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Factors Effect to the Post ERP Implementation in Sri Lankan Apparel Industry

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Abstract: An ERP system is playing a vital role in any organization to achieve the required speed, efficiency and accuracy of the daily business operations through automation and integration, providing a centralized and integrated system to increase the organization's productivity while reducing the time and labour costs. But most of the leading manufacturing organizations ended up adopting ERP systems without having the expected results. Most of the organizations failed to gain the true benefits as expected because of the lack of attention in the POST stage of the implementation. Since it takes a while to reap the full benefits, it is critical to have a successful ERP life cycle. Therefore the importance of post-implementation success factors is critical for any organization.

Similarly, garment manufacturing organizations have adopted the same trend by implementing new ERP systems by replacing their legacy systems. It seems that garment industries were successful when adopting the ERP systems than other manufacturing organization in Sri Lanka but this research would focus on to develop post-implementation success factors by analysing factors which have helped according to literature and industry knowledge and experience. Both qualitative and quantitative approach has been used to analyse the data and interviews and surveys used to capture the data in this research.

Research has shown that not only those technical issues but also some problems such as not use of effective change management, top management support, Business process reengineering, etc. Moreover, the proposed framework can be used as a guideline for successful ERP implementation at garment manufacturing organizations.

Keywords: Post ERP Implementation, Multicollinearity, Stepwise Analysis, Principal Component Analysis

Introduction

General satisfaction levels for ERP software continue to trend high. The survey conducted by Panorama's consulting received 86% satisfied with their ERP software and compared to 2012 the percentage has increased by 5%. Even though the high levels of overall satisfaction with the software only 60% respondents mentioned that their ERP implementations are successful. One third of the respondents didn't know if their project was a success. This points towards lack of post-implementation auditing, lack of business process and lack of communication about the project outcome from the top management. Furthermore 10% respondents highlighted that their ERP project was a failure.

The researches carried out by various parties proved that companies put less effort on ERP post implementation activities when compared to the pre implementation and implementation stages. Therefore companies are unable to get the much anticipated and predicted benefits from ERP implementations. Situation remains same in the Sri Lankan business environment. Most of the companies are still unable to take the full benefit out of ERP implementations. This is due to not having proper mechanism to

monitor the post implementation activities of ERP implementations.

Related Works

Top Management Support

Top management is critical factor for a successful ERP Post implementation. Also it requires to have huge resources to handle the complex situations arise from the ERP implementation. This needs the support and approvals of the top management. Also top management involvement is critical to handle the resistance from employees of the organization. It is best to start ERP implementation with the support of top management and this will definitely critical to a successful implementation (Leon, 2004).

Customization

Processes are different from factory to factory in Sri Lankan garment industry. Also factories are reluctant to change the existing processes for the best case practices. Therefore it required to have numerous customizations to support the garment manufacturing companies. The biggest mistake which organizations do is that customizing the software to suit the processes of the company (Millman, 2004). During an upgrade to a newer version of the ERP system automatically will not adjust to the new version of the ERP-system. Re-customization will be required in this case.

ERP system software is generally standardized system and many organizations would need to customize the ERP in order to support the business. This customization has to be carried out by external vendors or internally trained team. But over customization would make more complex and the business process would also have an impact. Customization will not give any cost benefit to the company as well. (Panorama, 2013).

Pre Implement- Success

Post Implementation success for an ERP for a given organization cannot be considered in a vacuum. Extensive understanding and thorough planning in the pre-implementation stage is a critical success factor in the post implementation stage. Pre Implementation activities such as project decisions, initial change management, business process mapping, and selection of the product are some of the main pre implementation considerations. Furthermore mentioned that "The post implementation experience relates directly, correlates directly to the pre-implementation experience" (Sullivan, 2009).

Operations and Maintenance

Successfully implemented ERP system would not automatically produce results; constant monitoring and management is essential for that. To gain maximum benefits in the Post Implementation stage, organizations should have continuous improvement, continuous learning and upgrades in their maintenance phase (Leon, 2004).

Change Management

Many companies struggle throughout the implementation stage because of underestimating the complexity and the lack of experience involved with change process (Hawking et al, 2004). There are problems faced by the organizations in the application of change management and the implementation of ERP. There are many employees and managers who are reluctant to change their organizational structure as required by ERP. They aren't disagreeing with the ERP but according to them nothing exists there for change management. However, employees who preferred tested traditional ways of management usually not willing to accept the ERP formulation and thus can show fearfulness towards it (Kuruppuarachchi et al., 2002).

