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Title

A multi-level, parameter based project success definition framework

Theme

Project management leadership → Leveraging India's skilled population for competitive edge

Keywords

Project success level, project management skills, project management competencies, competitive edge, value chain, competency mapping, competency transformation

Abstract

One of the ways for Indian vendors to gain competitive edge in global leadership summit is by delivering projects at higher success level. Hence, clear definition of project success and its classification into multiple levels is a must in order to make a step-by-step progress. The results to be delivered, accountability level, rewards-penalties, competencies of the talent pool required could all be different depending on the level of project success desired.

Today, engagement between vendors and customers are happening across various levels of project success across the globe, but there is no framework that defines a road map knitting together multiple success levels into a continuum. A parameter-based success level definition framework can help the Indian project teams, especially players in the outsourcing industry to move towards global leadership by gearing up the skills, PM best practices, processes and techniques in a focused manner.

This paper presents a framework of project success definition and helps in:

- Aligning skills and competencies of the talent pool to the desired success level
- Presenting a common view of project success definition to stakeholders
- Adapting Processes and Techniques, execution methodology, skills and competencies based on success level

This framework is different from OPM3 and CMMi which define maturity levels of organizations and not for individual projects. These industry frameworks don't differentiate projects based on success level.

The framework presented in this paper distinguishes projects based on their success level and facilitates alignment of competencies and processes to the success level desired.

Intent

The intent of this paper is to provide the audience with a tool, a systematic method using which they can plan project management competency transformation programs. This tool is the project success definition framework that brings clarity on what is commonly referred to as value chain. The framework brings clarity on what results are expected to be delivered at different levels of value chain and what competencies are needed for each level. The competency transformation can help the target audience to execute more upstream projects and hence create a jump in revenue growth as upstream projects often results in capturing all businesses resulting from related downstream projects. In summary, the project success definition framework can facilitate competency development to gear up for project delivery at higher success level and enable a faster revenue growth.

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Introduction

Rapid learning and skill up gradation has played a major role in the growth of Indian industry over the last couple of decades. The Indian IT industry has been exemplary in leveraging the skills of Indian workforce for growth by leaps and bounds. This growth riding on skills can be classified into two dimensions – horizontal spread and a vertical growth up the value chain. Upgrading skills in new technology areas, new domains leads to horizontal spread – foray into new areas of business and increased market reach of the business houses. However, the other dimension – the vertical growth up the value chain involves upgrading of project management skills and taking on higher level of responsibility in project execution. It is this growth up the value chain that is crucial for Indian business houses to gain competitive edge and increase global market share. It is well known that when a vendor engages with a customer at a higher level in the value chain, that vendor usually gets all or most of the business of the related downstream projects. Hence, the growth up the value chain is what provides the competitive edge going forward apart from up gradation of technology skills, which is any way a necessity. The focus of this paper is on how to up skill the workforce in a targeted manner to move up the value chain and compete at a higher level globally.

While Indian IT industry has achieved a vertical growth up the value chain over the last couple of decades, what constitutes the value chain has been lacking a crisp definition. There are several ways to look at value chain based on life cycle stages, types of outsourcing contracts, level of responsibility carried by the vendor and so on.

During the mid '90s, the Indian IT industry worked mostly in staff augmentation mode, taking up only coding and testing phase work and took no overall project management responsibility. This scenario changed over time and by early '00s, the industry leaders in India started executing

- End-to-end projects involving architecture definition, complete life cycle from requirements till testing, deployment and production support.
- Project under fixed price contract, which requires more matured project management capability compared to time and material contracts.
- Projects that are strategically outsourced. Outsourcing currently happens at 3 levels – tactical, strategic and comprehensive. In tactical outsourcing, it is benefits such as operational efficiency and cost reduction that are targeted. In tactical outsourcing, what projects are outsourced and to what extent depends on operational level reasons and the vendors typically are accountable for deliverables. Vendors don't manage the stakeholders in tactically outsourced projects. The next level is strategic outsourcing where outsourcing happens as part of a business strategy. In this case, typically a portfolio of projects is outsourced to a single or a small group of vendors and vendors carry the responsibility of managing the stakeholders within the customer's organization. Thus the project management responsibility goes beyond accountability for deliverables. In comprehensive outsourcing, the vendor carries responsibility for customer's business results also and becomes a partner in managing customer's customers. The Indian IT industry has forayed into the strategic outsourcing space and is yet to make an impact in the comprehensive outsourcing space.

