

## BENCHMARKING OF INDIAN CONSTRUCTION INDUSTRY

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### Abstract

The research is focused on comprehending the utilization of a scorecard system within the Indian construction sector in order to establish a benchmarking structure for its comprehensive advancement. The methodology employed in this investigation includes analyzing the various aspects encompassed by scorecard systems. Contractor firms were assessed based on their performance across different dimensions of a scorecard. The capacities of these organizations were evaluated in comparison to the industry's evolving expectations. The mentioned approach uncovered important insights about the Indian construction industry, identifying key elements of a balanced scorecard and establishing various parameters for evaluating the industry. These findings served as the basis for a custom Scorecard tailored for the construction sector, with the aim of promoting comprehensive progress. The study, although based on a limited sample size, could benefit from additional surveys and field data collection. The research outcomes are expected to assist construction companies in assessing their global standing and facilitating inclusive growth in this rapidly evolving market. This study is an original contribution that focuses on benchmarking within the construction industry and serves as a valuable resource for companies in this sector.

**Keywords-** Benchmark, Sustainable growth parameters

### Introduction:

Benchmarking is the process of establishing a standard or reference point for comparison. In order to benchmark companies within the Indian construction sector, it is essential for these companies to implement a consistent system of performance evaluation that takes into account the industry's specific characteristics and obstacles. This study aims to present a performance measurement model tailored to the construction industry.

### 2.0 Balanced Scorecard System for Performance Management

The balanced scorecard (BSC) is a strategic performance management tool that is widely used by organizations globally to assess performance. It helps businesses, government entities, and nonprofit organizations align their activities with the organization's vision and strategy, enhance internal and external communication, and monitor performance against strategic objectives. The BSC includes financial metrics, customer perspective, internal business processes, and learning and growth aspects as indicators of a company's success.

### 2.1 Development of the Balanced Scorecard System

The concept of the BSC dates back to the 1950s when a team at General Electric initiated a project to develop performance measures for the company's decentralized business units. The team recommended measuring divisional performance using 8 metrics, including one financial metric and several non-financial metrics. Subsequent developments in the Western world and Japan highlighted the importance of non-financial measures in providing

organizations with a long-term perspective and aiding in their success.

**2.2** The phrase "balanced scorecard" was introduced in the 1990s. As the years went by, the balanced scorecard evolved from being merely a tool for measuring to becoming a comprehensive management approach. This approach aids companies in defining their goals and plans, and in converting these into practical actions. It provides a view into both the company's internal operations and its external achievements, aiming to enhance strategic effectiveness and outcomes over time.

### **2.3 The Perspectives of the Balanced Scorecard**

The Balanced Scorecard (BSC) concept encompasses four perspectives:<sup>3</sup>:

**2.2.1 The Financial Perspective-** Previously, performance measurement methods primarily concentrated on financial performance. While this model acknowledges the importance of financial data, the Balanced Scorecard (BSC) emphasizes the significance of timely and accurate funding data. However, the past approach was overly focused on financial aspects, resulting in an imbalance when compared to other perspectives.

**2.2.2 The Learning & Growth Perspective-** This perspective encompasses employee training and corporate cultural attitudes aimed at enhancing both individual and organizational development. People serve as the primary resource in service organizations within the construction industry. Given the rapid pace of technological advancements, continuous training and up skilling of the workforce are essential for organizational success. Learning and growth are vital not only for the organization but also for its resources. Kaplan and Norton highlighted in their article 'Using the Balanced Scorecard as a Strategic Management system' that 'learning' extends beyond 'training' to include mentorship, internal tutoring, and effective communication channels among employees for prompt problem-solving. Additionally, it involves leveraging technological tools.

**2.2.3 The Business Process Perspective-** This perspective focuses on internal business processes that enable managers to assess the efficiency of their operations and the alignment of products and services with customer needs. These metrics are specific to each company based on the nature of its offerings.

**2.2.4 The Customer Perspective-** Customer satisfaction is the central focus of this perspective, reflecting a growing emphasis on customer-centricity and satisfaction across all industries. This metric also serves as an indicator of future product and service trends. Satisfied customers are more likely to remain loyal and make repeat purchases, while dissatisfied customers may switch to competitors. When developing metrics for customer satisfaction, organizations should prioritize.

