International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 07 Issue: 06 | June 2020 www.irjet.net p-ISSN: 2395-0072

# PROJECT PERFORMANCE MANAGEMENT IN CONSTRUCTION INDUSTRY

**Hapani Gaurav Bipinbhai[1], Jayraj V. Solanki[2]**

*[1]P.G. Student, Department of Civil Engineering, U.V. Patel College of Engineering, Ganpat University, Gujarat, India.*
*[2]P.G. Head and Assistant Professor, Department of Civil Engineering, U.V. Patel College of Engineering, Ganpat University, Gujarat, India.*

---

**Abstract -** *Business perceptions of the construction industry have changed significantly during the last decades. Due to increasing competition and globalization issues, the parameters of the project environment have been enriched by several new concepts. The performance assessment done by objective measures have now been replaced with subjective measures. Within the context of this research; interdependencies between a construction company's "resources and capabilities", "project management capabilities", "strategic decisions", "strength of relationships with other parties" and "external factors" with "project performance" and "company performance" were investigated from a resource based perspective which put forward intangible assets of the company. To achieve the objectives, a questionnaire survey was administered to 50 companies and analyzed.it was important performance analysis and find factors direct effect of project performance management. And finding ways to improve the performance of construction companies, subjective dimensions of performance have proven to be as effective as the traditional objective dimensions.*

***Key Words*: Project Performance, Management**

## 1. INTRODUCTION

This All through the most recent two decades' various businesses, fundamentally fabricating, have acquainted new strategies and methods with move customary standards so as to improve their presentation. This has prompted the formation of new ways of thinking, for example, simultaneous Engineering/development, lean creation/development and numerous others. The fundamental driver behind those ways of thinking is to streamline an association's exhibition both inside and remotely inside its separate commercial center. Definitely, this has prompted the 'reexamining' of execution the executive's frameworks through compelling execution estimation.

Effective Project management needs to think and faces so many factors that affect the project for completion of it and to reduce that affectation to project, analysis of different individual factors have to be done effectively. This study also aims to select the different factors which affecting the project form literatures and interaction with industries professionals.

Second step is to make valid question based interview survey from ongoing construction project of real estate and infrastructure project within Gujarat state and to take reliable data in forms of questions to know which factors are affecting more to the project completion schedule. Third stage is to gather all collected data which collected from various scale of projects and to do analysis of that by particular reliable method of data analysis and taking result from that method provide controls plan of that particular factors which affect more to the project form declared results.

Result assessment is performed in numerous ways. Tools and techniques have been developed to consider probabilities and consequences, using historical data, statistical data or estimated judgment translated into numerical information There are also assessments grading certainty in scales such as rare-almost certain and low-extreme. They share estimates of probability and consequence and the use of software tools to manage the data.

Quantitative and semi-quantitative examinations are performed utilizing factual techniques (Relative significant record, Factor investigation, relationship between elements, and so forth.) and incorporate the utilization of quantitative or numerical information. Their outcome is quantitative. This methodology is progressively objective and exact. For the outcomes to be increasingly significant it is important to utilize the right info parameters from legitimate sources. In this examination quantitative methodology for directing overview and investigation is done for better comprehension toward the announcement issue.

### 1.1 OBJECTIVE

- To study impact of different parameters that affects performance of construction project. And also study performance measure method.
- To improve construction project performance by selected performance measure parameters and different methods.

### 1.2 SCOPE OF PROJECT

Research will be done on construction companies and consultancies within Gujarat region too if required.

### 1.3 LITERATURE REVIEW

This article shows the advantages of utilized the Balanced Scorecard technique and improve organization methodology and work execution and the investigation of vision and strategic, accepts it as a benchmark for the exhibition and progress of the organization during the following years. Organization Vision of has been related with a business point of view, for example, fund, clients, inner procedures, learning and development.