Summarizing, growth up the value chain has taken place sporadically and is not easy to define with specific parameters. Based on the exposure and experience of the authors, it can be generally asserted that among the leading IT business houses in India, not all projects are in the upstream space in the value chain and not many business houses in India have a presence in the upstream space of the value chain. Hence, this sporadicity leaves the following questions open:

1. How to transform the project management staff to be able to manage upstream projects? What specific competencies are to be targeted?
2. How to assess the competency of project managers to ascertain the level at which they can execute the project?
3. How to differentiate more capable project managers and reward them?
4. How to create a road map for an organization unit to move up the value chain in project execution?

Answers to above questions are not straightforward simply because what parameters constitute the levels of value chain and how to map competencies to them is not clear. Some leading organizations have forayed into upstream projects by managing those specific contexts while many especially the small and medium scale organizations are still struggling to move up the value chain and are struck.

This paper defines a value chain based on project success level definition and demonstrates how the project success level definition can be used to determine contractual obligations, competency levels needed and results expected from the projects. This framework can help the organizations to assess their current capability, set target level capability and create a transformation road map. This competency mapping is illustrated with case studies and results of such efforts.

This framework can facilitate project management capability transformation and enable organizations to execute projects at higher success level and in turn catapult IT businesses into a new league resulting in growth of a higher magnitude. As upstream engagement can create a jump in revenue growth by capturing downstream projects, higher project management capability is a key to leverage all the other skills of the work force and gain a competitive edge in the global arena.

Evolution of the project success concept

Having said that a project success-based classification is needed, we should look at current practice of how project success is defined. Defining project success is very important because one must know before hand what one has to achieve in order to achieve it in the end.

Project management bodies of knowledge and institutions define project success in very broad and generic terms. And they leave specifics such as parameters of success and their values to be worked out by individual projects. Thus we have to look towards industry practice, published literature to find patterns and see if a largely acceptable success definition can emerge.

When we look into industry practice, we find that there is a large variance in success definition and hardly any consensus exists. A survey of published literature shows that the process of defining project success has evolved through the history of modern project management. In the early years of the modern project management up to the 1970s, project success was conceived as completing the project according to limited criteria namely, time, cost and quality; this is known as the Iron Triangle, the golden triangle and other few titles [11] (Scope is considered to be at the centre of this triangle and there are variants that

show quality at the centre with scope, cost and time being the 3 corners of the triangle). This triangle was accepted widely and is still accepted today. Even though it is “Iron”, it has been criticized for being insufficient to fully define the project success [7][16][11]. Completing a project on time, on budget and according to desired quality does not necessarily mean success [22]. For example, the F-20 aircraft project was completed according to the iron triangle, yet it was a failure, as not a single aircraft was sold [15]. On the other hand, the Sydney Opera House suffered huge cost and time overruns but it is a world-renowned product and highly successful in that sense. Thus, the iron triangle is very operational, incomplete to measure project success and it needs to be complemented with additional criteria to be able to measure success more realistically.

Hence, Han and Ika argue that the concept of project success definition is vague and there is no consensus [10][11]. And the main reason seems to be that there are many factors that influence the process of defining project success and every evaluator perceives the success from his or her point of view [3][22][13].

