

MANAGING SCHEDULE AND COST RELATED CONFLICTS IN SOFTWARE INDUSTRY

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ABSTRACT

The Key for the successful software repeatable business lies with on time delivery of the projects within budget. During implementation of software projects, many schedule and cost related conflicts will arise between project managers and all other stake holders including team members, customers, senior management. Schedule related conflicts arising because of lack of trust whether the project will be delivered on time or not, lack of empowerment for team members to complete their individual deliverables, changing scope by customers after freezing requirements etc. Cost related conflicts arising during project implementation if project manager not publishing the cost baselines and cost variances of the project to all stakeholders, not preparing correct cost estimations and because of lack of senior management's on time approvals on project costs. To resolve these, Project Manager should be in regular contact with customers, senior management and other stake holders by publishing correct project baselines and variances in different phases of the project to all stake holders. The present study has been conducted to understand the perception of schedule and cost related conflicts in various software industries located in Hyderabad and why they are arising and their resolution methodologies and how these are interrelated with each other.

Keywords: Schedule conflicts, Empowerment, Cost Baseline/Variations, Requirements Freezing.

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INTRODUCTION

Schedule and Cost related conflicts between individuals takes place owing to several factors, but most common are personal perceptions and empowerment not given for associates, emotional issues, lack of trust among associates which decreases productivity and correct cost estimations by the project managers. Continuous and swift growth in the area of IT and software project management field increasing the various conflicts arising between groups and teams in the form of team's performance management, project management, quality management etc. Schedule related conflicts are unavoidable in Software Project Management because of the nature of Projects trying to address the needs and requirements of many stakeholders, necessity of obtaining resources on time from Management to complete the project on time, conflicts arising during integration of projects, continuous changing requirements from the customers and empowerment not given to associates to complete their deliverables on time. Cost relate conflicts also arising during project implementation because of lack of knowledge for the project manager for correct estimations to be done on a timely manner and on time publication of cost baselines and variances to all stakeholders by their approvals and getting on time budget approvals from senior management on project costs.

Because of the new era of software offshore development, many schedule and cost conflicts are arising because of different barriers like integration issues, limitation of resources, competition and differences in values, goals, attitudes, expectations, cross-cultural issues, Emotional & Face values, Group conflicts etc. When there are only differences of opinion between individuals about task-related matters, it can be construed as technical conflict rather than interpersonal conflict. Of course, technical and interpersonal conflicts may influence each other due to role-related pressures. It is often very difficult to establish whether a conflict between two parties is due to manifest rational factors, or it emanates from hidden personal factors.

REVIEW OF LITERATURE

Thamhain, Hans J.(1), Leadership, Conflict, and Program Management Effectiveness, This article deals with key problems faced by project managers in managing complex tasks. The emphasis is on the focal position of the project manager-how he or she develops support from functional specialists and handles the ever-present conflict situations in managing projects, and how these activities influence managerial performance. The article is based on a continuing research study of project

managers in various high-technology organizations. Data for the study was collected from project managers during a series of project management seminars. Project managers attending these seminars came from a variety of technology-oriented companies, such as aircraft manufacturers, computer companies, and electronic equipment manufacturers. A judgment sample of 100 project managers was obtained. The data was collected via a questionnaire and supplemented by discussions before and after completion. The findings presented in the article should help both the professionals who operate in a project-organized environment and the scholars who study and research contemporary organizational concepts to understand the complex interrelationships among managerial influence, conflict resolution approaches, and project management effectiveness.

Robey, Daniel et al.(2), Perceptions of Conflict and Success in Information Systems Development Projects, Previous research on the development of information systems has focused on the conflicts among participants and the consequences of satisfactory resolution of those conflicts. In this paper, we test a model of conflict during system development [40,41]. As specified, the model proposed relationships among participation, influence, conflict, and conflict resolution. We extend the model to include project success as an outcome variable. A sample of 84 participants in 17 system development projects in 3 organizations was surveyed. Results support the portions of the model reported earlier [41], show a strong positive relationship between conflict resolution and project success, and show a modest positive relationship between participation and project success.