Examination of the exploration center in the articles demonstrated a shortage of distributed work on the subjects of Forecasting Performance, Innovation Performance, Performance Modeling, Procurement Performance, Research Performance, Sustainability Performance, and Technology. Execution, which are exceptionally restricted. Commending the huge measure of research did at the venture, firm and national/industry levels of examination, the only here and there explored action, customer, foundation, institutional and development activity levels of investigation are available to examination in an expansive way.

The examination delivered a venture sway appraisal undertaking to assess the development venture in three periods of the utilization of BSC and AHP gear. The examination of the reactions indicated that the "planning standards" of the structure ventures were a "subsidize financial plan" that is significant contrasted with the other extended BSC viewpoints. Experts and analysts can without much of a stretch utilize these rules to improve venture execution.

The sixth methodology is to harvest venture growth story on various rank days. The tale may incorporate basic exercises, exercises in progress, planned costs, cost caused and so on.

### 1.4 DATA COLLECTION

The data was collected by conducting a questionnaire survey amongst the professionals of the construction industry.

### 1.5 DATA ANALYSIS

The data collected from the questionnaire survey was analyzed using the **Importance Performance Analysis** methodology.

Importance Performance Analysis originally proposed and presented by Martilla and James (1977) as a method by which to quantify customer fulfillment with an item or administration. The IPA approach distinguishes fulfillment as the capacity of two segments: the significance of an item or administration to a customer and the presentation of a business in offering that assistance or item (Martilla and James, 1977). IPA analyzes the exhibition of a thing, yet in addition the significance of that thing as a deciding variable in fulfillment to the respondent (Silva and Fernandes, 2010). The joined customer evaluations for those two segments at that point furnish a general perspective on fulfillment with clear mandates for the executives.

Cartesian diagram consists of four quadrants: -

Quadrant I (top priority).

Quadrant II (keep achievement).

Quadrant III (excessive).

Quadrant IV (low priority).

