

RESISTANCE TO CHANGE IN IMPLEMENTATION OF ERP PROJECTS

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ABSTRACT

This research work explores resistance to change faced by the different companies during implementation of Enterprise Resource Planning systems in Pakistan by highlighting the various variables, which were identified by the Project Managers and other stakeholders in the researched organizations. In recent times, many organizations around the world have opted to have a system where reliable / secure information is shared promptly, effectively and in real time through out organization / departments. In order to do so, ERP system / software have now been introduced extensively around the world including Pakistan. This research work has identified the critical factors offering Resistance to Change while Implementation of ERP system in an Organization based on the case studies of two public sector companies in Pakistan. Based on the outcome of the two cases, the research work suggests the actions that are required from the organization / project manager for successful implement of Enterprise Resource Planning System in an organization and to overcome resistance for smooth integration of ERP.

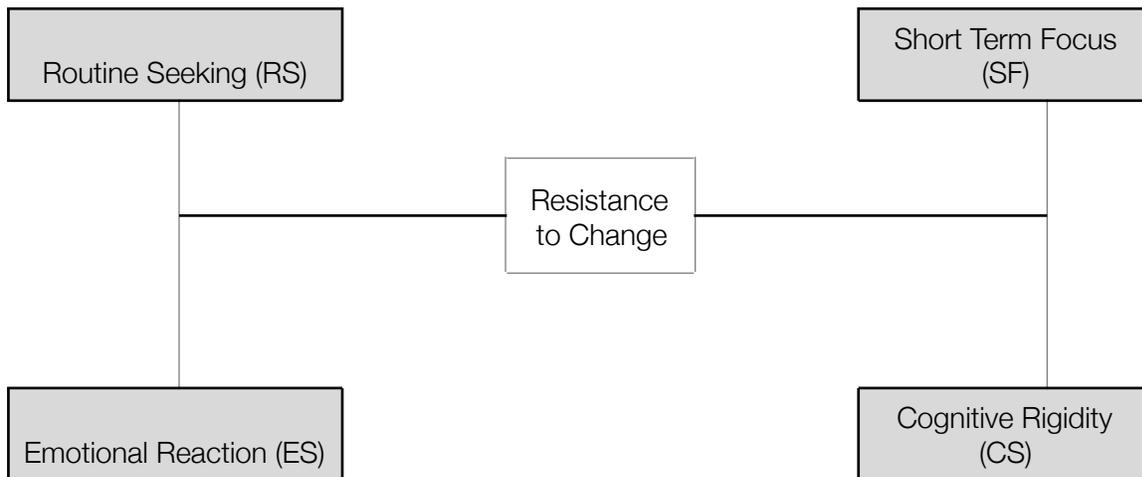
INTRODUCTION

This work presents the outcome of research on resistance to change while implementation of Enterprise Resource Planning (ERP) in an organization based in developing countries followed by qualitative and quantitative study of two cases in Pakistani based public sector organizations. Critical factors have been identified which cause resistance to change that ERP systems are designed to being in. The concept of Resistance to Change is not new to this world; literature abounds

suggesting that Resistance is faced whenever a change is introduced in human life. In contemporary business environment in the public sector, attempts to bring about or introduction of new technology in the system are often confronted by the Resistance to Change.

Oreg. S (2003) carried out work on Resistance to Change and tendencies associated with the individuals to offer resistance and concluded that resistance is measured by four scales / components which are Routine Seeking (RS) associated with Resistance to Change in terms of behavior component, Emotional Reaction (ES), associated with stress and uneasiness experienced, Short Term Focus (SF) associated with distraction due to inconvenience and Cognitive Rigidity (CS) associated with way / frequency people change their mind towards change.

Measures of Resistance to Change as per Oreg. S (2003)



LITERATURE REVIEW

The literature was carried out based on the selected articles relevant to the research work. While analyzing the available research work, the brief of Enterprise Resource Planning has been given and major emphases is given to Resistance to Change and Resistance to Change with respect to Enterprise Resource Planning

prospective. Subsequently, from the review of literature, identification of critical factors that are likely to offer to Resistance to Change while implementation of Enterprise Resource Planning Project in an Organization are identified. Enterprise Resource Planning or ERP in simple is taken as a method of effective planning of all the resources in an organization. ERP as the terminology speaks of itself takes into account the techniques used and make use of the concepts for effective business integration with the view point to use management resources optimally and at the same time improve the efficiency of the enterprise or organization (Marnewick & Labuschagne, 2005).