NEED FOR THE STUDY

To improve the quality and on time delivery within the budget of the deliverables, project teams should work as a cohesive team in a friendly environment with less schedule and cost related conflicts and should have collaborative work practices in place. To achieve this desired functionality there is a requirement to have an effective conflict resolution processes should be in place to be implemented in the projects. To complete this process, we need to know what are the important schedule and cost related conflicts arising during project implementation and why they are arising during software project management and resolution methodologies and process should be clearly defined to minimize conflicts and hence creating good working environment to deliver the project on time with in budget and with quality.

STATEMENT OF THE PROBLEM

This research emphasizes on the schedule and cost related conflicts and machinery required to resolve different software conflicts with appropriate conflict resolution techniques.

OBJECTIVES OF THE STUDY

- To know the most important factors influencing schedule and cost related conflicts during software project implementation to deliver the project on time within budget.
- To know the mode of factors impacting Cost and scheduled related conflicts and their resolution success.
- To know whether empowerment given to team members to complete their deliverables will lessen schedule related conflicts or not.
- To know whether PM can use previous project cost estimations for the current project and if uses what are the conflicts arising out of it.
- To study about the conflicts on project schedules during integration, which will delay the overall delivery of the project.

RESEARCH METHODOLOGY

Data collection made through electronically (through E-mails) and hardcopies circulation by a short questionnaire. After collecting the primary data, the interpretation done by using SPSS 19.0, relevant statistical tools are used to check the efficiency of the results.

PERIOD OF THE STUDY

The study conducted in Feb'12-April'12 at different software organizations within Hyderabad city.

SAMPLE & SAMPLE SIZE:

Sample Respondents are the Project Managers, Account Managers, Group Leaders from various Software organizations in Hyderabad city. Questionnaires distributed 225 (150 Received) for above said respondents with in time period of 90 days.

THE STUDY

This paper is an outcome of an analysis of responses received from 150 respondents who include Project Managers, Account Managers and Group Leaders working in different software companies in Hyderabad city. They express their views about concept of Project’s schedule and cost related conflicts in software industry. They express their views about schedule/time related conflicts arising because of conflicts in the team regarding over all delivery of the project on time, empowerment given to team members to complete their individual deliverables on time, conflicts on project schedules during integration, which will delay the overall delivery of the project, conflicts on the scheduled delivery of the project because customer changed scope after freezing requirements. Opinions also collected on cost/budget related conflicts when Project members have conflicts with PM when using previous project experiences while preparing project costs to deliver project with minimal cost, conflicts on publishing the cost baseline during project execution, PM having Conflicts with Senior Management in getting approvals on the project costs.

STUDY STATISTICAL ANALYSIS:

1) Conflicts arising within the team regarding over all delivery of project on time (ONTDEL)

Test Statistics

	ONTDEL
Chi-Square	12.182 ^a
df	3
Asymp. Sig.	.0230

Inference: The obtain chi-square value is equals 12.182 at 3 degrees of freedom, the significance value is less than 0.05 suggest that there is significant importance for on time delivery of the project in the conflict resolution process.

2) Conflicts arising regarding Empowerment given to team members to complete their individual deliverables.(EMPOWER)

Test Statistics

	EMPOWER
Chi-Square	6.142 ^a
df	2
Asymp. Sig.	.0183

Inference: The obtain chi-square value is equals 6.142 at 2 degrees of freedom, the significance value is less than 0.05 suggest that there is significant Empowerment to be given for associates to complete their individual deliverables on time.

3) Conflicts on Project Schedules during Integration of individual deliverables, which will delay overall project delivery.(INTDEL)

Test Statistics

	INTDEL
Chi-Square	5.628 ^a
df	3
Asymp. Sig.	.0236

Inference: The obtain chi-square value is equals 5.628 at 3 degrees of freedom, the significance value is less than 0.05 suggests that completing the Integration of individual deliverables as per project's schedule plays an important role in resolving project schedule related conflicts.

4) Conflicts on the scheduled delivery of the project because customer changed scope after freezing requirements (SCOPCH)

Test Statistics

	SCOPCH
Chi-Square	10.840 ^a
df	3
Asymp. Sig.	.021

Inference: The obtain chi-square value is equals 10.840at 3 degrees of freedom, the significance value is less than 0.05 suggest that there is significant importance scope changing by customers playing in resolving the schedule related conflicts.