In the 1980s de Wit enhanced the concept of project success by splitting the project success into two parts namely the project success (meaning the product) and project management success (meaning the managerial processes)[6]. The PMBoK[1] has introduced 3 more parameters to the iron triangle namely quality (scope if quality was the parameter considered under the iron triangle), resources and risks thus giving more flexibility to define project success. Even then, given the nature of expectations of stakeholders from the project as reflected in the nature of the contract, these extensions are insufficient. For instance, the success of a metro train project can not only be measured by direct parameters such as timely completion, quality, satisfaction of commuters etc., but can also by indirect parameters such as traffic reduction on the roads. Generalising, impact on the social context is a parameter that is not covered by the extended set mentioned above.

The evolution of the concept of project success has been dealt with exhaustively by Eskander Howasawi[8] establishing that there is a lack of a universal definition of the project success and proposes a four-level framework for success definition[8][9]. These levels are

1. Deliverables level / product level,
2. Project process level,
3. Business level and
4. Context level.

This paper presents an extended framework by elaborating these four levels by adding parameters of success and illustrates how the levels can be mapped to contractual obligations, competencies and results.

The project success framework

Table 1: The project success framework

Success levels →	Level 1 – Product deliverables	Level 2 – Project process	Level 3 – Organization	Level 4 – Social context
Meaning	If the product delivered by the team meets specification, then it is considered successful at level 1	If project has been executed within specified project management parameters such as schedule and budget, then it is successful at level 2	If the project results in predefined business benefits, then it is successful at level 3.	If the project makes an impact on society or the immediate context beyond the business or organization, it is successful at level 4
Success parameters	Field error rate, Defect density, scope coverage	Schedule deviation, Cost deviation, Resource utilization	Profit, Revenue generation, Customer satisfaction	User base, Geographical coverage, Usage frequency
Vendor responsibility	Delivering as per specification (typical T & M projects)	Project management within specified parameters (Typical Fixed price projects)	Stakeholder management (Typical strategically outsourced projects)	Partnering to manage customer's customers (Typical comprehensively outsourced projects)
Capability needed on the part of vendor	Mainly technology and software engineering life cycle skills	Requirements management, estimation, schedule management	Stakeholder management, Cost management	Strategic business management
Some examples	<ol style="list-style-type: none"> 1. A Metro train project where the trains, stations and all other deliverables are defect free 2. Defect free social media software such as Facebook 	<ol style="list-style-type: none"> 1. On time and under budget completion of the project 2. On time and under budget completion of the project 	<ol style="list-style-type: none"> 1. Increase in revenue and profit for Metro organization 2. Increase in revenue and profit for the business owners of new social media platform 	<ol style="list-style-type: none"> 1. Reduction of traffic on roads (More commuters preferring Metro over road transport) 2. A new or changed habit of large section of the society using this software (measured by no. of users and usage frequency).

The implication of these levels is described below.

1. The project can be assessed at each level separately as well as overall. The assessment of a certain level might be different from another. Consequently, different decisions might be made about the overall project or about certain level of the project.
2. The higher the level, the higher its influence in success or failure of the project. For instance, if a high quality product that has met its deadline and budget can be very successful at level 1 and 2, but if it does not bring in the revenue or profit it would be considered a failure at level 3 and hence it would be considered an overall failure also. On the other hand, if an over budget, delayed product with average quality meets the business goals in terms of revenues or profits, it may still be considered a successful project, despite the failures at level 1 and level 2.
3. A criterion can exist at all levels at the same time; however the measures of such criterion can differ from one level to another. Let us take an example of a corporation tax filing software for US customers, which is scheduled to be released by October 2015 so that the corporate clients can use it to prepare their tax calculations during November and December and eventually file the taxes in January 2016. Time can be a success parameter for this project that exists at multiple levels having different implications. While at the project level, an on-time release would mean controlled project cost, at business level it could result in higher revenues. While a delay could mean higher cost at level 1, which could be acceptable, a delay of one month may mean that entire tax year revenue could be missed which is entirely unacceptable (If the clients cannot start using the software in November, they will not need it until the next year November). Thus a month delay in release would have different implication at different levels.
4. If contradicting criteria exist, the one with link to a higher priority criterion at a higher level must be prioritized. For instance, some times a compromise is made between feature set and duration. Reducing product features may mean a lower success or even failure at level 2, but if it can meet the time to market parameter at level 3 and thus ensure other business parameters such as revenues, then the parameter at level 3 takes precedence (time to market takes precedence over product features).