### **2.3 Implementing the Balance scorecard**

The Balanced Scorecard (BSC) can be put into action using a 9-step structure created by Howard Rohm from the Balance Scorecard Institute. The flowchart provides more details about this structure.

|   |                                                                                                                                                                                                                                                                                                                                                                                                        |
|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | <b>Organizational Assessment</b> <ul style="list-style-type: none"> <li>Assessment of the strategic elements</li> <li>To finalize the Balanced Scorecard Plan</li> <li>Preparing a <b>change management plan</b> for the organisations</li> </ul>                                                                                                                                                      |
| 2 | <b>Strategy</b> <ul style="list-style-type: none"> <li>Determining the strategic themes, including strategic results, strategic themes, and perspectives, which are developed to focus attention on the customer needs and their value proposition</li> </ul>                                                                                                                                          |
| 3 | <b>Objectives</b> <ul style="list-style-type: none"> <li>Determining your organization's objectives – that is your organization's continuous improvement activities, which should link to your strategic themes, perspectives and strategic results.</li> </ul>                                                                                                                                        |
| 4 | <b>Strategy Maps</b> <ul style="list-style-type: none"> <li>The objectives are linked in cause-effect relationships to produce a strategy map for each strategic theme</li> <li>The theme strategy maps are then merged into an overall corporate strategy map</li> </ul>                                                                                                                              |
| 5 | <b>Performance Measures</b> <ul style="list-style-type: none"> <li>The performance measures are developed for strategic objectives.</li> <li>Performance measures should be defined clearly, differentiating the outcome and output measures, as well as the leading measures (future expected performance) and lagging measures (past performance history) design your performance targets</li> </ul> |
| 6 | <b>Strategic Initiatives</b> <ul style="list-style-type: none"> <li>The strategic initiatives are developed that support the strategic objectives</li> <li>To build accountability throughout the organization, performance measures and strategic initiatives are assigned to owners and documented in data definition tables.</li> </ul>                                                             |
| 7 | <b>Software and Automation</b> <ul style="list-style-type: none"> <li>Automating the Balanced Scorecard system, and consists of analyzing software options and user requirements to make the most cost-effective software choice for today and to meet enterprise performance information requirements in the future.</li> </ul>                                                                       |
| 8 | <b>Cascading</b> <ul style="list-style-type: none"> <li>Cascading the corporate scorecard throughout the organization to business and support units</li> </ul>                                                                                                                                                                                                                                         |
| 9 | <b>Evaluation</b> <ul style="list-style-type: none"> <li>Evaluating the success of chosen business strategies</li> </ul>                                                                                                                                                                                                                                                                               |

**Fig 1. Implementation of the Balance Scorecard**

### 3. The Construction Industry in India

The construction industry is a significant contributor to India's economy, accounting for more than 10% of its GDP. This sector comprises two main segments: infrastructure and buildings. The infrastructure segment encompasses a wide range of projects, including roads, railways, dams, canals, airports, power systems, telecommunications, urban development, and rural infrastructure while the building segment covers residential, commercial, institutional, and industrial structures. Construction costs make up a substantial portion of project expenses, representing 60-80% of the total costs for roads and housing.

Construction materials, such as steel, bricks, cement, aggregates, fixtures, tiles, sand, fittings, paints, chemicals, minerals, aluminum, glass petroleum products, timber, and plastics, constitute nearly two-thirds of the overall construction costs.

The construction industry encompasses a diverse range of activities, including building new structures, renovations, additions, alterations, maintenance, repair, and engineering projects like highways or utility systems.

It is the second-largest employer in the country after agriculture, with around 31,000 enterprises. Over 95% of these enterprises employ fewer than 200 persons, while only a small percentage (3% between 200 and 500 employees, and just over 1% with more than 500 employees) have a larger workforce.<sup>3</sup>

### 3.1 Distinctive Features of the Construction Industry

The construction sector is characterized by a complex, intertwined, and dynamic nature, where there's a paradoxical relationship between projects and their processes<sup>6</sup>. Palmer (2003, 2004)<sup>7,8</sup> suggests that construction doesn't act like a traditional industry but rather as a conglomerate of smaller industries, an 'industry of industries', a 'meta-industry', which encompasses various challenges, inefficiencies, and paradoxes, alongside the potential for invention and innovation. Construction stands out because its success is primarily judged by project outcomes rather than the internal operations of the companies involved. Moreover, every project is shaped by its specific context and technical needs. The high stakes of safety and quality at construction sites are intensified by the project's dynamic nature. These elements, in turn, significantly affect the financial outcomes of the project and the financial consequences for all parties involved.

In terms of a performance evaluation, two projects were analyzed, focusing on the primary organizations associated with them and their performance against key parameters.

Project 1 involved Client-P, Consultant-A, and Contractor-X, while Project 2 involved Client-Q, Consultant-B, and Contractor-Y. (The actual names of the projects have been withheld for confidentiality).