Since the main focus of this research work is on Resistance to Change while implementation of Enterprise Resource Planning Projects in an organization, therefore, in depth understanding of the research work specifically w.r.t. Resistance to Change as a separate entity was also done. It has been observed that research done on resistance to change is mostly exploratory and communication has been given high priority to overcome the same.

After analyzing the research work done on Resistance to Change as a separate entity, scrutiny of research work done w.r.t to Resistance to Change in Respect of Implementation of Enterprise Resource Planning was also done to reach to factors directly effecting the change. The following table shows the critical factors identified from the literature that can be considered in offering Resistance to Change.

RESEARCH METHODOLOGY

The study work conducted has main focus on Resistance to Change in conjunction of Enterprise Resource Planning specifically prevailing in Pakistan. Limited work / study is available specifically with respect to Resistance to Change while implementation of Enterprise Resource Planning in an Organization.

Data Collection

Data has been collected mainly through literature and interviews. Three types of questionnaire were prepared. First set of questionnaire was used to do initial qualitative based on the critical factors from Literature Review. Subsequently, another set of questionnaire used have numerical rating with respect to each critical

Critical Factors	References
Knowledge / Skills	[5], [6], [7], [12], [13]
Training	[4], [6], [7], [8], [9], [10], [11], [12], [13]
Education	[10], [11], [12], [13]
Business Process Reengineering	[9], [13], [35], [10]
Involvement of Management / Staff / Department.	[3], [14], [5], [6], [37], [8], [9], [13]
Change in Job Content	[11]
Job Security	[6]
Attitude	[8], [11]
Behaviour towards Change	[3]
Perception of towards ERP	[2], [5], [11]
Effort required to learn ERP system	[8], [11]
User Satisfaction / Expectations	[19], [3], [14], [6]
Communication	[15], [2], [16], [4], [13], [6], [7], [8], [10], [12], [13], [17]
Top Management Support	[4], [14], [5],[17], [13]

factors identified for literature review and to rate the dimensions of Resistance. The third set of questionnaire used for the identified critical factors wherein the respondents were asked to rate each, to measure lack of each factor on resistance to change. The second and third set of questionnaire has rating from 1 to 5 from strongly disagree to strongly agree.

Data Analysis

Data have been analyzed based on the case studies and interview / questionnaire using qualitative / quantitative approach. The data have been analyzed based on the case studies of the two companies with respect to each identified factors through literature review taking into account of various open ended questions to consider if various aspects of each factors were considered during implementation of ERP in an organization, the same is followed by the quantitative approach by using variance analyses to under the difference of opinion amongst three sets of respondents i.e. Senior Management, Middle Management and Staff. The critical

factors offering resistance to change are identified as significant or otherwise using factor analysis.

The factors are identified based on the responses of questionnaire 150 in Nos. and are segregated using Exploratory Research Analysis Approach, the reliability of questionnaire as been checked through Cronbach Alpha and was found in acceptable limits. Subsequently, In order to authenticate the working identified factors, regression was done to ascertain the impact of identified on Resistance to Change. The validity of questionnaire were checked through Chronbach Aplha technique and all were found acceptable.