5) Conflicts between PM and other stake holders on timely publication of cost baselines during project execution. (COSTBSL)

	COSTBSL
Chi-Square	3.182 ^a
df	3
Asymp. Sig.	.4381

Inference: The obtain chi-square value is equals 3.182 at 3 degrees of freedom, the significance value is grater than 0.05 suggest that there is no significant importance given by stake holders for on time publication of cost baseline by the project manager during project execution.

6) Project members have conflicts with PM when using previous project experiences while preparing project cost estimations. (PREVEXP)

	PREVEXP
Chi-Square	8.346 ^a
df	3
Asymp. Sig.	.684

Inference: The obtain chi-square value is equals 8.346 at 3 degrees of freedom, the significance value is greater than 0.05 suggests that there is no significant importance playing when PM uses previous project experiences while preparing cost estimations.

7) PM has Conflicts with Senior Management in getting on time approvals on the project costs. (SRMGTAPP)

	SRMGTAPP
Chi-Square	14.382 ^a
df	3
Asymp. Sig.	.0252

Inference: The obtain chi-square value is equals 14.382 at 3 degrees of freedom, the significance value is less than 0.05 suggests that there is significant importance senior management has to give to approve the project's costs on time to resolve cost related conflicts during project

execution.

CORRELATIONS

		ONTDEL	EMPOWER	INTDEL	SCOPCH	COSTBSL	PREVE XP	SRMGTA P
ONTDEL	Pearson Correlation Sig. (2-tailed)	1	.436	-.482**	.269	.396*	.157	.269
			.089	.004	.385	.036	.045	.363
	N	150	150	150	150	150	150	150
EMPOWER	Pearson Sig. (2-tailed)	.347*	1	.256	.189	-.312	.098	.068
		.098		.428	.482	.378	.428	.381
	N	150	150	150	150	150	150	150
INTDEL	Pearson Sig. (2-tailed)	.282	.246	1	.309	-.384	.083	.312
		.005	.423		.234	.043	.435	.235
	N	150	150	150	150	150	150	150
SCOPCH	Pearson Sig. (2-tailed)	.369	.082	.108	1	-.042	-.034	1
		.365	.482	.236		.623	.682	
	N	150	150	150	150	150	150	150
COSTBSL	Pearson Sig. (2-tailed)	-.596**	.212	-.185	-.042	1	.218	-.042
		.054	.375	.046	.638		.535	.613
	N	150	150	150	150	150	150	150
PREVEXP	Pearson Sig. (2-tailed)	-.035	.078	.082	-.034	.213	1	-.031
		.650	.478	.256	.735	.545		.337
	N	150	150	150	150	150	150	150
SRMGTAPP	Pearson Sig. (2-tailed)	.146**	1	.235	.058	-.213	.078	.084
		.98	.375	.042	.435	.734	.682	.918
	N	150	150	150	150	150	150	150

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

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

First let us look at the correlation of all variables with each other. The correlation table is shown above the values in there correlation values are standardize and range from 0 to 1(+ve to -ve). All the variables Empowerment given to team members to complete their individual deliverables, Project Schedules during Integration of individual deliverables, customers changing scope after freezing requirements, Senior Management on time approvals in approving project costs are positively correlated with Delivery of project time within budget, where as using previous project experiences while preparing project cost estimations and on time publication of cost baselines during project execution are negatively correlate with each other. If they are of independent with each other and we may to use this table to predict dependent variable. As we will see later our regression ends up eliminating some of them independent variable, because all of six are not required, do not add any value to the regression model.

REGRESSION

Variables Entered/Removed

Model	Variables Entered	Method
1	EMPOWER INTDEL SCOPCH COSTBSL PREVEXP SRMGTAPP	Enter

a. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.612 ^a	.375	.308	.823

a. Predictors: (Constant), EMPOWER, INTDEL, SCOPCH, COSTBSL, PREVEXP, SRMG TAPP

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	29.113	5	5.823	5.6315	.002 ^a
	Residual	48.586	47	1.034		
	Total	77.698	52			

a. Predictors: (Constant), EMPOWER, INTDEL, SCOPCH, COSTBSL, PREVEXP, SRMG TAPP.

b. Dependent Variable: ONTDEL

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.098	.525		2.094	.043
	EMPOWER	-.271	.226	-.242	-1.185	.282
	INTDEL	-.451	.477	.394	-.947	.349
	SCOPCH	.0287	.508	.000	.000	1.000