Project 1 progressed according to schedule, whereas Project 2 experienced delays. The comparison of BSC metrics between the two projects clearly indicates that adherence to these metrics by one project participant is not sufficient for a successful project outcome.

|                              | A            | P        | X            | B            | Q        | Y            |
|------------------------------|--------------|----------|--------------|--------------|----------|--------------|
|                              | Consultant 1 | Client 1 | Contractor 1 | Consultant 2 | Client 2 | Contractor 2 |
| <i>Financial</i>             | Strong       | Strong   | Strong       | Average      | Average  | Very strong  |
| <i>Customer</i>              | Strong       | Strong   | Strong       | Average      | Average  | Very strong  |
| <i>Internal process</i>      | Strong       | Strong   | Strong       | Average      | Average  | Very strong  |
| <i>Learning &amp; Growth</i> | Strong       | Average  | Average      | Weak         | Average  | Very strong  |

Range- Weak, Average, Strong, Very Strong

**Fig 2. Rating of 2 projects for the BSC perspectives**

### 3.2 Enhancements for the Construction Industry

The Indian Government has recently introduced new strategies to boost investment in the construction industry. Launched in September 2014, the Make in India program seeks to encourage investment, promote innovation, enhance skill development, protect intellectual property rights, and establish high-quality manufacturing infrastructure.

This initiative covers 25 different sectors of the economy, including automobiles, aviation, biotechnology, chemicals, defense manufacturing, and more. In the construction sector, the government has put in place measures to simplify funding processes. For example, 100% foreign direct investment (FDI) is now allowed through the automatic route for various projects such as townships, housing, and infrastructure development. Specific conditions apply, such as a minimum land area of 10 hectares for serviced housing plots and a minimum built-up area of 50,000 sq. mts. for construction projects.

Industrial Parks also benefit from this initiative, as 100% FDI is permitted under the automatic route. It is important to note that the initiatives in other sectors of the economy also have a significant impact on the construction industry.

**Table 1 Impact of Make in India on the Construction Industry**

|   |                                                                                                              |
|---|--------------------------------------------------------------------------------------------------------------|
| A | Direct impact through Construction sector                                                                    |
| 1 | Building of residential, retail, commercial and hospitality sectors                                          |
| 2 | Developing of Smart cities and townships                                                                     |
| 3 | Creating of infrastructure                                                                                   |
| B | Indirect impact through other sectors of the economy                                                         |
| 1 | Building of manufacturing facilities and storage houses                                                      |
| 2 | Construction of R&D labs                                                                                     |
| C | Quality and Safety                                                                                           |
| 1 | Demand of best-in-class buildings and infrastructure adopting international standards of quality and safety. |

### 3.3 Challenges in the Construction Industry

The construction sector faces numerous obstacles. The industry lacks organized training and skill development opportunities. Various firms are subject to multiple regulations without a unified regulatory structure. Dispute resolution is arduous and ineffective, leading to costly and time-consuming conflicts. The growing number of government regulations presents a hurdle for construction management. A shortage of skilled labor is evident.

Institutional financing and essential infrastructure such as power and roads are insufficient. Balancing environmental preservation with meeting the demands of a developing nation like ours is a major constraint.

**Table 2 Current status of construction industry**

| Sl. No | Major challenges faced by the construction industry         |
|--------|-------------------------------------------------------------|
| 1      | Lack of structured training and skill building              |
| 2      | Tedious and inefficient Regulatory framework                |
| 3      | Lengthy dispute resolution                                  |
| 4      | Shortage of skilled workers                                 |
| 5      | Inadequate institutional finance                            |
| 6      | Shortage of supporting infrastructure like power and roads. |
| 7      | Balance with the fragile ecosystem                          |

### 3.4 Balanced Scorecard for the Construction Industry

A unique scorecard must be created specifically for the construction industry. After analyzing the components of a balanced scorecard, it is determined that these components are more closely related to the 'Project' rather than the 'Organization' itself. The table below demonstrates this relationship. As we move up from the bottom, the focus of the components shifts from the organization to the project. The table highlights the context in which the components can be assessed for a scorecard tailored to the construction industry.

Table 3 BSC parameters List

| Parameter         | Indian Construction Industry                                                                                                                                                                                                                                                                                                        |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Financial         | Revenue for any construction organization is earned via the projects of the company.                                                                                                                                                                                                                                                |
| Customer          | Unlike other industries, in this sector, the customer associates the project with a number of construction organizations- the developer, the designer, the contractor, etc. instead of just one company. In other words, one organization may have different customers for its different projects.                                  |
| Internal process  | Internal process relates to both the project as well as the company. The processes set by the company would be applied to the project to achieve customer satisfaction and financial success. The processes of one company would merge and co-exist with other companies working on the same project, all aiming for similar goals. |
| Learning & Growth | Skill development is related to both the organization and the project. The organization would train their employees in the type of service they perform (generic); the organization would also need to train their employees on the special requirements of a project that team is working on (specific).                           |