FINDINGS

Qualitative approach

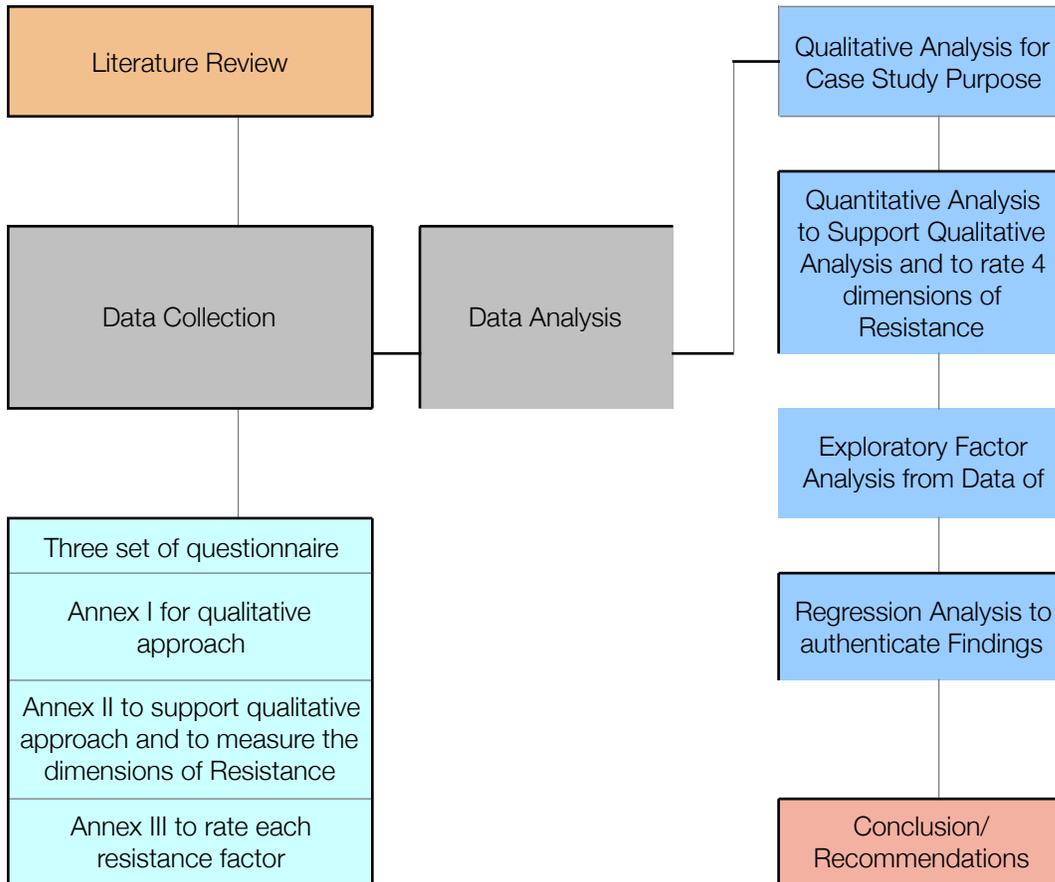
Study 1: Sui Southern gas company (SSGC):

Sui Southern Gas Pipeline Limited or SSGC is one of the Pakistan's Natural Gas distribution and transmission company while the other being Sui Northern Gas Pipeline Limited. The Company with the help of its gas high / low pressure pipeline network is supplying gas to areas of Balochistan and Sindh province. Sui Southern Gas Company (SSGC) uses its high-pressure network of transmission lines of over 3200 Km and distribution network of almost 32000 Km to supply gas to Industrial, Commercial and Distribution Consumers. The Company's major shares i.e. 70 % is owned by the Government of Pakistan (GoP) and is managed by the autonomous Board of Directors. The ERP was introduced in to the company in the mid 2000s and financial oracle have been used in the Company. The good part of the company noticed is that the capacity building within the company was increased so that outside vendors were not required in later stages.

Study 2: Sui Northern gas pipeline limited (SNGPL) Qualitative approach:

Sui Northern Gas Pipeline Limited also know as SNGPL was incorporated in 1963 and later on was converted to public limited company in 1694. SNGPL is one of the two natural gas transmission and distribution company of Pakistan providing gas to almost 4.5 million consumers comprising of domestic, commercial and industrial. SNGPL system starts from Balohistan and ends at Peshawar having annual sale of around 597,056 MMCF worth Rs. 216,652 million. The operation of Sui Northern

Gas Pipeline Limited (SNGPL) is performed using its high and low pressure network. The high pressure network is know as Transmission network and low pressure network is known as Distribution network. The transmission system is spreaded throughout from Sui District in Balochistan and runs to Peshawar in



Khyber Pakhtoon Khawa (KPK) through a high pressure network of 7,733 KM. On the other hand the distribution network of about 94,263 KM supplies gas to 2,650 towns and villages of KPK and Punjab provinces. The ERP in the company was also introduced in to the company in mid 2000 using oracle financials. However, it lacked capacity building and sufficient training was not given to the staff during various stages of implementation.

Discussion based on Qualitative Study:

Based on the discussion with respect to first part of questionnaire it is inferred that senior management was very much satisfied with the implementation of ERP system in its organization. They were now more satisfied the way things presented to them, and ease of decision making are now more easy. The management emphasized that major resistance was offered from the staff as they did not possess first hand knowledge of the system. There was lack of education level, training, perception and behavior attitude towards change. The Management was very much satisfied with the communication and support provided to the lower staff and were of the view that cultural barriers and promotion from lower ranks to middle management can be considered as one of the reason for resistance. The management were of the view that promotion requirements from staff to executive cadre are needed to be revised.