Illustration of the framework

Sample success definitions for two projects are illustrated below in table 2 and table 3. Both the case studies involve incident management software, which have similar functionality and hence similar complexity and size. They vary only in their success definitions as shown in the customized success definition frameworks for these two projects. The first one is an incident management system for Railways dept. and the second one is an incident management system for a water filter product.

Note: Both the systems are hypothetical but are based on realistic software requirements of real life software in that category.

The incident management system for Railways: This system is expected to be used by a large section of passengers apart from the railways staff across the country and hence carries success measures across all 4 levels of the framework. The parameters along with assigned values are illustrated in table 2 below.

Table 2: Success framework for incident management system of Railways

Success level →	Product level (1)	Project level (2)	Business / Organization level (3)	Social context level (4)
Success parameters	<ul style="list-style-type: none"> •Conformance to specifications: 90% •Ease of use: zero cost on training end users •Field error rate: 0.1 defects per kilo lines of code. •Performance: Response time for any transaction to be less than 4 seconds under a concurrent user load of 50 users 	<ul style="list-style-type: none"> •Schedule deviation: < 10% •Cost deviation < 10% •Customer satisfaction index: 9 on a scale of 10 •Defect density: 0 critical defects, 1 defect with workaround and 3 trivial defects on release 	<ul style="list-style-type: none"> •Cycle time from incident report till action assignment to be reduced from 15 days to 4 days •Cost of call center management to be reduced by 20% 	<ul style="list-style-type: none"> •20% of all users registered in any internet forums of Railways should use the software •30% of all incidents to be reported using this software in year 1.

The incident management system for water filter product: This software is used by a small segment of people consisting of users of the product and maintenance staff. As the product is sold based on the strength of its features and customer support quality is not a business critical parameter, this product owner invests in the software only to co-ordinate the incident management better to optimize work load distribution and reduce the overall cost of incident management. Hence, this project carries no parameter at level 4 and carries parameters at levels 1, 2 and 3 with less stringent values compared to the project for Railways. The success framework for this project is as depicted in table 4 below.

Table 3: Incident management system for water filter product

Success level →	Product level (1)	Project level (2)	Business / Organization level (3)	Social context level (4)
Success parameters	<ul style="list-style-type: none"> •Conformance to specifications: 90% •Field error rate: 0.5 defects per kilo lines of code. •Performance: Response time for any transaction to be less than 6 seconds under a concurrent user load of 50 users 	<ul style="list-style-type: none"> •Schedule deviation: < 10% •Cost deviation < 10% •Customer satisfaction index: 9 on a scale of 10 •Defect density: 0 critical defects, 2 defect with workaround and 5 trivial defects on release 	Overall cost reduction of incidents by 20%	None

Application of the framework

The framework is useful in many aspects of project management and can help organizations move up the value chain:

- Competency mapping
- Planning project strategies
- Contract negotiations
- HR decisions for project managers

These are illustrated using multiple case studies.

Case study 1:

CorporateTax (Name changed) is a corporate tax filing application used by the most leading business houses in the US and this software had a serious performance issue. Being a large application, re-engineering involved a 200 person month effort and the business owners were negotiating the project with the vendor during May and were demanding that the project be delivered by end of September (with in 4 months duration). This was a very ambitious time line but was crucial for the business success as a later release would mean that an entire year’s revenue would be lost. The business houses in the US start their tax return filing preparations in November itself and if the application is released by end of September, then they can release a beta for its customers in October and a final release by November. If the product is not released by November, then the customers would opt for an alternative solution and this product will not have business for the financial year. If they missed the customers in Nov this year,

they had to wait till November next year. Thus 4 months was a hard deadline and the project team put in a massive level of hard work and delivered the re-engineered product on time.

