

# **BALANCE SCORE CARD - A STRATEGIC PROJECT MANAGEMENT TOOL FOR INFRASTRUCTURE DEVELOPMENT PROJECTS**

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## **ABSTRACT**

Infrastructure typically refers to the technical structures that support a society, such as roads, water supply systems, sewers, hydro-power plants, electrical grids, telecommunication networks and so forth. The term Infrastructure in this context is expected to extend the meaning of construction by way of its magnitude, development time, key stakeholders, project budget, project financing and end-users' perspectives of the final outcome of the project.

The process of decision making presents itself a complex scenario involving multi stages and diverse stakeholders. Such scenarios create the bottlenecks to the success of the projects because breaking down its complexities is unlikely without a proper understanding of its content.

Effective management of these projects therefore requires proper decision making on various aspects without limiting to its completion budget, delivered quality and project duration. Consideration of further aspects such as desired performance/ technology level, effective utilization of resources and acceptance by the customer has become increasingly important.

In order to meet the aforesaid competing demands in the industry, the conventional construction project management (PM) has led to strategic project management (SPM) approaches. Out of many approaches that can be adopted in strategic project management, the Balance Score Card (BSC) technique was tried as a model for this need and as an effective PM tool that can be used to evaluate project outcomes through; Financial perspective; Customer perspective; Internal perspective and Innovation and Learning perspective.

This new concept was developed and tested with a sample of different stakeholder organizations (clients, designers, consultants and contractors) in several infrastructure projects in Sri Lanka. The findings confirmed strong acceptance of the BSC technique as a more appropriate decision making tool for management of infrastructure projects due to its capability to evaluate various project concerns at the same time including organizational business objectives. This assures that the most critical factors are reviewed before making pertinent decisions.

This technique can be further developed as a computer application to evaluate various project decisions with different divisions, organizations, stakeholders located at the same place, different section or different regions over the internet very easily. Further improvements are possible to provide emphasis for specific project outcomes effectively with regard to organizational objectives using appropriate weighted scale for different parameters.

***Key Words:*** *Balance scorecard, Strategic project management, Project Management tools, infrastructure projects*

## 1. INTRODUCTION

In recent years, the discipline of Project Management (PM) especially in infrastructure projects has changed its application dramatically to tally with emerging management processes and philosophies related to implementation of organizational development and strategic change. Most of the recent literature on best business practice introduces many different terms related to PM, including management by projects, project-based organizations, project-oriented businesses, temporary project organization and project form of organizational structure.

Reasons are numerous, they reflect endeavours of modern organizations to respond to the environmental changes by adopting specific patterns of coping behaviour including;

- The implementation of strategic management through projects makes the achievement of highest returns possible by optimal utilization of resources available (including time, money and people) more realistic;
- The expansion of human knowledge to create the need for an effective organizational design to support knowledge management for competitive advantage through intra-organizational integration, professional and functional concurrence based on project teams, inter-organizational networking “win-win” partnerships in project situations (Cicmil, 1997).

Beyond the Knowledge Areas and Processes in PM used to meet the successful completion of

projects (meeting the set time, cost and quality outline) managing projects strategically in an organization significantly help to improve the effective use of resources, profitability and industrial/ market sustainability (Maylor, 2001 Kaplan & Norton, 2008).

Therefore it is understood that an infrastructure project has diverse perspectives in its management other than its individual success factor over the fact that the project being completed effectively.

Apart from many strategies and tools that could be adopted in the identified need, Balance Scorecard method developed by Kaplan and Norton was found as an effective approach.

Balance Scorecard (BSC) has four specific perspectives over the subject which each perspective can be customised based on the strategic need of the user. Therefore with this method an infrastructure project can be evaluated by any key stakeholder such as Client/ Investor, Designer/ consultant, Contractor and End-user.