Methodology

Population

Population will consists of total number of employees using ERP system at the selected garment manufacturing organizations and external consultants for this research which was around 350.

Sample Size

Sample was selected using non probability sampling technique called the convenience sampling. This was done because of the convenient accessibility and proximity to the researcher. (n = 100)

Data collection methods and techniques used for research analysis are interview questionnaires.

Concept	Variable	Indicator	Measurement
Independent Variable	Top management Support	Project support Clearly defined business goals Benefits to strategic business units Appointment of steering committee User support	5 questions based on 1-5 Likert Scale (Q1-Q5)
	Change Management	Change Agents User Trainings User support	5 questions based on 1-5 Likert Scale (Q6-Q10)
	Operations and Maintenance	User trainings for new users and refresher trainings System reviews Help desk	5 questions based on 1-5 Likert Scale (Q11-Q15)
	Pre Implementation Success	Information gathering ERP Product selection Planning Standardising business process	4 questions based on 1-5 Likert Scale (Q16-Q19)
Independent Variable	Pre Implementation Success	Information gathering ERP Product selection Planning Standardising business process	4 questions based on 1-5 Likert Scale (Q16-Q19)
	Customization	Complex and bugs Suits Upgrade to the next version	4 questions based on 1-5 Likert Scale (Q20-Q23)
	Post Implementation Audit & Reviews	System audits carried out Audit and review in months Suggestions implemented	3 questions based on 1-5 Likert Scale (Q24-Q-26)
	Business Process Reengineering	Quality, customer service and employee satisfaction Performance, profits, business practices, productivity and cost reductions Preparation and planning	5 questions based on 1-5 Likert Scale (Q27-Q31)
Dependent Variable	Post Implementation Success	Benefits to the organization Company effort	3 questions based on 1-5 Likert Scale (Q32-Q34)

The above operationalization table determines the areas such as concept, variables, measurements and indicators which has been used in carrying out the research and specifically preparing the questionnaire.

Detail Approach

Descriptive Statistics

Total ERP Satisfaction level by user opinion and the correlations between the variables are obtained using descriptive statistics.

Statistical Approach

Stepwise Regression Analysis

Stepwise regression approach is used to deal with the multicollinearity effect when performing a regression analysis. It is a method of regressing multiple variables while simultaneously removing those that aren't important each time removing the weakest correlated variable.

Principal Component Analysis

It is the more commonly used technique and more accurate than stepwise regression to deal with the effect of multicollinearity. The objective of principal components analysis is to explain the maximum amount of variation with the fewest number of principal components avoiding the multicollinearity.

Correlations

		Operation & Maintanace	Pre Implementation	Customization	Business Process Reengineering
ERP Success	Pearson Correlation	.648**	.722**	.476**	.826**
	Sig. (2-tailed)	.000	.000	.000	.000
	N	100	100	100	100
Audit Review	Pearson Correlation	.170	-.203*	-.255*	.021
	Sig. (2-tailed)	.091	.043	.010	.839
	N	100	100	100	100
Top Management	Pearson Correlation	.635**	.766**	.472**	.796**
	Sig. (2-tailed)	.000	.000	.000	.000
	N	100	100	100	100
Change Management	Pearson Correlation	.754**	.826**	.580**	.747**
	Sig. (2-tailed)	.000	.000	.000	.000
	N	100	100	100	100
Operation & Maintanace	Pearson Correlation	1	.713**	.617**	.765**
	Sig. (2-tailed)		.000	.000	.000
	N	100	100	100	100
Pre Implementation	Pearson Correlation	.713**	1	.638**	.745**
	Sig. (2-tailed)	.000		.000	.000
	N	100	100	100	100
Customization	Pearson Correlation	.617**	.638**	1	.563**
	Sig. (2-tailed)	.000	.000		.000
	N	100	100	100	100
Business Process Reengineering	Pearson Correlation	.765**	.745**	.563**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	100	100	100	100