COSTBSL	-.629	.192	.560	3.274	.002
PREVEXP	.674	.746	.607	.903	.371
SRMGTAPP	.056	.287	.089	.575	.542

a. Dependent Variable: ONTDEL

$$\text{ONTDEL} = 1.098 - 0.271(\text{EMPOWER}) - .0451(\text{INTDEL}) + .287(\text{SCOPCH}) - .629(\text{COSTBSL}) + .0674(\text{PREVEXP}) + .056(\text{SRMGTAPP})$$

Before we look at the equation however we need to look at the statistical significance of there model and the R² value the analysis of variance (ANOVA) table which are given above the last column indicate 0.043 the model is statically significant that 95% confidence level.

The above equation indicate that on time delivery of the project within budge positively depends on customer scope changes after freezing requirements, using previous project experiences while preparing project cost estimations, on time approvals from Senior Management on the project costs, where as Empowerment given to team members to complete their individual deliverables, Project Schedules during Integration of individual deliverables, on timely publication of cost baselines during project execution are negatively impacted.

FACTOR ANALYSIS

Rotated Component Matrix

Factor	Component			
	1	2	3	4
EMPOWER	.428	.659	.189	.387
INTDEL	-.267	-.186	-.581	.568
SCOPCH	.721	.321	.729	.342

COSTBSL	.287	.277	-.193	.687
PREVEXP	.128	-.451	.295	-.468
SRMGTAPP	-.145	-.323	.345	-.345

INFERENCE

Analysis by factor wise factor analysis the observation indicate that most successful factors for project schedule and cost related conflict and resolution. Factor analysis is a data reduction method where collected data creating complexity for judging. The influencing factors are depend on Eigen values where the value is greater than or equal to 1. According to the above factor analysis the extracted factors are customer scope changes after freezing requirements is highly influencing factor for managers to look into which impacts the overall delivery of the project and increases the project budget. Second influencing factor is Empowerment given to team members to complete their individual deliverables influences team members to deliver their deliverable on time with quality because of freeness given to them to complete it as per their wish which lessens the schedule related conflicts. Third influencing factor is on time publication of cost baselines and informing to all stake holders by project managers will reduce the cost budget related conflicts. Fourth influencing factor is using previous project experiences while preparing cost estimations will reduce cost related conflicts with senior management and project manager and other stake holders as these are more relevant and almost near to the actual cost of the projects.

RESULTS & DISCUSSION

- ✚ Team members empowerment was recommended my most of the respondents because they want to complete their individual deliverable as per their wish in a given time.
- ✚ Respondents recommended that Project Managers should be allowed to complete the project within scheduled time with extra or external resources, which are including personnel and software/third party tools.
- ✚ Respondents suggested that team members should be followed agreed upon schedules for different modules of the project such that fewer conflicts will be arised during project integration.

- ✦ It was felt during this study by respondents that Project Manager should have frequent discussions with customers on requirements freezing on time and accepting the deliverables on time.
- ✦ Discretion for the use of the previous project experiences for cost estimations was left to project manager itself and respondents felt that project manager should be empowered to analyze the project costs to find new solutions to deliver the project with in budget.
- ✦ On time publication of the cost baselines and cost variances to all stake holders of the project will lessen the cost related conflicts.
- ✦ Respondents recommended that senior management should provide approvals for project cost budgets on time and should suggest project manager to showcase alternative ways of doing the project with minimal cost.