Middle Management are the main user of ERP system, they were of the view point that senior management does not have much knowledge of computer related activities and as a result of which their work load have been increased. They showed reservations on the training which was only offered to senior management but not to middle management who were the main users of ERP system. At the same time, middle management especially young engineers showed great satisfaction over the paper free environment as now they time is not wasted in documentation. The allocation of resources such as UPS, computer and dedicated staff are not optimum to make use of resources. Middle management emphasized on training the most.

The greater resistance was offered in case of staff, they considered it as a revenge from the management to make them leave the job, some of the staff also considered that its another way of humiliating the non executives. Some staff member ware mainly of the view that no training, no management support, no communication, no motivation and no incentives were provided by the company to make them learn new system. They consider that it is only the management plan to implement and consent of staff was not sought. They insisted that proper training, communication and management support are essential.

Exploratory Factor Analysis Approach

The extensive review of literature resulted in segregating of fourteen (14) Nos of variables / factors that can be significant in offering resistance to change while implementation of Enterprise Resource Planning in an organization. Subsequently extensive discussion with the project managers and team involved in implementation of ERP in SNGPL and SSGC was carried out resulted in excluding two factors that are covered on already selected variables / factors. Questionnaire both open ended and closed ended was used for this purpose.

Rotated Component Matrix^a

	Component		
	1	2	3
Change in job content causes resistance	.915		
Lack of job security causes resistance	.891		
Lack of involvement of staff / management causes resistance	.802	.486	
Lack of Management support causes resistance	.681		
Lack of communication causes resistance	.664		.624
Lack of user expectation causes resistance to change	.627		.431
Negative attitude causes resistance	.620	.468	
Lack of Training Causes Resistance		.916	
Lack of education resistance		.771	
Lack of effort causes resistance			.806
Negative behavior causes resistance			.705
Negative perception Causes Resistance		.548	.664

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 4 iterations.

As mentioned earlier EFA is mostly done when there no significant research is done on the topic being searched upon and thus is used as a approach for segregation of variables under different factors. The EFA was carried out using Principle Component Analysis (PCA) with varimax rotation was carried out using SPSS 20.0 software. Before the proceeding of the analysis two tests were performed to check the multicollinearity and Kaiser Meyer Olkin test was carried out for measurement of how adequate the sample is. The value of determinant was done and the value was found 0.0000794 which is more than the acceptable value, thus indicating that there is issue of multicollinearity. The value of KMO test was found to be 0.724 and was within in limits. [Andy Field, 2005].

The Rotated Component Matrix is shown in the Table. below showing factor loading for each component / variable with respect to each factor. Variable having high value are listed in descending order. There are seven variables that has higher loading effect on factor 1, two variables having higher loading effect on factor 2 and finally there are three variables having high loading effect with respect to factor 3.

Naming the Extracted Factors:

The extracted factors are now named based on the variables that are related to each factor. The variables under Factor 1 includes change in job content, job security, involvement of users, support from higher, communication, expectation and attitude and is named as Motivation and Management Support., second factor is names as Capacity building mainly it contains to variables which includes training and education and third factor includes human related aspects such as effort, behaviour and perception and thus named as Human Related Aspect. The reliability is the measure of consistency i.e. the extent to which the same result is measure by the instrument each time it is under test under the same environment. It can be explained from the fact that if the test is carried out after certain period of time same

Factors	Cronbach Alpha
Lack of Management Support & Motivation	0.894
Lack of Capacity Building	0.601
Lack of Human Related Aspects	0.619
Resistance to Change	0.679

result is produced. The mode used to check the validity of the instrument i.e. the questionnaire related to each factor Cronbach Alpha value was calculated. The Cronbach Alpha is mostly used to check the reliability of instrument and values closer to 1 shows more reliability. The value below 0.5 is considered to be poor. The value above 0.6 is considered to be acceptable. [55]. The value of Cronbach's Alpha for each factor is given in Table below and shows that all values are above 0.6 and thus reliability test for the set of instrument is reliable. It maybe noted that value of resistance to change has been extracted from second set questionnaires where

Correlations

		Resistance to Change	Lack of Motivation and Management Support	Lack of Capacity Building	Lack of Human Related Aspects
Resistance to Change	Pearson Correlation	1	.765**	.355**	.661**
	Sig. (2-tailed)		.000	.000	.000
	N	150	150	150	150
Lack Motivation and Management Support	Pearson Correlation	.765**	1	.373**	.407**
	Sig. (2-tailed)	.000		.000	.000
	N	150	150	150	150
Lack of Capacity Building	Pearson Correlation	.355**	.373**	1	.078
	Sig. (2-tailed)	.000	.000		.344
	N	150	150	150	150
Lack of Human Related Aspects	Pearson Correlation	.661**	.407**	.078	1
	Sig. (2-tailed)	.000	.000	.344	
	N	150	150	150	150

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

respondent has rated each dimension of Resistance.