Now, let us see how the project success definition helped in this project -

Contract negotiations

The project success definition listed schedule as a level 3 parameter rather than a level 2 parameter which is usually the case. Because of this, the vendor had to put in more experienced and higher skilled staff on the project resulting in a higher cost. The vendor had to renegotiate the project cost with the customer because of deployment of staff with higher skills and experience. The project cost was more than what would have been the cost if it were to be executed in say 8 months with regular level of staff deployment. The project success definition played a role in bringing clarity about what constituted project success and facilitated contract negotiations.

Planning project strategies

Schedule had been identified as a constraint and resources had been identified as a degree of freedom up front because of success definition level. Hence, project planning was carried out by identifying upfront, inherent parallelism and the project manager was ready to embrace additional requirements/ requirement changes by deploying more resources.

Benchmarking project managers for HR decisions

Quite often, the project managers are judged based on the size of the project in terms of number of people and duration. However, a smaller project needing success at level 3 or 4 may be more challenging and need a higher level of capability. This subtlety goes unnoticed if there is no project success framework. With the framework, the HR can bring in clarity in their reward-recognition policy by including criteria based on success levels.

Competency mapping

In this case study, competency mapping was carried out at a coarse level by simply deploying more experienced and higher skilled staff. However, a more granular competency mapping is possible as illustrated in the next case study.

Case study 2:

In this case study, a mid sized organization with about 5000 employees was executing downstream projects in T & M model, involving design, coding and testing phases. Most projects came from their European channel partners who handle project management, requirements and analysis, architecture, deployment and product support.

This organization wanted to move to a higher level and execute end-to-end projects involving architecture, requirements till deployment and production support. In the project success definition framework, they wanted to move from level 1 to level 2 and carried out a competency mapping and gap analysis. Table 4 and table 5 below presents the results of this competency mapping initiative. Table 4 lists the relevant skill and table 5 presents the gap analysis which in turn can result in a competency development road map. In the table, if a particular skill is listed in both under level 1 and level 2, and is marked in a bigger font in level 2, it means that this skill is needed at a higher level of expertise for success level 2.

Table 4: Project success framework for case study 2

Success level	Indicators	Relevant skills
Social context	Customer's business parameters, Customer delight	Stakeholder management, visioning, consulting skills and more requirement management skills
Business / organizational context	Project cost, customer satisfaction, team satisfaction	Previous level + leadership skills, customer management skills
Process / project management	Schedule deviation, effort deviation, requirement volatility	Basic PM skills + Req engg, Estimation, risk mgmt, planning & tracking, test mgmt, estimation, few soft skills
Deliverable quality	Defect rate, usability, look-and-feel	Software engineering & technology

Table 5: Competency gap analysis for case study 2

Success level	Skills important in current context	Skills important in next context
Social context	Stakeholder management, visioning, consulting skills and more requirement management skills	Stakeholder management, visioning, consulting skills and more requirement engineering skills
Business	Previous level + leadership skills, customer management skills	Previous level + leadership skills, customer management skills
Process / project management	Basic PM skills + Req engg, Estimation, risk mgmt, planning & tracking, test mgmt, estimation, few soft skills	Basic PM skills + Req engg, Estimation, risk mgmt, planning & tracking, test mgmt, estimation, few soft skills
Deliverable quality	Software engineering & technology	Software engineering & technology

Case study 3:

A leading IT service business house in India designed a competency transformation program named Path Finder [23] in order to move majority of its project management staff from success level 1 to success level 2. They defined the success parameters, mapped competencies, defined a curriculum to enhance competencies, conducted training programs, conducted individual assessments and then conducted project assessments.

A measurement of project results indicated that fixed price projects could be executed with a schedule under run of 10% (thus saving 10% cost approximately). Thus, the project success framework and the competency mapping, the transformation exercise yielded measurable results in this case.

Conclusion

Project management skills needed to execute upstream projects in the value chain are critical to gain competitive edge in the global arena. The project success framework of this paper clearly defines the value chain, helps create a competency road map and achieve a progress from one level of success to the next level. The case studies prove that this framework is useful in real life projects and have delivered measurable results.

