of organizational outcomes, only few works addressed this phenomenon and among these works limited empirical researches examined the driving factors influencing employee' intention to use e-training programs as an essential determinant or prerequisite for any successful implementation.

Accordingly, this paper *aims* address the gap in current body of literature, and contributes to both theory and practice, by examining empirically employees' intention to use e-training programs, developing and validating an analytical comprehensive model combining multiple sets of key influence factors, which are significant in predicting intention and assess their relative importance.

In addition, the current study seeks to test the mediatory impact of this intention on the perceived effectiveness of transferring employability skills in order to examine the phenomenon under investigation from broader perspective.

3- Literature review

Relevant literature, which provided the conceptual foundation for this paper and past research were extensively reviewed and integrated sequentially, including a wide range of recently published works, in order to develop more effectively the study hypotheses and the research model.

4- Developing the research model and hypotheses

Drawing upon the theoretical background discussed and the comprehensive review of literature on e-training, e-learning and innovation adoption, as well as insights from a serious of in-depth interviews in the preliminary stage of our study the following hypotheses were formulated:

H1: Perceived relative advantage (*PRA*) is positively related to the intention to use e-training
H2: Perceived compatibility (*PCT*) is positively related to the intention to use e-training
H3: Perceived complexity (*PCL*) is negatively related to the intention to use e-training
H4: Perceived trail-ability (*PTR*) is positively related to the intention to use e-training
H5: Perceived observability (*POB*) is positively related to the intention to use e-training
H6: Perceived customizability (*PCU*) is positively related to the intention to use e-training
H7: Perceived risk (*PRK*) is negatively related to the intention to use e-training
H8: Intention to use e-training (*INT*) mediates the relationship between adoption predictors and the perceived effectiveness of transferring employability skills (*EFF*) via e-training programs

Symbolically, the initial equation of the proposed model (***EQ1***) can be presented as follows:

$$INT = a + b_{PRA}\,PRA + b_{PCT}\,PCT - b_{PCL}\,PCL + b_{PTR}\,PTR + b_{POB}\,POB + b_{PCU}\,PCU - b_{PRK}\,PRK \text{ ---(EQ1)}$$

5- Research Methodology

A richer research methodology is used in this empirical study combining ***quantitative*** and ***qualitative*** methods to validate the research model and empirically test the hypothesized relationships among its variables. Thus, the research process involved multi-stage procedures. The empirical data collected by the survey was analyzed and tested.

The sample was drawn from full-time employees working at Egyptian business firms embedded in e-training. Among a total of 500 questionnaires that were randomly distributed, 287 valid responses were obtained and used in data analysis.

6- Data Analysis and Model Testing

The empirical data collected by the survey was analyzed and tested using statistical software packages (SPSS). Analysis, as presented in the following table, included *descriptive statistics* and linear *correlation matrices* to examine the relationship among independent, dependent and mediating variables, which provided preliminary empirical evidence of valid hypotheses testing, before performing the regression analysis.

6- Data Analysis and Model Testing (continued)

Descriptive statistics and correlation matrices showing the relationships among variables

Var	Mean	SD	1	2	3	4	5	6	7	8	9
1-PRA	3.9094	1.19971	1								
2-PCT	3.8954	1.17202	0.31	1							
3-PCL	3.1219	1.42986	-0.49	-0.41	1						
4-PTR	3.7700	1.21589	0.47	0.38	-0.50	1					
5-POB	3.8466	1.14850	0.36	0.37	-0.50	0.48	1				
6-PCU	4.3275	1.17254	0.28	0.46	-0.45	0.44	0.38	1			
7-PRK	3.0696	1.36208	-0.33	-0.42	-0.39	-0.41	-0.41	-0.36	1		
8-INT	2.8606	1.42459	0.68**	0.58*	-0.87**	0.57*	0.60**	0.66**	-0.77**	1	
9-EFF	2.5714	1.25197	0.47*	0.56*	-0.68**	0.48*	0.51*	0.54*	-0.58*	0.76**	1

n= 287, (a) Tested by Pearson coefficients r
**Correlation is significant at 0.000 levels (2-tailed
*Correlation is significant at 0.001 levels (2-tailed)

The Correlation Coefficients r between 1,2,3,4,5,6,,7 and 8 representing H1 to H7

The Correlation Coefficient r between 8 and 9 representing H8

Due to the presence of many predictors in the study, multiple regression models (full model and stepwise model) were built to test for the joint and independent influence of the predictors on the criterion variable.