In order to further analyze the authenticity of the result, additional analysis followed by regression was carried out to see the relation amongst the variables and further

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	90.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	.955	.170		5.627	.000	.674	1.236		
Lack of Motivation and Management Support	.324	.029	.546	11.012	.000	.275	.372	.717	1.395
Lack of Capacity Building	.058	.022	.118	2.592	.011	.021	.095	.854	1.170
Lack of Human Related Aspects	.394	.042	.429	9.305	.000	.324	.464	.828	1.208

to confirm if there is a relation between the Management Support & Motivation, Capacity Building, Human Related Aspect with Resistance to Change.

Correlation:

The correlation table is given below and it shows that all the independent variables are correlated with the dependent variable and are significant.

Linear Regression:

Linear regression resulted the following table:

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.862 ^a	.743	.737	.18663

a. Predictors: (Constant), Lack of Human Related Aspects, Lack of Capacity Building, Lack of Motivation and Management Support

The above table shows that the value of constant is 0.955 which is also referred as B₀, this indicated that y axis will be intercepted by regression line at this point. From the above table, it can be inferred that if the value of Lack of Motivation and Management Support is increased by one unit then the resistance to change will increase by 0.324 units. In case the value of Lack of Motivation and Management Support is increased by 1 standard deviation then the Resistance to Change will increase by 0.546 standard deviation. The coefficient of Lack of Motivation and Management Support is significant at 0.05 %. As regards Lack of Capacity Building

ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	14.683	3	4.894	140.527	.000 ^b
Residual	5.085	146	.035		
Total	19.768	149			

a. Dependent Variable: Resistance to Change

b. Predictors: (Constant), Lack of Human Related Aspects, Lack of Capacity Building, Lack of Motivation and Management Support

if increased by 1 unit, the value of resistance to change will increase by 0.058 units and is significance at 0.05 %. Increase in 1 unit of Lack of Human Related Aspects, the value of Resistance to Change will increase by 0.394 units and is significant at 0.05 %.

Model Summary:

Model summary is given in the Table:

Regression model describes the dependency of the dependent variable on independent variables and total model fitness can be shown. As per the above model the variation in Resistance to Change is up to 74.3 % due to dependent variables i.e. Lack of Motivation and Management Support, Lack of Capacity Building and Lack of Human Related Aspects.

ANOVA:

Analysis of variance is done in the following table:

The sum of square due to regression is 14.683 and due to Residual is 5.085, indicating that there also factors other than mentioned in this model affecting resistance to change.

DISCUSSION

This paper has highlighted critical factors that are considered important to cause resistance or if controlled can help to minimize the resistance. The two organizations selected for the purpose of this research work are from public sector / government culture prevailing environment having different mindset. The main purpose to do research work in such organization is to understand the nature and extent of resistance prevailing when change specifically Enterprise Resource Planning is introduced in to the an organization.

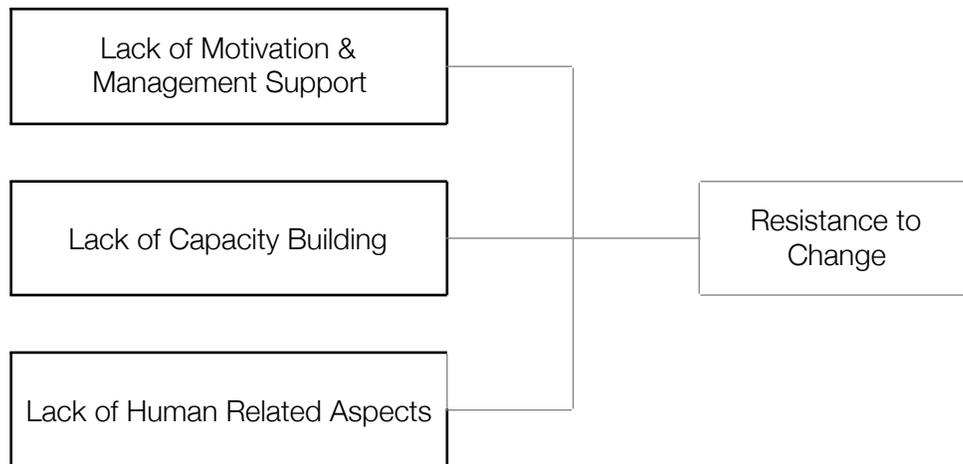
The identified factors offering resistance to change were discussed with the individuals of both companies, initially qualitative approach was used followed by quantitative based questionnaire the analyze the difference of opinion amongst three categories of the respondents i.e. Senior Management, Middle Management and Staff. While going through the results of questionnaire Annex-I and Annex II, it

has been observed that there exists a gap in thinking and approach of Senior Management and Staff, for the Senior Management, everything is upto the mark and they are doing excellent work for the implementation, however, the staff on the other hand are of point of view, they have been ignored during various phases of implementation of the project.

