Dependent Factors influencing the Project Delivery in a Fixed Price IT Project

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Abstract

Over the couple of decades IT Industry has changed exponentially with respect to the Project delivery models (Offshore model, Onshore model, Hybrid Model etc.), Technological advances (Software and Hardware changes), Infrastructure (On Premise Vs Cloud Services), revenue (Global revenue). Different project management methodologies have been evolved during this period. This publication is intended to provide a study on the dependent factors influencing the project delivery in a fixed price project in IT industry.

Introduction:

A project is a temporary endeavor which has a definite beginning and end. The project is time bound in nature. There are 2 major project types that are executed in IT industry

 1. Fixed Budget Project

2. Time and Material Project.

 A project has 5 different phases namely

- Project Initiation
- Project Planning
- Project Execution
- Monitoring and Control
- Project closure.

This article deals with how the following factors impact in the Project Delivery in case of Fixed Budget Project.

- Time
- Cost
- Resources
- Scope
- Quality

These five factors are mutually dependent and if one the factors vary then at least one of the other 4 factors will vary.

Data Chosen for the purpose of the study:

IT Implementation Type: ERP/SAP (ERP Stands for Enterprise Resource Planning. Which is an end to end solution supporting all the business Departments like Supply Chain, HR, Finance etc. SAP is an ERP tool developed in Germany.) is taken for the study.

Types of Projects: Fixed Budget Project (The project is to be executed by the implementation partner within the agreed budget), Time and Material (The resources are provided to the client and only the resources are charged at a daily rate) and Hybrid of Both

Industry Sector: Energy/Petro Chemical (Information Technology implementation in Petrochemical Industries)

IT implementation Partners: IBM/INFOSYS/CAPGEMINI/ACCENTURE

Factors	Project 1		Project 2		Project 3		Scale
	FP Project Expected	FP Project Actual	FP Project Expected	FP Project Actual	FP Project Expected	FP Project Actual	
Time	3	6	12	15	20	24	In Months
Scope	6	10	26	28	33	33	No of Objects
Cost	39	39	250	250	275	275	In 1000s USD
Quality	10	10	10	8	10	7	As per company ISO standards on a scale of 1-10 , 1 being poor and 10 being best
Resources	2	2	8	8	10	10	Number of Human Resources
Risk	1	5	1	3	1	3	On a scale of 1-5, 1 being low risk and 5 being highly risky

The data is collected to compare how the parameters in case of Fixed Price Projects and how the other dependent factors will impact the delivery. The clients are both located in US, State of Texas at Houston and are part of Energy Sector at a similar scale. The ERP considered in Study is SAP. The study below clearly shows how factors are impacted and mutually depended.

Hypothesis:

There are 5 dependent parameters of project management in which case if one parameter changes the rest will change automatically:

1. Cost
2. Quality
3. Scope
4. Schedule
5. Resources

If any one of the parameters is varied the rest of the 4 will automatically change to accommodate the change. Any project management methodology chosen should ensure that the changes are to be useful.

These five factors are mutually dependent and if one the factors vary then at least one of the other 4 factors will vary.

The variability of these factors will vary depending on the project phase project currently is in.
The standard project life cycle has below generic characteristics:

At the beginning of the project, cost and staffing levels are low and increases when the work progresses. It again starts to drop rapidly as the project begins to halt.
The typical cost and staffing curve does not apply to all projects. Considerable expenses are required to secure essential resources early in its life cycle.
Risk and uncertainty are at their peak at the beginning of the project. These factors drop over the lifecycle of the project as decisions are reached, and deliverables are accepted.
The ability to affect the final product of the project without impacting the cost drastically is highest at the start of the project and decreases as the project advances towards completion. It is clear from the figure 2 that the cost of making new changes and rectifying errors increases as the project approaches completion.

Below diagram talks about uncertainty from the beginning o the project till end. The uncertainty is more at the beginning and less during the end.