6- Data Analysis and Model Testing (continued)

The reliability analysis showed that the value of *Cronbach's alpha* of every construct is greater than 0.8 (ranging from 0.81 to 0.94). *Descriptive statistics* and *linear correlation matrices* were performed to examine the relationship among independent, dependent and mediating variables, which provided preliminary empirical evidence of valid hypotheses testing, before conducting the *regression analysis.*

Due to the presence of many predictors in the study, multiple regression models (*full model and stepwise forward conditional model*) were built to test for the joint and independent influence of the predictors on the criterion variable, assess meditational hypothesis and modeling relationships. *Multicollinearity* among the independent variables included in the proposed regression model. The values revealed no severe multicollinearity problem .

The summary output of the multiple regression analysis (full model) presented in the following tables led to accept the previously mentioned hypotheses, while the statistical significance test supported this acceptance and confirmed the hypothesized relationships.

6- Data Analysis and Model Testing (continued)

Summary output of multiple regression analysis

Coefficients [a]	Symbols	Values
Multiple correlation coefficient	Multiple R	0.910264136827132
Coefficient of multiple determination	R^2	0.828580798793644
Adjusted R Square	Adjusted R^2	0.824279958620007
Standard Error	SEE	0.597173764185509
Observations	N	287
ANOVA [b]		
Regression	SS_{reg}	480.929082315829
Residual	SS_{res}	99.4960047921858
Total	SS_{total}	580.425087108015
F-test overall model	F	192.655566201409*
Degrees of freedom	df_1, df_2	7, 279

a Criterion variable: INT
b. Predictors: (constant), PRA, PCT, PCL, PTR, POB, PCU, PRK
*p<0.00000000 levels of significant

A seen from the table, a strong, significant and meaningful correlation is found between criterion variable INT and the above mentioned predictor variables (*Multiple R=0.910264136827132*). The value of F- ratio (*F (7,279) =192.655566201409 at p<0.000000*) is statistically significant indicating that the results of the model could hardly have occurred by chance. Thus, the goodness-of-fit of the model considered satisfactory.

6- Data Analysis and Model Testing (continued)

The coefficient of determination, multiple *R-square* suggested that the proposed model is valid, the predictor factors of the model explained the major proportion (*82.85 %*) of the variability observed among the criterion variable INT (R^2=*0.828580798793644*), which reinforce our confidence in the hypotheses testing results and provides support for the above mentioned association. Furthermore, the *adjusted* R^2 of the model, which is a more conservative estimate of variance by considering error variance, is *0.824279958620007*. This reinforces our confidence that the overall explanatory power of the research model considered high and quite capable of explaining the observed variance among the sample.

For easily comparing and assessing the relative impact of each predictor variable on the criterion variable standardized beta coefficients and t-test values were presented.

6- Data Analysis and Model Testing (continued)

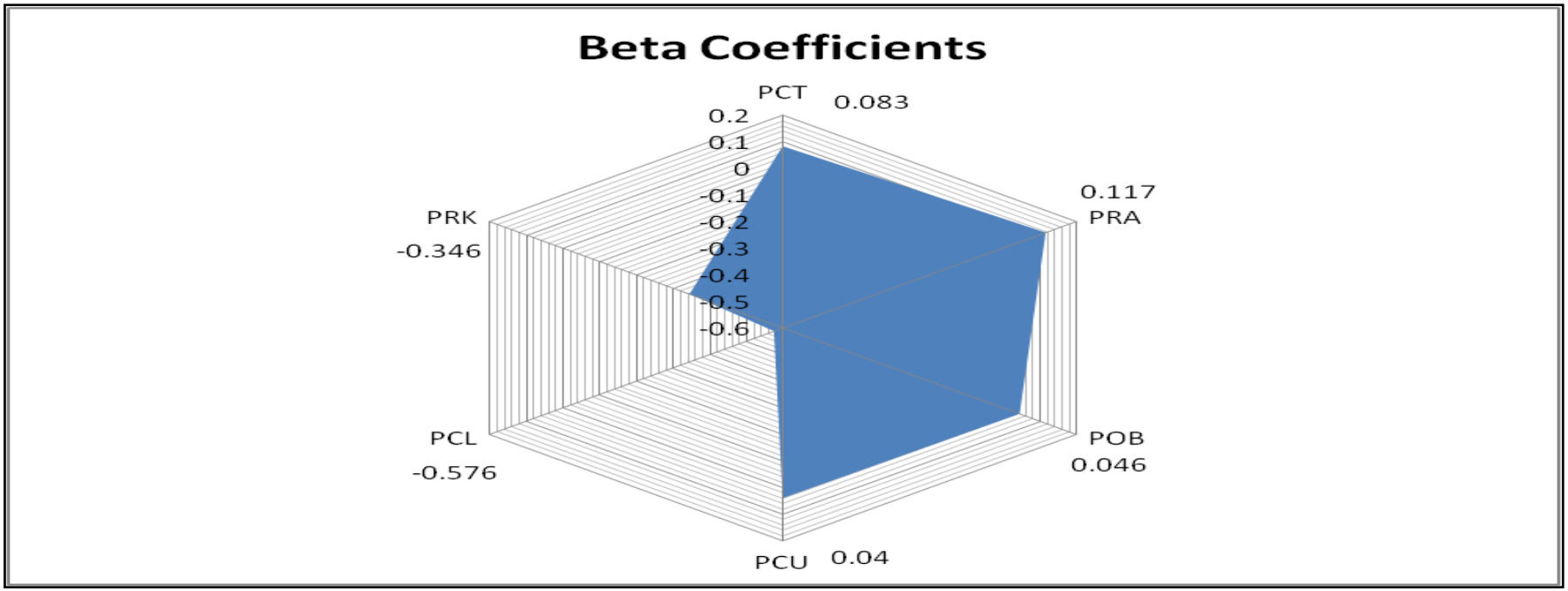
Variables included in the research model equation