CONCLUSION

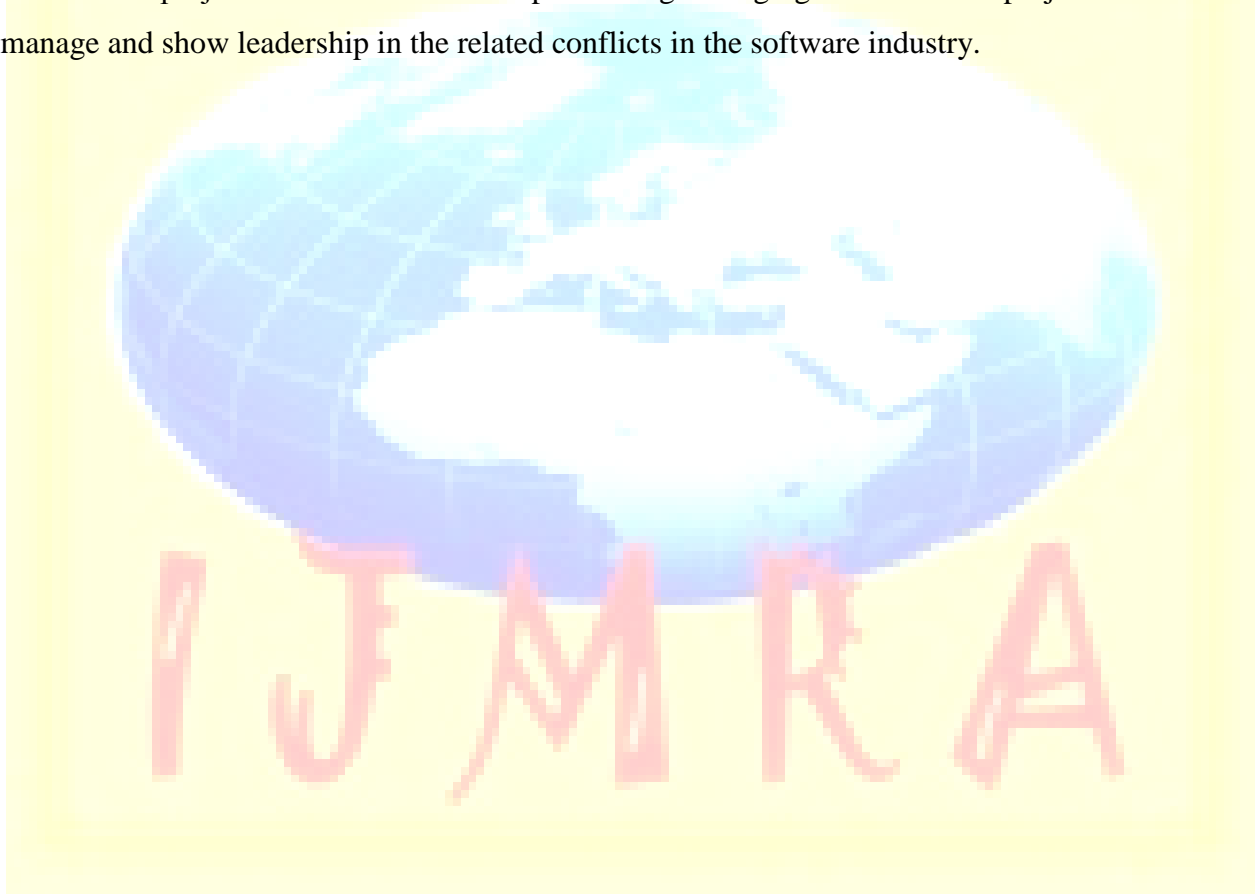
Schedule and cost related conflicts resolution involves recognizing and managing the particular conflicts and resolving them very rationally to satisfy both conflicting parties. This is an essential part of building emotional intelligence, and nurturing relationships. Poorly handled schedule and cost conflicts can affect the customers' business and decreases project team's morale and thereby impacting the on time delivery and company's image. To maintain competitive advantage, we need the entire organization to focus on developing conflict resolution strategies to quickly and effectively resolve schedule and cost related conflicts, while building trust and commitment between team members and managers and customers.

Conflict in the workplace can be incredibly destructive to good teamwork. Managed in the wrong way and with incorrect leadership styles, real and legitimate differences between people can quickly spiral out of control, resulting in situations where co-operation breaks down and the team's mission is threatened. This is particularly the case where the wrong approaches to conflict resolution are used. To calm these situations down, it helps to take a positive approach to conflict resolution, where discussion is courteous and non-confrontational, and the focus is on issues rather than on individuals. If this is done, then, as long as people listen carefully and explore facts, issues

and possible solutions properly, schedule and cost related conflicts can often be resolved very effectively.

SCOPE FOR FURTHER RESEARCH

Further research can be carried out detailing about the effects on schedule and cost related conflicts taking into consideration of other dimensions of the projects like human resources related conflicts, communication mechanisms defined in the projects and its related conflicts, customer complaints etc. on the project's conflicts while implementing/managing the software projects and how to manage and show leadership in the related conflicts in the software industry.



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