If any of the factors change in the beginning the other factors as well change. The amount of the funds consumed are more in the beginning and less in the end. The following diagram shows how the factors are influenced.
Source : PMI / https://www.smartsheet.com/blog/demystifying-5-phases-project-management
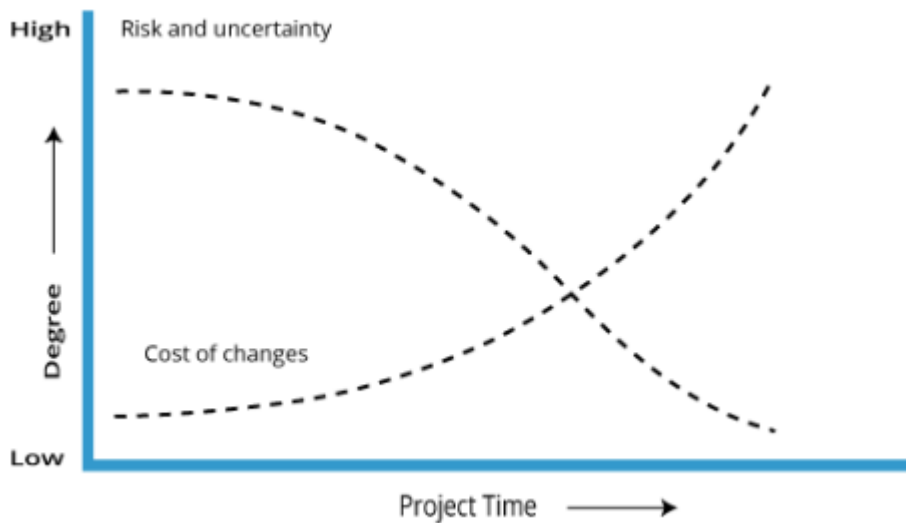
There are five phases of project management and if the lifecycle provides a high-level view of the project, the phases are the roadmap to accomplishing it.

During the project initiation phase the ground work to the start the project is done and at the end the consumption decreases progressively. The major work includes the preparation of the project charter. Let's see an example of how the factors change with an example:

Let's say that the ERP project has a scope of 5 modules to be implemented in 12 months using 10 resources with a budget of 100K USD.
Now if the **Scope is changed from 5 to 6** the below factors vary
a.   Time – Either the project duration will increase
b.   Resources – The team size is to be increased if the work is to be executed within the same time period of 1 year.
c.   Cost – If the scope is to be increased by keeping the time period same then if the subcontractors are to be sourced then the cost will increase. If the resources increase, then the cost will increase too.
d.   Quality: If the scope is increased from 5 to 6 objects and the same has to be delivered with the same number of resources and cost then the quality of 6 objects will definitely not be same as that of when 5 objects are delivered
Similarly, when the number of resources change then the at least one of the other 4 factors change.

In IT industry there are

Fixed Price Project:

Project Scope is firmly fixed and is not subject to change during development. Detailed project scope is developed and approved before the work starts, what delays the project start. The time frame and the number of working hours required for development are strictly determined. The FP contract price includes all known risks that can happen during project performance. These risks may occur or may not. Still, the customer always pays for them. In case the risk arises, XB Software takes care of it without extra payment from the client's side.
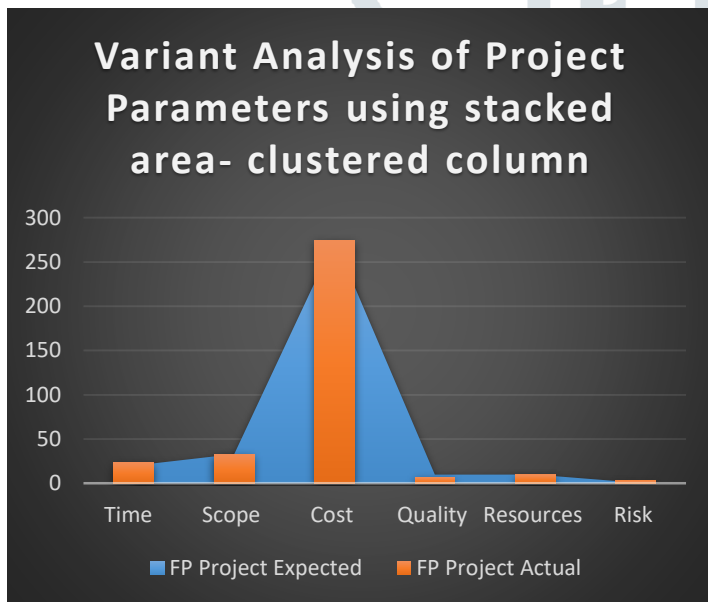
Time and Materials Project:

In case of Time and materials project the project is not measured based on the deliverables and it is measured based on the resources provided for a stipulated period of time. Under TM contract, the customer will pay only for real project work. One doesn't overpay for the risks which may not occur, but in case they take place, contrary to FP, it's the customer who bears additional costs.
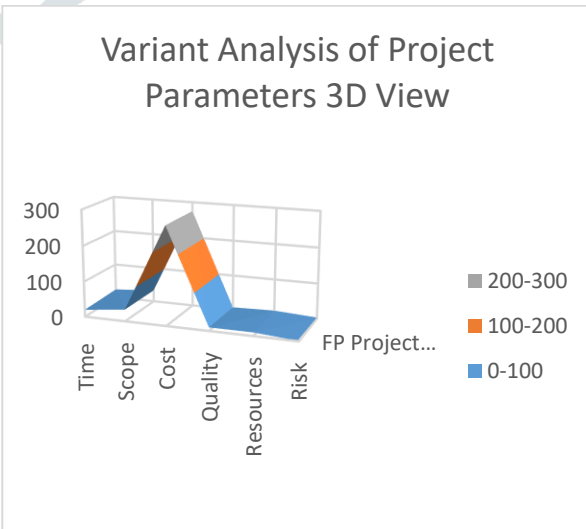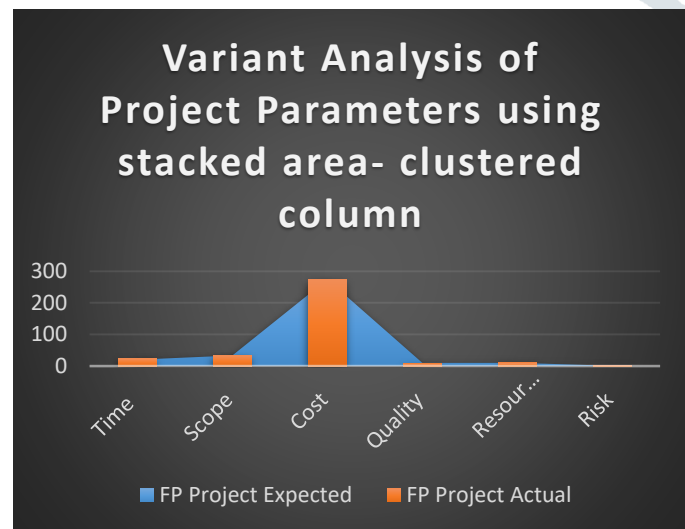
This paper deals with how the variant parameters vary and how the corrective actions are to be taken to compensate these parameters. In large organizations any changes are to be approved by the CAB – Change Advisory Board. The CAB can either approve the changes or reject it. Only the approved changes are implemented.
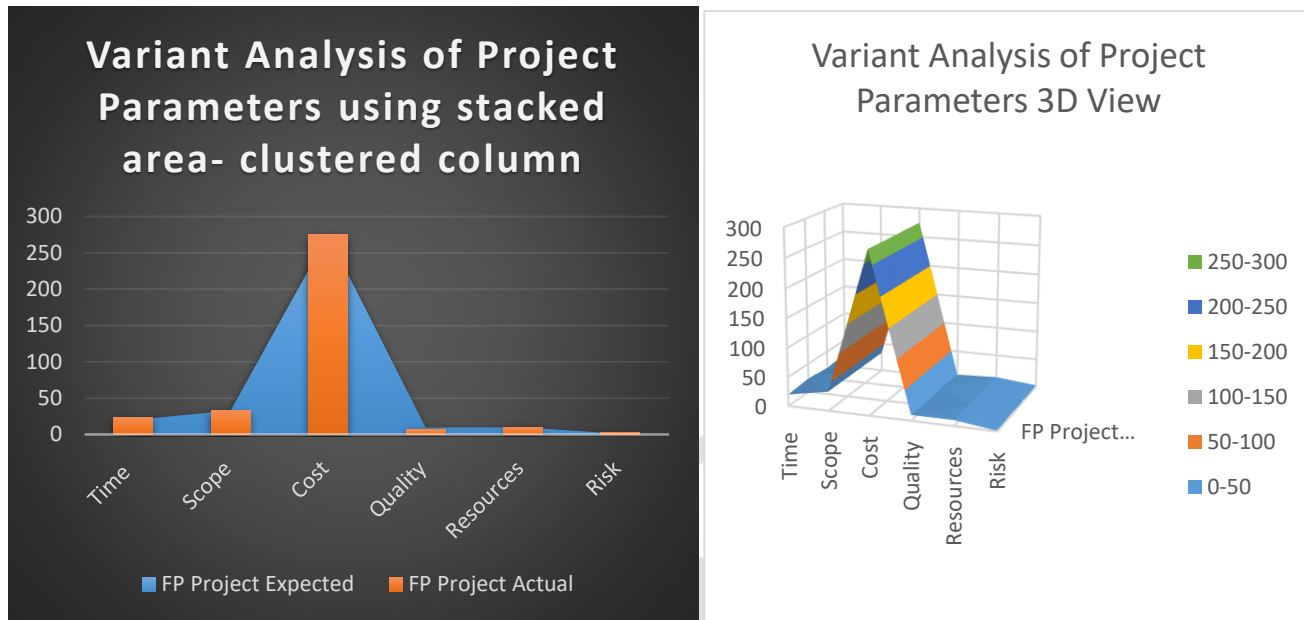
Project Variant Analysis Visualization:

Project 1:

Project 2:

Project 3:

Variant Analysis of Project Parameters using stacked area- clustered column

Variant Analysis of Project Parameters 3D View
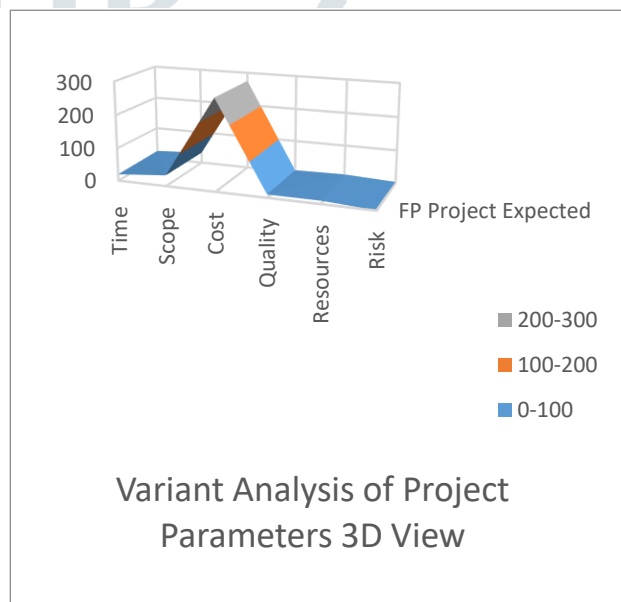
Conclusion:

The above mentioned data and the analysis clearly shows that project management is critically impacted and at least one of the five parameters will change when one the dependent factor change. Depending on the project phase the current project is and the magnitude of change in the parameters the other four factors are critically impacted. To compensate this change based on the weightage of the other four parameters and the prioritization of the project corrective or preventive actions will be needed. This could include but not limited to project extension, scope creep, resource addition, risk mitigation or purchase of new software's. In early days of project management as per ITSM only three factors were considered to be the major influencing factors – Time, Resources and Cost. Now with the advent of changes in infrastructure and globalization quality and scope as well are now influence the project delivery considerably. The magnitude of these changes will depend on the project type and project phase.

References:

http://www.aflexio.com/en/planning/references/

https://www.orpic.om/UploadsAll/Publications/pdf/130714_INSIDE_ORPIC_English_1mb.pdf

https://www.ibm.com/case-studies/w571967d37857t65

https://oilgas.bestpracticeconferences.com/event/the-sap-s-4hana-go-live-at-xto-at-exxonmobil/

http://www.moct.gov.sy/ICTSandards/en/27/4_Project_Management_Phases_Knowledge_Areas_and_Processes.htm

http://www.pmi.org/About-Us/About-Us-What-is-Project-Management.aspx

https://www.projectsmart.co.uk/project-management-process-groups-explained.php

https://project-management-knowledge.com/definitions/f/fixed-price-contract/

https://study.com/academy/lesson/the-six-constraints-of-project-management.html

PMBOK® Guide – Sixth Edition and Extensions to the PMBOK® Guide Page.235

PMP Exam Prep: Accelerated Learning to Pass the Project Management Professional (PMP) Exam by Rita Mulcahy Page 83,92-96,107,111-120.

Cleland, David. 1998. Field guide to project management. New York: Wiley.Page30-38.

Devaux, Stephen. 1999. Total project control: A manager's guide to integrated project planning, measuring, and tracking. New York: Wiley.Page 11-15.

Lientz, Bennet & Rea, Kathryn. 1995. Project management for the 21st century. San Diego: Academic Press. Page 5-9

Grady, Robert B. 1992. Practical software metrics for project management and process improvement. Englewood Cliffs, NJ: Prentice-Hall. Page 4-10

McConnell, Steve. 1998. Software survival guide: How to ensure your first important project isn't your last. Redmond, Washington: Microsoft Press. Page 5-10