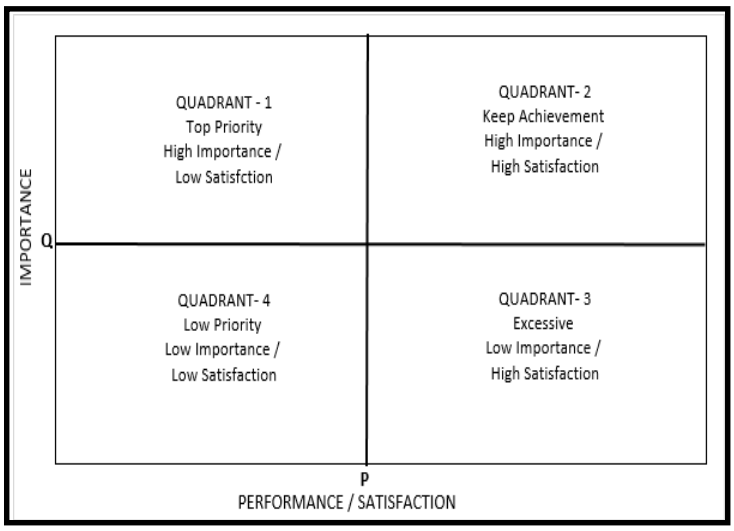


**Fig -1**: Importance Performance Analysis

Calculation for IPA

| QUESTION | Impact | Performance level | Impact | Performance |
|---|---|---|---|---|
| Quality department | 5 | 1 | 4 | 2 |
| Quality Assurances plan | 4 | 2 | 5 | 1 |
| Quality testing plant | 4 | 4 | 3 | 4 |
| Quality engineer | 5 | 5 | 4 | 5 |
| Quality of equipment | 4 | 5 | 4 | 5 |
| Financial resources | 3 | 2 | 2 | 3 |
| Leadership | 4 | 2 | 3 | 5 |
| Experience | 2 | 5 | 5 | 2 |
| Innovation capability | 1 | 3 | 2 | 1 |
| Relations with government | 1 | 2 | 1 | 3 |
| Relations with contractor | 2 | 5 | 1 | 5 |
| Schedule management competency | 5 | 3 | 3 | 4 |
| Cost management competency | 5 | 2 | 4 | 1 |
| Projectrisk management | 4 | 3 | 5 | 3 |
| Project procurement management | 5 | 4 | 3 | 4 |
| Project knowledge management | 2 | 3 | 2 | 4 |
| Health and safety management | 4 | 5 | 4 | 3 |
| Economic conditions | 5 | 2 | 3 | 1 |
| New entrants to the Market | 1 | 3 | 5 | 3 |
| Supply | 4 | 2 | 3 | 4 |
| Demand | 4 | 4 | 2 | 3 |
| Time needed to implement | 5 | 3 | 3 | 2 |
| Financial perspective | 3 | 5 | 3 | 1 |
| Customer perspective | 4 | 3 | 3 | 3 |

**Fig -2:** Factors

| Impact | Performan | Impact | Performan | Impact | Performan | Impact | Performan | Impact | Performan |
|---|---|---|---|---|---|---|---|---|---|
| 4 | 1 | 5 | 1 | 5 | 2 | 3 | 1 | 4 | 2 |
| 5 | 1 | 4 | 2 | 3 | 1 | 4 | 2 | 5 | 1 |
| 4 | 4 | 5 | 3 | 4 | 2 | 2 | 3 | 3 | 3 |
| 2 | 5 | 3 | 3 | 2 | 3 | 3 | 2 | 2 | 4 |
| 5 | 2 | 2 | 3 | 5 | 3 | 4 | 3 | 4 | 3 |
| 1 | 5 | 4 | 3 | 2 | 3 | 5 | 4 | 5 | 4 |
| 2 | 2 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 4 |
| 2 | 3 | 5 | 3 | 3 | 5 | 4 | 5 | 3 | 5 |
| 3 | 1 | 3 | 1 | 2 | 1 | 3 | 2 | 1 | 2 |
| 2 | 3 | 2 | 1 | 1 | 3 | 1 | 3 | 1 | 2 |
| 2 | 5 | 1 | 3 | 1 | 5 | 1 | 4 | 2 | 5 |
| 2 | 2 | 4 | 4 | 4 | 3 | 2 | 4 | 5 | 2 |
| 5 | 2 | 4 | 2 | 5 | 1 | 4 | 3 | 5 | 1 |
| 2 | 4 | 5 | 4 | 3 | 5 | 3 | 4 | 3 | 4 |
| 4 | 4 | 2 | 5 | 3 | 4 | 4 | 3 | 1 | 3 |
| 3 | 4 | 3 | 4 | 4 | 3 | 4 | 5 | 4 | 4 |
| 2 | 2 | 4 | 1 | 2 | 5 | 3 | 2 | 3 | 5 |
| 2 | 2 | 5 | 4 | 5 | 2 | 4 | 3 | 4 | 2 |
| 5 | 5 | 3 | 3 | 3 | 3 | 5 | 1 | 5 | 1 |
| 2 | 4 | 5 | 4 | 3 | 3 | 4 | 4 | 2 | 4 |
| 3 | 5 | 2 | 2 | 4 | 4 | 4 | 2 | 3 | 2 |
| 2 | 4 | 4 | 3 | 5 | 3 | 2 | 5 | 3 | 5 |
| 4 | 2 | 3 | 4 | 2 | 5 | 3 | 1 | 4 | 3 |
| 1 | 4 | 4 | 2 | 2 | 3 | 4 | 3 | 3 | 3 |