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Correlations

		ERP Success	Audit Review	Top Management
ERP Success	Pearson Correlation	1	-.167	.854**
	Sig. (2-tailed)		.097	.000
	N	100	100	100
Audit Review	Pearson Correlation	-.167	1	-.085
	Sig. (2-tailed)	.097		.402
	N	100	100	100
Top Management	Pearson Correlation	.854**	-.085	1
	Sig. (2-tailed)	.000	.402	
	N	100	100	100
Change Management	Pearson Correlation	.725**	-.100	.831**
	Sig. (2-tailed)	.000	.324	.000
	N	100	100	100
Operation & Maintanace	Pearson Correlation	.648**	.170	.635**
	Sig. (2-tailed)	.000	.091	.000
	N	100	100	100
Pre Implementation	Pearson Correlation	.722**	-.203*	.766**
	Sig. (2-tailed)	.000	.043	.000
	N	100	100	100
Customization	Pearson Correlation	.476**	-.255*	.472**
	Sig. (2-tailed)	.000	.010	.000
	N	100	100	100
Business Process Reengineering	Pearson Correlation	.826**	.021	.796**
	Sig. (2-tailed)	.000	.839	.000
	N	100	100	100

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Below results are obtained from the stepwise regression analysis.

Table 04: Variables Entered/Removed

Model	Variables Entered	Variables Removed	Method
1	Top Management	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2	Business Process Reengineering	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
3	Audit Review	.	Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

Table 04 illustrates the variables used to build the model. It starts with zero predictors and then adds the strongest predictor, top management, to the model if its b-coefficient is statistically significant (p < 0.05, see last column). Table illustrates the variables used to build the model. It starts with zero predictors and then adds the strongest predictor, top management, to the model if its b-coefficient is statistically significant (p < 0.05, see last column).

And like wise include the next strongest predictor such a way that there is no significance auto correlations among the independent variables selected.

Table 05: Model Summary

Model Summary[d]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.854[a]	.730	.727	.42019	.730	264.880	1	98	.000	
2	.888[b]	.788	.784	.37410	.059	26.639	1	97	.000	
3	.897[c]	.805	.799	.36031	.017	8.567	1	96	.004	1.728

a. Predictors: (Constant), Top Management
b. Predictors: (Constant), Top Management, Business Process Reengineering
c. Predictors: (Constant), Top Management, Business Process Reengineering, Audit Review
d. Dependent Variable: ERP Success

Table 05 represent the best model as number 3 where it explains the 80% of the variation of the response variable by the model. Durbin Watson value around 2 depicts that there is no autocorrelation in the sample.

Table 06 :ANOVA Table

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	46.768	1	46.768	264.880	.000[b]
	Residual	17.303	98	.177		
	Total	64.071	99			
2	Regression	50.496	2	25.248	180.409	.000[c]
	Residual	13.575	97	.140		
	Total	64.071	99			
3	Regression	51.608	3	17.203	132.510	.000[d]
	Residual	12.463	96	.130		
	Total	64.071	99			

a. Dependent Variable: ERP Success
b. Predictors: (Constant), Top Management
c. Predictors: (Constant), Top Management, Business Process Reengineering
d. Predictors: (Constant), Top Management, Business Process Reengineering, Audit Review

The F-test is highly significant, (p-val < 0.05) thus it proves that there is a linear relationship between the variables in the model 3.

Table 07: Table of Coefficients

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	1.069	.176		6.069	.000	.719	1.419					
	Top Management	.787	.048	.854	16.275	.000	.691	.883	.854	.854	.854	1.000	1.000
2	(Constant)	.250	.223		1.118	.266	-.193	.693					
	Top Management	.495	.071	.537	6.946	.000	.353	.636	.854	.576	.325	.366	2.734
	Business Process Reengineering	.516	.100	.399	5.161	.000	.317	.714	.826	.464	.241	.366	2.734
3	(Constant)	.604	.247		2.449	.016	.114	1.094					
	Top Management	.461	.070	.500	6.621	.000	.323	.599	.854	.560	.298	.356	2.812
	Business Process Reengineering	.557	.067	.431	5.729	.000	.364	.750	.826	.505	.258	.358	2.793
	Audit Review	-.128	.044	-.134	-2.927	.004	-.215	-.041	-.167	-.286	-.132	.972	1.029

a. Dependent Variable: ERP Success

According to the table 07 all independent variable coefficients are statistically significantly different from zero in the model 3. Tolerance values greater than 0.2 and VIF value < 5 indicates the nonexistence of the correlations between the independent variables in model 3.