## 2. PROBLEM STATEMENT

According to Clements and Gido, 2007; “A project has a well defined objective – expected result or product. The objective of the project is usually defined in terms of scope, schedule and cost”. The situations are similar and other scenarios in current infrastructure development context give rise to the question that “Is it sufficient a project being successful by only

*achieving the set time, cost and quality targets?"*

Answer shall be managing such projects ensuring successful outcomes from implementing effective project management that could result in positive impacts on human, social and economic environments (Maylor 2009, PMI 2004).

Different organizations set their vision and mission to be a successful industry player. Such vision is then supported with carefully selected goals and objectives. Thereafter achieving such goals and objectives are set with stronghold strategies (Porter, 1996). Unless an organization's individual projects do not reflect its vision and do not align with its strategies, a project being completed within the set frame is a mere success. Each and every mission/project undertaken by an organization should drive its industrial sustainability and profitability (Maylor, 2009).

Therefore managing infrastructure projects always raise the bar for the management practices in order to result effective outcomes. Then the questions rise that; How to ensure the successful outcome of a project that aligns with the organizations strategic plan? How an infrastructure project can effectively deliver various stakeholders' expectations? How to stay control in an infrastructure project when making decisions?

It was found in other researches and text books there are many approaches to align project success with its organizational objectives.

This paper leads to a study that evaluated the effectiveness of the BSC technique as a strategic PM tool in infrastructure projects.

### **3. LITERATURE REVIEW**

In most of modern literature it is repeatedly found and highlighted the importance of SPM with regard to infrastructure development projects. As shown in Figure 1, project performance is vulnerable to external industrial, social, economic and legal environments (market trends). Similarly, change in customer needs, satisfaction levels, income/ business revenue and living standards (customers) are vital in defining a successful project outcome. Not limiting to external environment and customers, industrial rivalry (competitors) decide the levels of budgets/ finances which will ultimately keep the developments on the move as an industry (Maylor, 2009).

In order to identify the importance of strategy in project management, it is first looked at what are the common failures in PM in recent past. Based on the partial analysis done to identify the key causes of project failures followings are the four top ranks:

1. Organizational strategy does not include role of projects in delivery of organizational objectives

2. Project Management not viewed as a strategic capability
3. The organization lacks a coordination mechanism for resources
4. Project goals not aligned with the organizational goals

As far as a project success is concerned, the alignment of project objectives with the organization's long-term strategy seems vital. In developing a long range project strategy, following concerns are found most critical;

- Delivery time (project periods are being tightened)
- Human resource management (selecting a suitable project team)
- Rate of change of technology
- Organizations become more customer focus
- Customers' and suppliers' influence
- Effective selection of tools and techniques (Green, 200)

When considering the on time delivery of projects, which is a part of effective project management, it might not be someone's first priority if he /she would go digging in portfolio profitability. Time to time with the changes in the industry there might be more other projects or some customer requests where one can invest on for profitable outcome, but unless it is not aligned to the organizations strategic goals it is less effective to support those kinds of project since the organization might lose focus (Gale, 2007).

### **3.1 The Balance Scorecard (BSC) – Tool for Strategic Alignment**

This concept was developed in 1992 by Robert S. Kaplan, the Arthur Lowes Professor of Accounting, Harvard Business School and David P. Norton, President of Nolan and Company Inc. Massachusetts.