#### 4. Conclusion

Based on the referenced study and the identified parameters relevant to the construction sector, a suggested model can be effectively applied to the industry. This model advocates the use of balanced scorecard metrics and details the essential measures and initiatives to be implemented at both organizational and project levels.

| Strategy                                                                                                                                          | Objectives                                                                                                                                                                 | Measures                                                                                                                                                                                                                                   | Initiatives                                                                                                                                                         |
|---------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Financial <ul style="list-style-type: none"> <li>Increased productivity</li> <li>Increased revenue</li> </ul>                                     | <ul style="list-style-type: none"> <li>Obtain efficiency in operational costs of projects</li> <li>Ensure maximum utilization of resources</li> </ul>                      | <ul style="list-style-type: none"> <li>Revenue per sq. ft of project</li> <li>Cost per sq. ft of project</li> <li>Revenue per manpower/ man month provided on project</li> <li>Cost per manpower/ man month provided on project</li> </ul> | <ul style="list-style-type: none"> <li>Monitoring regularly, monthly</li> </ul>                                                                                     |
| Customer Satisfaction <ul style="list-style-type: none"> <li>Safe structure</li> <li>Low cost</li> <li>World class standard</li> </ul>            | <ul style="list-style-type: none"> <li>Strive for optimization of cost</li> <li>High quality of product</li> <li>Safety in product</li> <li>Trust in brand name</li> </ul> | <ul style="list-style-type: none"> <li>Value Engineering Workshop Results of project</li> <li>Inspections and audits result of project</li> <li>Market survey of project and company</li> </ul>                                            | <ul style="list-style-type: none"> <li>Conduct Value Engineering Workshops</li> <li>Conduct Inspections and audits</li> <li>Create market knowledge base</li> </ul> |
| Internal Process <ul style="list-style-type: none"> <li>Improve Quality</li> <li>Improve Safety</li> <li>Improve Efficiency of Product</li> </ul> | <ul style="list-style-type: none"> <li>Enhanced safety and quality in all processes</li> <li>Improve efficiency</li> </ul>                                                 | <ul style="list-style-type: none"> <li>Checklist for safety &amp; quality in design stage, procurement stage, execution stage and closure of company on project</li> </ul>                                                                 | <ul style="list-style-type: none"> <li>Workshops to brainstorm ideas and review design, procurement and execution</li> </ul>                                        |
| Learning & Growth <ul style="list-style-type: none"> <li>Improve trainings</li> <li>Encourage Innovation</li> </ul>                               | <ul style="list-style-type: none"> <li>Improve learning of employee</li> <li>Improve innovation culture</li> </ul>                                                         | <ul style="list-style-type: none"> <li>R&amp;D Development (generic and specific)</li> <li>No. of innovative ideas on project</li> </ul>                                                                                                   | <ul style="list-style-type: none"> <li>Training and skill build up</li> <li>Collaboration over innovation</li> </ul>                                                |

Fig. 3 Proposed model of Balance Scorecard for construction industry

## 5. References

- <sup>1</sup>“Benchmarking.” Def.1 *Oxforddictionaries.com*. Oxford Dictionaries, 2<sup>nd</sup> Edition. Web 21 Aug2016.
- <sup>2</sup> Lewis, R. W. (1955) Measuring, Reporting and Appraising Results of Operations with Reference to Goals, Plans and Budgets, *Planning, Managing and Measuring the Business: A case study of management planning and control at General Electric Company*, New York:Controllwership Foundation.
- <sup>3</sup> Kaplan, R. S. and D.P. Norton (1996b) Using the Balanced Scorecard as a Strategic ManagementSystem,” *Harvard Business Review* (January-February):75-85
- <sup>4</sup> MorongwaMakakane (2007) Successful Step by Step Implementation of the Balanced Scorecard, *Workinfo.com Human Resources Magazine* Volume 1 Issue 10, 2007
- <sup>5</sup>India Planning Commission, Twelfth five-year plan (2012/2017)/Planning Commission, Government of India
- <sup>6</sup> Nam, C.H. & Tatum C.B. (1988) Major characteristics of constructed products and resulting limitations of construction technology. *Constr. Mgmt. and Economics*, 6, 133-148.
- <sup>7</sup> Palmer, K.D., 2003, General Schemas TheorySee <http://holonomic.net>, date accessed 21 August 2016
- <sup>8</sup> Palmer, K.D., 2004, Nondual Science,see <http://archonic.net>, date accessed 21 August 2016
- <sup>9</sup><http://www.makeinindia.com/>, August 2016
- <sup>10</sup>Shirur&Torgal, (2014), “India Construction Industry: Challenges for the Construction Managers”, *IOSR Journal of Business and Management*, Volume 16, Issue 4, Ver III, p65-69.