According to the Table 08 top management and business process reengineering variables have a higher variance proportion in dimension 4 in model 3 indicating the existence of the collinearity among these two variables. At the same time Audit review has a significant variance proportions in two dimensions suggesting to carry out a further multicollinearity dimension redundancy analysis.

Below results are obtained from the Principal Component Analysis.

Table 09 :KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.826
Bartlett's Test of Sphericity	Approx. Chi-Square	551.732
	df	21
	Sig.	.000

Kaiser-Meyer-Olkin (KMO) Measure (between 0-1) of Sampling Adequacy for the overall data set where the high value which is 0.826, is considered to be good. Bartlett's significance test verify the existence of the multicollinearity and the appropriateness the of applying the PCA analysis to the dataset. Sig < 0.5 indicate that the correlation matrix of the independent variables are not an identity matrix.

Table 10: Communalities

	Initial	Extraction
Top Management	1.000	.764
Change Management	1.000	.843
Operation & Maintanace	1.000	.823
Pre Implementation	1.000	.843
Customization	1.000	.617
Audit Review	1.000	.957
Business Process Reengineering	1.000	.817

Extraction Method: Principal Component Analysis.

Values in this extraction column indicate the proportion of each variable's variance that can be explained by the principal components where variables with high values are considered to be well represented variables.

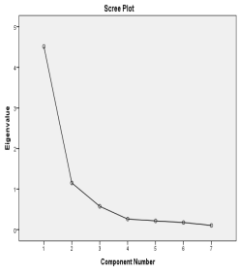
Table 11: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.512	64.464	64.464	4.512	64.464	64.464	4.482	64.028	64.028
2	1.151	16.446	80.910	1.151	16.446	80.910	1.182	16.882	80.910
3	.576	8.226	89.136						
4	.262	3.743	92.879						
5	.216	3.092	95.971						
6	.176	2.521	98.492						
7	.106	1.508	100.000						

Extraction Method: Principal Component Analysis.

Eigenvalues are the variances of the principal components. All the variables are standardized, which means that the each variable has a variance of 1, and the total variance is equal to the number of variables used in the analysis, in this case, 7. The first component will always account for the most variance and the next component will account for as much of the left over variance as it can, and so on. Hence, each successive component will account for less and less variance. The first principal component explains about 64% of the variation while the first three principal components explain 89% of the variation.

According to the table only 2 components have been extracted by the PCA analysis.



Values in the first two columns of the figure 03 have a narrow slope. From the third component on, the line is almost flat, meaning the each successive component is accounting for smaller and smaller amounts of the total variance. In general, it extracts only those principal components whose eigenvalues are greater than 1.

Figure 03 : Scree Plot

Table 12: Component Matrix

	Component	
	1	2
Top Management	.874	.031
Change Management	.918	.006
Operation & Maintenance	.858	.296
Pre Implementation	.909	-.128
Customization	.735	-.278
Audit Review	-.106	.972
Business Process Reengineering	.890	.155

Extraction Method: Principal Component Analysis.

a. 2 components extracted.

The first principal component is strongly correlated with six of the original variables. The first principal component increases with increasing Top Management, Change management, Operations & aintenance, Pre Implementation, Customization and BPR. The second principal component increases with the increment of Audit Review.

Below results are obtained from the Correlation Analysis with the standardized ERP Success values and the extracted principal components.

Table 14: Correlations

		Zscore: ERP Success	PCA1	PCA2
Zscore: ERP Success	Pearson Correlation	1	.824**	-.167
	Sig. (2-tailed)		.000	.097
	N	100	100	100
PCA1	Pearson Correlation	.824**	1	-.083
	Sig. (2-tailed)	.000		.412
	N	100	100	100
PCA2	Pearson Correlation	-.167	-.083	1
	Sig. (2-tailed)	.097	.412	
	N	100	100	100

**. Correlation is significant at the 0.01 level (2-tailed).

According to the Table 14, the linear relationship between response variable and PCA 1 is significance.

Discussion

There are very limited number of researches carried out about post implementation

effects in garment manufacturing organizations in the world.

This is an attempt to provide comprehensive knowledge to the newcomers who are entering to the Garment Industry and for the users who are currently engaged in the Post – ERP Implementation Stage and also apart from that to check whether, to what extent the issues face and the factors effect to Post ERP Implement in Global Industry can be relevant to the Sri Lankan Industry.