**Fig -3:** Impact- performance Values

Average of Importance level & Performance level

| IMPORTAI | PERFORMANCE |
|---|---|
| 4.15217 | 1.65217 |
| 4.30435 | 1.56522 |
| 3.19565 | 2.8913 |
| 2.73913 | 3.13043 |
| 4.13043 | 2.52174 |
| 2.97826 | 3.04348 |
| 3.36957 | 3.1087 |
| 2.91304 | 2.97826 |
| 1.97826 | 1.69565 |
| 1.63043 | 1.93478 |
| 1.82609 | 4.45652 |
| 2.95652 | 2.78261 |
| 4.43478 | 1.58696 |
| 4.13043 | 4.06522 |
| 3 | 3.30435 |
| 2.8913 | 3.26087 |
| 2.91304 | 2.95652 |
| 3.8913 | 2.23913 |
| 3.19565 | 2.86957 |
| 2.93478 | 3.41304 |
| 2.95652 | 2.69565 |
| 2.76087 | 3.32609 |
| 2.78261 | 3.28261 |
| 2.93478 | 2.76087 |

**Fig -4:** Average values of Impact & Performance

IPA CARTESIAN DIAGRAM

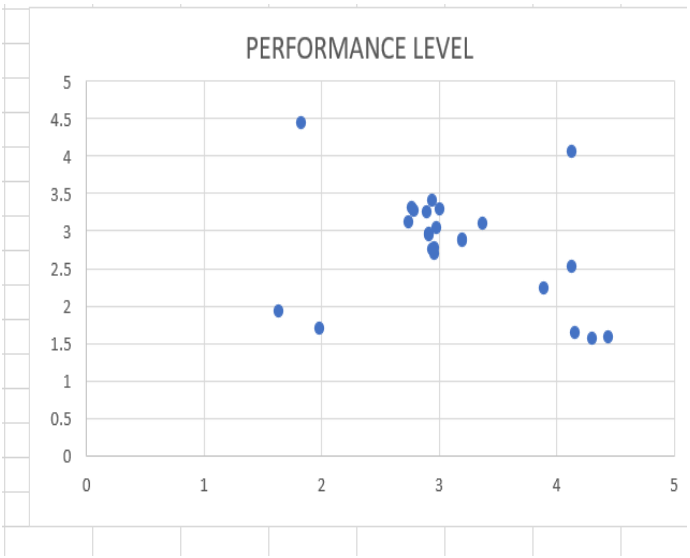


**Fig -5:** Cartesian Diagram

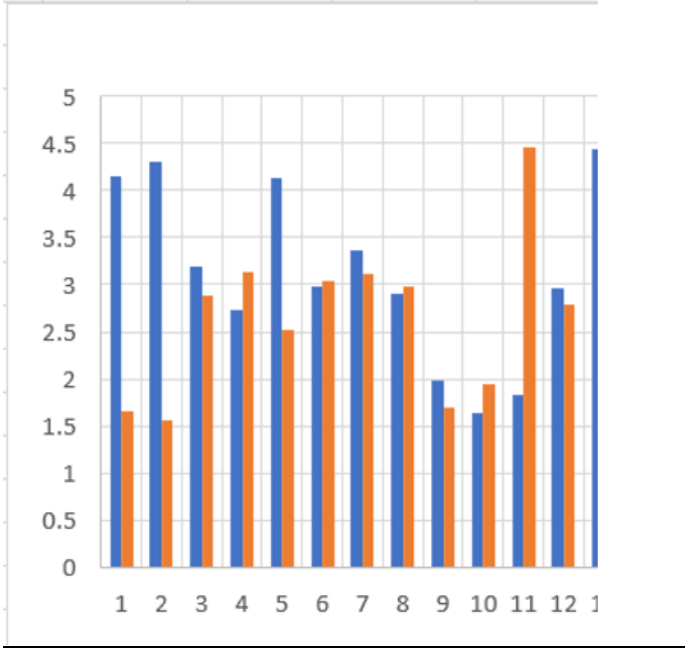


**Fig -6:** Graphical Representation

IMPACT – PERFORMANCE MEASUREMENT

| Numbers | Question | Importance Level | Performance Level |
|---|---|---|---|
| 1 | Quality department | High Important | Low performance level |
| 2 | Quality Assurances plan | High important | Low performance level |
| 3 | Quality testing plant | High important | High performance level |