Factors	Regression Coefficients		Beta Coefficients		t-test	
	Symbol	Value	Symbol	Value	Value	Sig.
PRA	b_{PRA}	0.139047338	B_{PRA}	0.117	3.44364278	0.000662058
PCT	b_{PCT}	0.100279971	B_{PCT}	0.083	1.32713437	0.185549277
PCL	b_{PCL}	-0.573685897	B_{PCL}	-0.576	-15.183835	0.000000000
PTR	b_{PTR}	0.003656753	B_{PTR}	0.003	0.05725256	0.954385013
POB	b_{POB}	0.057467403	B_{POB}	0.046	0.96808264	0.333841537
PCU	b_{PCU}	0.048545172	B_{PCU}	0.040	1.32422172	0.186513214
PRK	b_{PRK}	-0.361453145	B_{PRK}	-0.346	-10.012784	0.000000000
Intercept	a	1.6088468378				

As it can be seen from the table, Out of the 9 variables considered in the model, only **3** of them (*namely PCL, PRK and PRA*) were found to have a critical significant impact on the criterion variable *INT* with *p-value* less than 0.001. More specifically, the perceived complexity had the highest effect on employees' intention (with negative association (*Beta $_{PCL}$ =-0.576, t=15.1838355, p<0.000000*) followed by perceived risk (*Beta $_{PRK}$ =-0.346, t=10.0127845, p<0. 000000*) then perceived relative advantage (*Beta $_{PRA}$ = 0.117, t=3.44364278, p<0. 0006*). The graphic presentation in figure 1 clearly illustrates the findings discussed above.

6- Data Analysis and Model Testing (continued)

Spider diagram representing beta coefficients



The values of the non-standardized regression coefficients in table 3 were utilized for mathematically predicting the employees' intention to use e-training in future by the following multiple regression equation (***EQ2***):

*INT = 1.61 + 0.14 PRA + 0.10 PCT - 0.57 PCL + 0.004 PTR + 0.05 POB +0.04 PCU - 0.36 PRK---(**EQ2**)*

6- Data Analysis and Model Testing (continued)

For deeper analysis, the regression were repeated again using stepwise regression approach by conditional model to provide further evidence regarding the preceding findings and incorporates the pure impact of a smaller subset of variables that account for most of the variation in the criterion variable. The analysis outcomes are summarized in the following table:

The output summary of stepwise regression analysis (forward conditional model

Model	R	R^2	Adjusted R^2	SS_{res}	SS_{total}	df	F	Sig
1	0.868	0.754	0.753	437.658	580.425	1, 285	873.680*	0.00000
2	0.903	0.816	0.815	473.560	580.425	2, 284	629.255*	0.00000
3	0.909	0.826	0.824	479.193	580.425	3, 283	446.538*	0.00000

Model 1: Variables entered: PCL
Model 2: Variables entered: PCL, PRK
Model 3: Variables entered: PCL, PRK, PRA
Criterion Variable: INT