It has been observed from the analysis of both the companies that working of Senior Management in case of both the companies did not change to great extent, as per practice they are assisted by the lower staff or assistant and always rely on juniors while using computers or retrieving any information from the system. While on the other hand middle management with respect to change in job content found system to be useful and accepted the change more promptly. The staff felt that it is the revenge of the management and it is not Enterprise Resource Planning rather it is Early Retire Plan for the employees. Staff and Middle Management felt that they were not involved during different phases of the project and lacked management support. As regards training both middle management and staff were of the view that only selected ones were selected for the training / foreign training and the main users who were directly involved with the ERP system were not given due consideration. In respect of two companies, SNGPL executives felt that training in case of SSGC were more pronounced as compared to SNGPL. The system lacked capacity building. Negative perception was more pronounced in case of staff and some of the executives as well who thought that ERP would do anything for them but it was not the case effort and positive behavior was essential for the success of the factors.

In order to give logical conclusion to study the analysis was followed by regression analysis to see the impact of identified factors on Resistance. The correlation analysis show that there exist a strong correlation amongst the value of 0.765 with respect to Lack of Motivation and Management, 0.355 with respect to Lack of Capacity Building and 0.661 Lack of human related factors i.e. comparatively strong correlation is observed with respect to Lack of Motivation and Management Support and Lack of Human related factors with Resistance to Change.

As regards regression, it has been observed that Resistance to Change is up to 74.3 % due to dependent variables i.e. Lack of Motivation and Management Support, Lack of Capacity Building and Lack of Human Related Aspects with major



contribution due is from Lack of Motivation and Management Support and Lack Human related Factors having coefficient Beta values 0.324 and 0.394 respectively whereas contribution of Capacity Building is comparatively low i.e. 0.58.

CONCLUSION

The study conducted has highlighted issues concerning to Resistance to Change while implementation of Enterprise Resource Planning in organization and shows the effect of each factor identified on Resistance to Change. The three factors identified have been considered important to overcome resistance as per the study findings / results.

In view of the above, it can be concluded that Human Related Aspects, Capacity Building and Motivation & Management support if are lacking will cause Resistance to Change with major contribution from Lack Human Related Aspects and Lack of Management Support & motivation:

RECOMMENDATIONS

As inferred from the results, main contrition towards resistance to change come from Human Related and Lack of motivation & Management Support. Following is recommended thereof:

- a. The implementation of ERP involves BPR and it should be done properly, the job content is accepted to be changed, it should be ensure that implementation

should be done in phases with respect to public centre companies so that burdens on the users can be reduced.

- b. The management should keep all motivated and give them surety that the job is secured.
- c. Management should provide full support to all the individuals and keep them motivated through incentives and saving their interest.
- d. There should be no communication barriers, projects fails where communication barriers exists. Management should make efforts to remove such gaps.
- e. The expectations should be realistic and attitude should be positive if the company is intending to introduce a new system in to an organization, it can be ensure due by regular meetings and management involved giving true picture of the system. The lack of frequent meetings with the employees give the employees false hope and if the system does not come upto expectations, failure is the result.
- f. Capacity building should not be ignored, regular training and education improvement is necessary during different phases.
- g. The Management should not create an environment that gives smell of fear, it should be noted that fear cannot bring best out of people. Environment prone to fear create negative perception, behaviour and subsequently, decline of effort from the staff as well as concerned involved.

Future Research

The residual of 5.085 shows that there is still room for further research in the topic, the research work is an attempt to highlight issues arising due to implementation of enterprise Resource Planning project in an organization and critical factors associated with such change. Public sector companies where government culture is prevailing have been discussed and two in numbers. The future researcher may consider analyzing Resistance to Change while implementation of Enterprise Resource Planning Project with broad spectrum i.e. by involving respondents from

number of organization which could not be done in this research work due to time constraint issue.

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