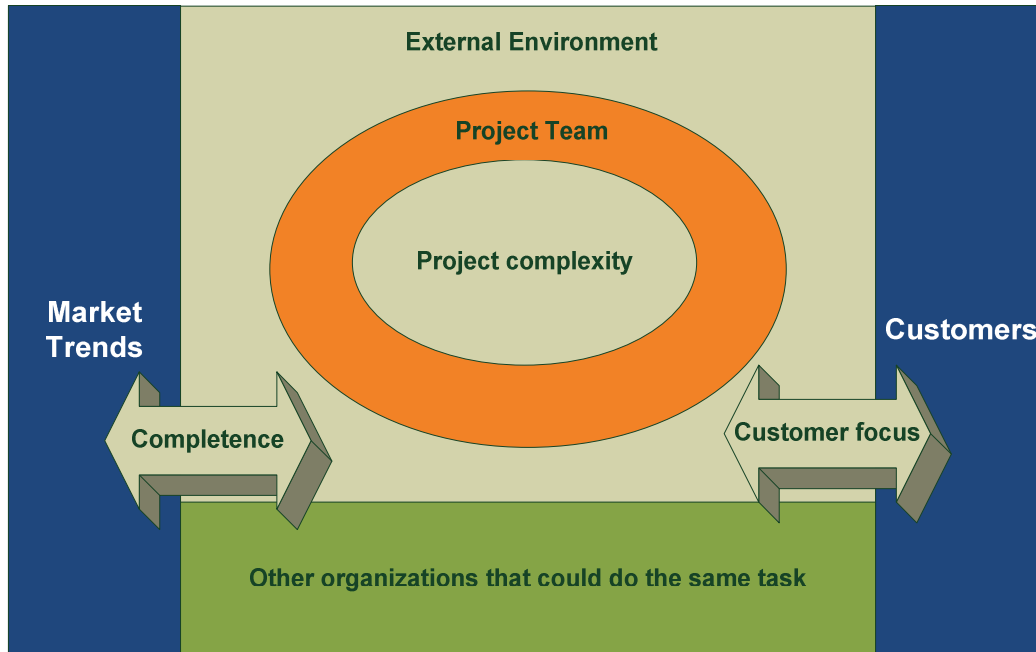


Figure 3.1: Project external environment (Maylor, 2009)

The BSC technique was intended to give directions to managers wanted balance presentation of both financial and operational measures (Kaplan and Norton, 1992).

Even an excellent set of BSC measures does not guarantee a winning strategy unless the strategy translated into specific measurable objectives is not met. The BSC allows managers to view the company's performance in four major perspectives which provides answers to four basic questions;

1. Financial perspective (How do we look to shareholders?)

2. Customer perspective (How do customers see us?)

3. Internal Perspective (What must we excel?)

4. Innovation and learning perspective (can we continue to improve and create value) (Kaplan and Norton, 1992)

As given above, this concept clearly defines various perspectives into business management so that it can be clearly used to define strategies to overcome deficiencies within the organization (Figure 2). Having understood the value of the concept, it was led to see the comparison of this concept as a strategic tool in PM in infrastructure development projects.