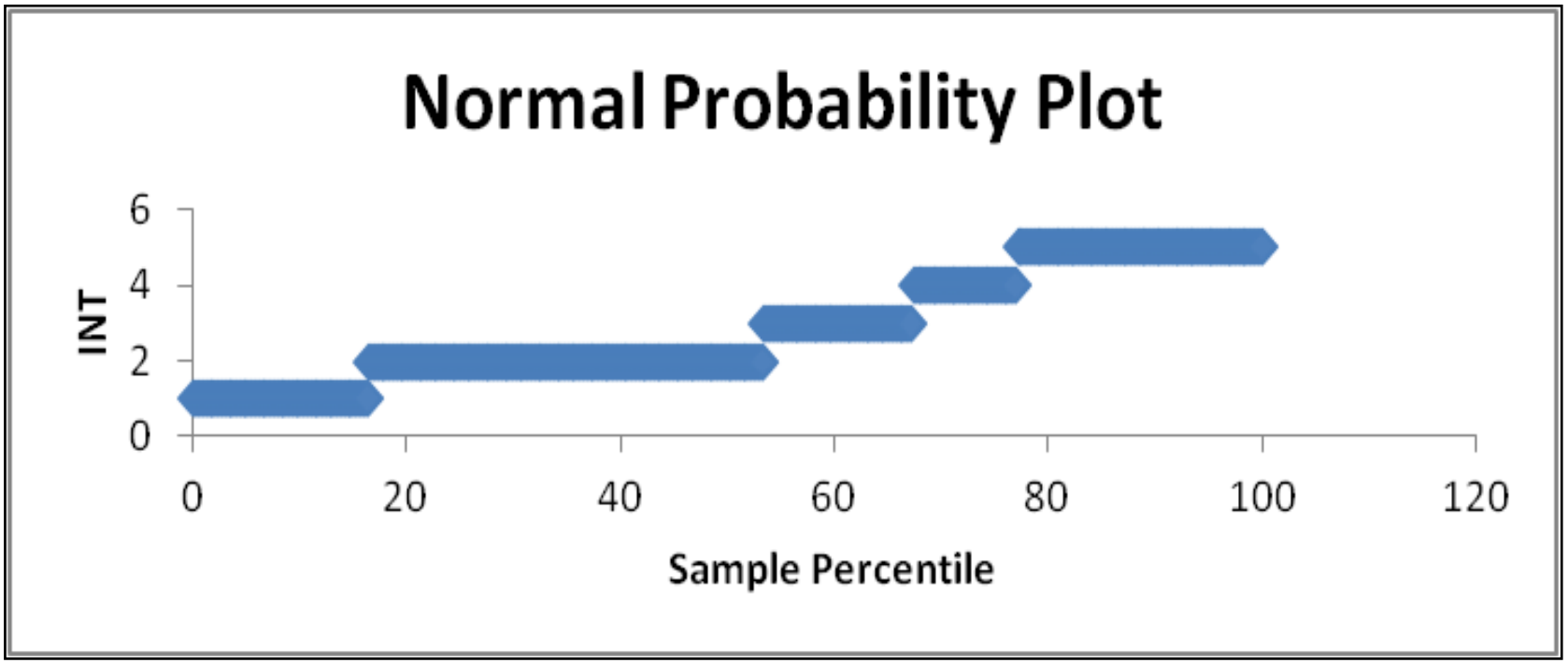
a Criterion variable: INT
*p<0.00000000 levels of significant

As noted here, only the 3 predictor factors (*PCL, PRK, PRA*) succeeded to enter the model equation and explained 82.6 percent of the total variation in criterion variable INT (R^2 *for model 3 =0.826*) and their regression coefficients values were used to estimate the final predictive equation (***EQ3)***, as below

$$INT = 1.64 + 0.13\ PRA - 0.57\ PCL - 0.36\ PRK \text{ --(EQ3)}$$

Normal probability analysis

A P-P plot of regression standardized residual for assessing the assumption of normality was conducted, The plot, in the following figure, showed that the data met the assumptions of normality.



7- Conclusion and Implications

This paper has addressed several pressing issues regarding e-training in organizations and taken a further significant step in contributing to both theory and practice of e-training, as well as help to fill some gaps in the current body of literature. More specifically, this study has made a number of important practical implementations and theoretical contributions.

In term of *practical implications*, the results presented in and information acquired from this paper can help practitioners and companies to develop more customized successful e-training programs and effectively transfer employability skills based on what their employees want and expect, overcoming the discrepancies exist between what employees expect and want and what management perceives they expect.

From an *academic and research standpoint*, this study provides empirical evidences and validation for the existing specialized literature concerning e-training. The study proposed a mathematical model for predicting the potential impact of factors influencing intention to use e-training. Also the findings of the empirical study provide support for the research model and for the hypotheses regarding the directional linkage among its variables. The high overall explanatory power of our model indicated that this model is capable of explaining high proportion of variance observed in e-training behavioral intention.

8-Limitations and Further research

As with all empirical study, our research has some limitations that present opportunities for future research.

- First, the research model was validated using empirical data gathered from Egypt and therefore the findings may be affected by the culture in this developing country.
- Since the study is cross-sectional in design, a further examination of our argument using a longitudinal study is recommended in the future to investigate our model in different time periods.
- Apart from the above, we must point out that although the majority of the hypothesized relationships were validated, and significant, and the proposed model yielded a relatively high level value of multiple correlation coefficient, the obtained value of multiple R-square (R^2), implies that other additional variables, which may not be considered in our research model, can be addressed to enhance the model ability for prediction.
- However, there are other opportunities to build on this study in future research. Suggested areas include reexamining the proposed model in other countries with different cultures,

Thank You