Furthermore as there are some significant differences in some factors such as technology complexity, technology performances and ease of business logic Modifications by the ERP software system wise, this research will be very much accurate, useful and add a great value to the users who are working with Microsoft ERP vendors and for the users who are hoping to Implement their industry with Microsoft Dynamics AX.

The key factors witch effects to the post ERP implementation were found out at the initial descriptive analysis, but the existence of the multicollinearity lead the analysis for the next level.

Below hypothesis were carried out to check the significance of the linear relationship between the independent variables and dependent variable.

Hypothesis 1

$H_1$0: 'Top Management support' in an ERP project does not influence ERP Post-Implementation success.

H_1a: 'Top Management support' in an ERP project positively influence ERP Post-Implementation success.

Hypothesis 2

$H_2$0:'Change Management' in an ERP project does not influence ERP Post-Implementation success.

H_2a: 'Change Management' in an ERP project positively influence ERP Post-Implementation success.

Hypothesis 3

$H_3$0: 'Operations and Maintenance' in an ERP project does not influence ERP Post-Implementation success.

H_3a: 'Operations and Maintenance' in an ERP project positively influence ERP Post-Implementation success.

Hypothesis 4

$H_4$0:'Pre-Implementation Success' in an ERP project does not influence ERP Post-Implementation success.

H_4a:'Pre-Implementation Success' in an ERP project positively influence ERP Post-Implementation success.

Hypothesis 5

$H_5$0:'Customization' in an ERP project does not influence ERP Post-Implementation success.

H_5a: 'Customization' in an ERP project positively influence ERP Post-Implementation success.

$H_6$0: 'Post-Implementation Audit' in an ERP project does not influence ERP Post-Implementation success.

H_6a: 'Post-Implementation Audit' in an ERP project positively influence ERP Post-Implementation success.

Hypothesis 7

$H_7$0: 'Business Process Reengineering' in an ERP project does not influence ERP Post-Implementation success.

H_7a: 'Business Process Reengineering' in an ERP project positively influence ERP Post-Implementation success.

Rejection Criteria: Reject null hypothesis if p-val < 0.05

Stepwise Regression Analysis and the Principal Component Analysis were carried out respectively in order to deal with the high multicollinearity.

Stepwise Regression

Only three of the variables were extracted by the stepwise regression analysis and model 3 was used in the entire stepwise process (Table 05)

The *F*-ratio in the **ANOVA** table (Table 06) tests whether the overall regression model is a good fit for the data

Hypothesis 8

$H_8$0: There is no linear relationship between the response variable and the independent variables (in model 3).

H_8a: There is a linear relationship between the response variable and the independent variables (in model 3).

Rejection Criteria : Reject null hypothesis if p-val < 0.05

The Durbin Watson statistic is a number that tests for autocorrelation in the residuals from a statistical regression analysis. The Durbin-Watson statistic is always between 0 and 4. A value of 2 means that there is no autocorrelation in the sample. Values approaching 0 indicate positive autocorrelation and values toward 4 indicate negative autocorrelation.

Table 07

Hypothesis 9

$H_9$0: All the coefficients of the independent variables are zero (in model 3).

H_9a: Not at least one independent variable is equals to zero (in model 3).

Tolerance and the VIF values under the collinearity statistics indicate the existence of the multicollinearity effects

Values < 0.2 for tolerance and values > 5 indicates high multicollinearity.

(VIF = 1/Tolerance)

Principal Component Analysis

Kaiser-Meyer-Olkin (KMO) Test is a measure of how suited the data is for Factor Analysis. The test measures sampling adequacy for each variable in the model and for the complete model. The statistic is a measure of the proportion of variance among variables that might be common variance.

KMO returns values between 0 and 1. A rule of thumb for interpreting the statistic:

KMO values between 0.8 and 1 indicate the sampling is adequate.

KMO values less than 0.6 indicate the sampling is not adequate and that remedial action should be taken. Some authors put this value at 0.5, so use your own judgment for values between 0.5 and 0.6.

KMO Values close to zero means that there are large partial correlations compared to the sum of correlations. In other words, there are widespread correlations which are a large problem for factor analysis.

All the variables are standardized before applying to the Analysis. Two principal components were extracted by the Principal Component Ananlysis and it was checked for the linear relationship with the response variable.