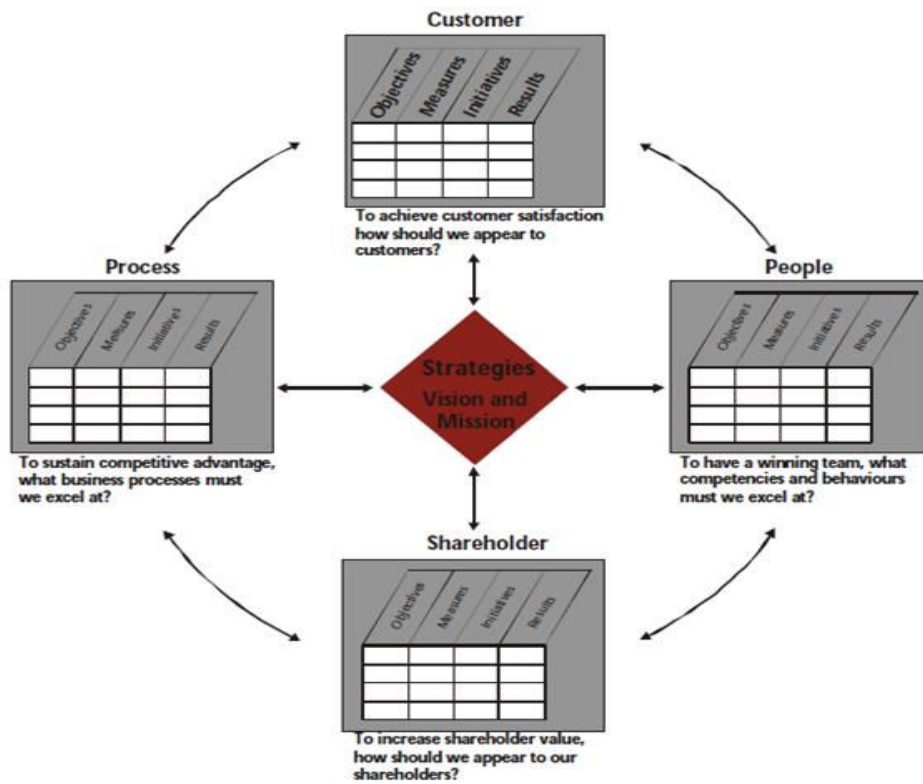


Figure 3.2 : BSC in project perspective (Cicmil, 1997)

#### 4. RESEARCH METHODOLOGY

Study with regard to the intended finding was done in two components. Firstly it was done an evaluation to find the existing gaps between traditional project management practices with BSC technique based on average industrial practices and past projects materials. Table 1 shows the summary of the evaluation done and it illustrates the lacking areas in a project life cycle with key stakeholders (client/ investor (CI), designer/ consultant (DC) and contractor/ performing organization (CO)).

Thereafter it was designed the study in order to evaluate the proposed model in infrastructure projects based on the Action Research approach (Kumar, 2008).

Action Research is a systematic approach to improve existing practice or take action to deal with an issue. Since it was expected to improve an existing methodology, to introduce a better approach, Action Research study method was found adaptable.





The tool selected was a structured questionnaire comprising five sections. The sections were designed to evaluate the sample on following basis;

Section 1: to study the respondent's knowledge and exposure to infrastructure development projects.

Section 2: to study about the respondents' organizational usage of PM practices.

Section 3: to study about respondents' organizational business strategy in their projects.

Section 4: to study comparison between existing system and suggested BSC technique.

Section 5: to learn key concerns based on BCS technique that could be used as a base model (Table 2) in infrastructure projects.

## **5. DATA ANALYSIS AND EVALUATION OF RESULTS**

Out of the data selected through the sample of 32 respondents who are engaging in infrastructure projects and their organizations performs various stakeholder roles within the industry, section wise analysis was done in order to study the respondents' results.

As shown in figure 3, descriptive statistics of section 1 showed that respondents' average PM knowledge and experience is nearly 67%.

Therefore it can be considered as a measure that the sample selected into the study was a good sample which their responses are valid to the study.

Figure 4 illustrates the descriptive statistics of organizational PM background of the respondents. In average their organizational PM usage was around 68%. Therefore it can be mentioned that the organizational exposure to PM practices are above average (50%).

Descriptive statistics in figure 05 shows the organizational level of business strategy. This is an indication of how well the organizations do with their business strategies in their projects. 75% average level means that they do well in their projects in-line with their business.

Most importantly figure 06 refers to the respondents' view on BCS technique as a PM tool in their projects which could be used in par with their existing system. Very specifically they all have appreciated the new approach with an average as high as 80%.

Table 5.1 : Sample BSC in a highway project (QPR Software PLC, 1992-2000)

<b>Project Name:</b>	ABC Expressway				
<b>Facility/ Infrastructure Detail:</b>	25 km- 6 lane Highway from City A to City B, bridging the country's main Airport to the capital city				
<b>Project Est. Value</b>	18,800 M (LKR)				
<b>Project Objectives</b>	<ul style="list-style-type: none"> <li>• Create a high speed link between City A and City C (International Airport)</li> <li>• Serve the traffic to from the Northern part of the island</li> <li>• Link with the rapid industrial expansion in the area</li> <li>• Encourage outward migration of people living under congested condition in around City A</li> </ul>				
<b>Project Duration</b>	36 months				
<b>Evaluating Party</b>	Client/ Investor				
<b>BSC Area*</b>	<b>BSC Measure</b>	<b>G</b>	<b>Y</b>	<b>R<sup>1</sup></b>	<b>Average</b>
FP	Has minimum 80% project funding reserved for the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Will the economic situation affect the expected completion?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Will the project be able to complete within max. 15% contingency limit?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Is there any other source of funding available?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
CP	Has this facility being needy to people?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Will the public see this as the solution for their need?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Will public pay the fare to use this facility?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Will this facility sufficient to the current need?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Will this facility be serving the community for next 5 years?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
IP	Will the organization's existing capacity be able to hle this project?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Will this project brings capacity building to the organization?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Will this project add competitive advantage to the organization?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Will the existing project teams deliver the expected outcomes?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
LI	Will this project bring new technologies to the organization?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Will this project be an innovative solution for the existing deficiency?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Has this type of projects enabled knowledge transferring skills developments in previous occasions?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Note <sup>1</sup>: Compliances with standard baselines are classified as green, yellow, red, with the numerical assignments 2, 1, 0, respectively. These numerical values can be calculated for the total percentage of compliance in each phase.