| | | | |
|---|---|---|---|
| 4 | Quality engineer | High important | High performance level |
| 5 | Quality of equipment | High important | Low performance level |
| 6 | Financial resources | High important | High performance level |
| 7 | Leadership | High important | High performance level |
| 8 | Experience | High important | High performance level |
| 9 | Innovation capability | Low important | Low performance level |
| 10 | Relations with government | Low important | Low performance level |
| 11 | Relations with contractor | Low important | High performance level |
| 12 | Schedule management competency | High important | High performance level |
| 13 | Cost management competency | High important | Low performance level |
| 14 | Project risk management | High important | High performance |
| 15 | Project procurement management | High important | High performance level |
| 16 | Project knowledge management | High important | High performance level |
| 17 | Health and safety management | High important | High performance level |
| 18 | Economic conditions | High important | Low performance level |
| 19 | New entrants to the Market | High important | Low performance level |
| 20 | Supply | High important | High performance level |
| 21 | Demand | High important | High performance level |
| 22 | Time needed to implement | High important | High performance level |
| 23 | Financial perspective | High important | High performance level |
| 24 | Customer perspective | High important | High performance level |

**TABLE -1:** Impact – Performance measurement

## 1.6 SUB – PARAMETER RESULTS

There is a 14 out of 24 sub factors have more effect on performance of project.

| |
|---|
| **Financial Resources** |
| Experience |
| Technical Competency |
| Cost Management |
| Relations With Client |
| Project Knowledge Management |
| Health And Safety Management |
| **Organization Management** |
| Investment Decision |
| Demand |
| Supply |
| Quality Engineer |
| Financial Perspective |
| Customer Perspective |

**TABLE -2:** Result

## 1.7 CONCLUSIONS

In this exposition, the different project performance factors were distinguished from the writing audit. For that the survey was set up for the venture execution the executives. And further, more the review was led and dependent on study reactions the examination of the undertaking execution factor was completed utilizing IPA.

From the overview of 24 contractual worker organizations, 18 designers and 8 PMC, we inferred that 20 out of 41 factors legitimately affected on the presentation of task. Also, factors influencing venture execution are 90% like the contactor, engineer and PMC.

## 1.8 REFERENCES

1. Using the Balanced Scorecard as a Strategic Management System in the Libyan Construction Industry Abdussalam Shibani, Nawal Gherbal.
2. International Journal of Civil Engineering and Technology (IJCIET) Volume 7, Issue 6, November-December 2016, pp. 698–706, Article ID: IJCIET_07_06_077
3. Performance Management in Construction International Journal of Innovative Research in Science, Engineering

and Technology ISSN: 2319 – 8753 4, April 2016 Ms.B.Kaviya1, Ms.C.Hema
4. First International Conference on Advanced Business and Social Sciences (ICABSS-Bali, 2016) ISBN: 978 0 994365644 www.apiar.org.au
5. International Journal of Innovative Research in Science, Engineering and Technology (An ISO 3297: 2007 Certified Organization) Vol. 4, Issue 4, April 2015
6.Corresponding Author Professor Rachel Cooper Centenary Building University of Salford Peru Street Salford, M3 6EQ UK
7.School of engineering & science, university of the west of scotland, hamilton campus, hamilton, Ml3 0jb, uk
8.Isilay Akkoyun1 and Attila Dikbas2 Project Management Centre, Istanbul Technical University, Ayazaga Kampusu, Istanbul, 34469 Turkey
9. To cite this article: Sevilay Demirkesen & Beliz Ozorhon (2017) Measuring Project Management Performance: Case of Construction Industry, Engineering Management Journal, 29:4, 258-277, DOI: 10.1080/10429247.2017.1380579
10. International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395 -0056 Volume: 02 Issue: 03 | June-2015