References

- [1] A guide to project management body of knowledge, 2013, fifth edition, Project Management Institute
- [2] ANDERSEN, E. S., BIRCHALL, D., JESSEN, S. A. & MONEY, A. H. 2006. Exploring project success. *Baltic Journal of Management*, 1, 127-147.
- [3] BACCARINI, D. 1999. The Logical Framework Method for Defining Project Success. *Project Management Journal*, 30, 25.
- [4] COLLINS, A. & BACCARINI, D. 2004. Project success? a survey. *Journal of Construction Research*, 5, 211-231.
- [5] DAVIS, K. 2013. Different stakeholder groups and their perceptions of project success. *International Journal of Project Management*.
- [6] DE WIT, A. 1988. Measurement of project success. *International Journal of Project Management*, 6, 164-170.
- [7] DVIR, D., LIPOVETSKY, S., SHENHAR, A. & TISHLER, A. 1998. In search of project classification: a non-universal approach to project success factors. *Research Policy*, 27, 915-935.
- [8] ESKANDER HOWSAWI, DAVID EAGER, ET AL, 2014, The four-level project success framework: application and assessment, *Organizational project management vol1, no1, 1-15*
- [9] ESKANDER HOWASAWI, DAVID EAGER ET. AL., 2011, Understanding project success: The four level success framework, IEEE international conference on Industrial engineering and engineering management, 2011, pp 620 - 624, E-ISBN 978-1-4577-0738-4

- [10]HAN, W. S., YUSOF, A. M., ISMAIL, S. & AUN, N. C. 2012. Reviewing the Notions of Construction Project Success. *International Journal of Business and Management*, 7, 90-101.
- [11]IKA, L. A. 2009. Project success as a topic in project management journals. *Project Management Journal*, 40, 6-19.
- [12]JUGDEV, K. & MULLER, R. 2005. A retrospective look at our evolving understanding of project success. *Project Management Journal*, 36, 19-31.
- [13]KERZNER, H. 2013. *Project management: a systems approach to planning, scheduling, and controlling*, Wiley.
- [14]LE MASURIER, J., ROTIMI, J. O. & WILKINSON, S. A comparison between routine construction and post-disaster reconstruction with case studies from New Zealand. 22nd ARCOM Conference on Current advances in construction management research, 4-6 September 2006 Birmingham, UK. The Association of Researchers in Construction Management 523–530.
- [15] MARTIN, T. & SCHMIDT, R. 1987. A Case Study of the F-20 Tigershark, RAND Corporation
- [16]MILIS, K., MEULDERS, M. & MERCKEN, R. A quasi-experimental approach to determining success criteria for projects. Proceedings of the 36th Annual Hawaii International Conference on System Sciences, 2003., 6-9 Jan. 2003 2003. 12 pp.
- [17]SHENHAR, A. J. 2001. One Size does not Fit All Projects: Exploring Classical Contingency Domains. *Management Science*, 47, 394-414.
- [18]SHENHAR, A. J., LEVY, O. & DVIR, D. 1997. Mapping the dimensions of project success. *Project Management Journal*, 28, 9.
- [19]THOMAS, G. & FERNÁNDEZ, W. 2008. Success in IT projects: A matter of definition? *International Journal of Project Management*, 26, 733-742.
- [20]TURNER, J. R. 1993. *The handbook of project-based management:improving the processes for achieving strategic objectives*, McGraw-Hill Book Co.,.
- [21]TURNER, J. R. & COCHRANE, R. A. 1993. Goals-and-methods matrix: coping with projects with ill defined goals and/or methods of achieving them. *International Journal of Project Management*, 11, 93-102.
- [22]TURNER, R. & ZOLIN, R. 2012. Forecasting Success on Large Projects: Developing Reliable Scales to Predict Multiple Perspectives by Multiple Stakeholders Over Multiple Time Frames. *Project Management Journal*, 43, 87-99.
- [23] Nagaraja G, "Path Finder - a Software project management competency initiative", IEEE APSEC, Bangalore, 2006, slide 10