Conclusion

Users don't have a proper idea about the benefits of an ERP system affects to the organization. Even though the majority of the respondents satisfied with the ERP, there are considerable portion of the respondents who doesn't have any idea about how the ERP systems benefited the company (Figure 02)

All the factors except Audit Review are distributed around the mean 3.5 indicating that for each of these factors are considered as in the level of "Agreed". (Table 02)

The research highlights the critical factors to be looked at ERP post implementation phase to achieve the maximum benefits. Sri Lankan garment manufacturing organizations are not reaping the best out of ERP implementations due to placing less effort on ERP post implementation phase.

Researcher identified that post implementation audit and review is not having significant relationship with the ERP post implementation success factor. All the other factors are having strong to moderate relationships. But the existence of the correlations among the independent variables avoid the researcher to get into the conclusion with the factors which only linearly relate well with ERP success factor themselves, while leading to the existence of the multicollinearity when fitting a regression model. (Table 03)

And to deal with multicollinearity the stepwise regression analysis and the principal component analysis were carried out.

Only 3 independent variables are considered to be the appropriate factors with non-auto correlations, in the stepwise regression analysis. (Table 04)

The regression model derived by the stepwise analysis is,

Post ERP Success = 0.604 + 0.461 * Top Management + 0.557* Business Process reengineering – 0.128 * Audit Review.

But the output from the collinearity diagnostics lead to perform a dimension redundancy test which is very commonly use the Principal Component Analysis.

Only two components were extracted by the PCA analysis which had an eigenvalue greater than 1. (Table 11/ Figure 03)

The first principal component is strongly correlated with six of the original variables. The first principal component increases with top management, change management, operation & maintenance, pre implementation, customization and BPR. This suggests that these six criteria vary together. If one increases, then the remaining ones tend to as well. Audit review can be excluded as it weekly correlates to the first principal component.

PCA 1 = 0.874 * Top Management +0.918 * Change Management + 0.858 * Operations & Maintenance+ 0.909 * Pre Implementation + 0.735 * Customization + 0.89* Business Process reengineering

The second principal component increases with only one of the values, increasing audit review. This component can be viewed as a measure of how audit review performs in terms of having proper review plans in every 6 months, suggestions of review include into ERP systems, etc.

PCA 2 = 0.972 * Audit Review

Final Regressions analysis were carried out taking dependent variable as the success factor and independent variables as PCA1 and PCA2 where the 2 components are uncorrelated.

Coefficient for PCA2 is not significance, hence conclude that only PCA1 component has a significant linear relationship to the dependent variable. In another words the initial variables, Top Management, Change Management, Customization, Pre implementation, Operations and Maintenance and BPR only have a linear relationship with the response variable. (Table 14)

References

Chang, H et al., 2011, 2013 “ERP Post – Implementation Learning, ERP Usage and Individual Performance Impact.”

Panarama Consulting Solutions , 2013 “A Panorama Consulting Solutions Research Report”,2013 ERP Report.

J.Jayasinghe , 2004 “Framework for Post Evaluation of Implementation of ES Systems,”

M.S. thesis, Dept. Computer Science. Eng., Moratuwa Univ., Moratuwa, Sri Lanka, 2004.

Leon,Alexis , 2008. ERP DEMYSTIFIED .2nd .New Delhi :Tata McGraw Hill.p3-345.

Linda s. Sullivan, 2013, 2009. "Post-implementation success factors for enterprise resource planning (erp) student administration systems in higher education institution".

Millman, Gregory J. 2004 "What Did you Get From ERP, and What Can You Get? Fei Financial Executives International".

Kuruppuarachchi, P., Mandal, P., Smith, R., 2002. "IT project implementation strategies for effective changes", A critical review. Logistics Information Management (2), 126-137.

T.S. Madurapperuma, Y.K.D. Galkotuwa, G.L.C.A. Gunawardana, R.A.D.K.M. Ramanayaka, D.R.H. Walpola and S. Thelijjagoda,2009 "ERP Deployment in Manufacturing Industry in Sri Lankan Context", Department of Business and Information Management, Sri Lanka Institute of Information Technology, Malabe.

Shiromi Arunathilaka, 2004 "E-Transformation Strategy for the Sri Lankan Garment Industry", Western Sydney University, Sydney, New South Wales, Australia.

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Author Biographies

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