G – “Green” means that project performance agrees with project plans and stakeholder expectations;

Y - “Yellow” means that deficiencies in project performance have been noted, are being monitored and corrective action will have to be implemented in the near future;

R - “Red” means that serious deficiencies have been noted, the project is in jeopardy/crisis (Moe, 2007).

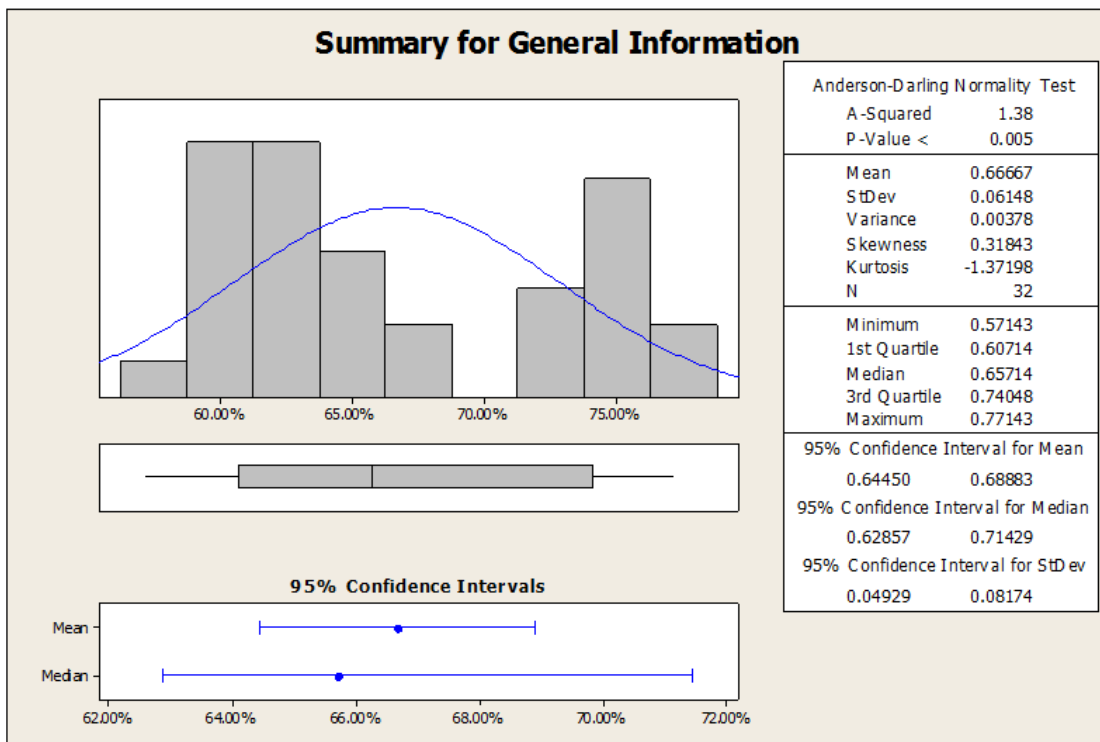


Figure 5.1 : Descriptive statistical information of respondents’ general information

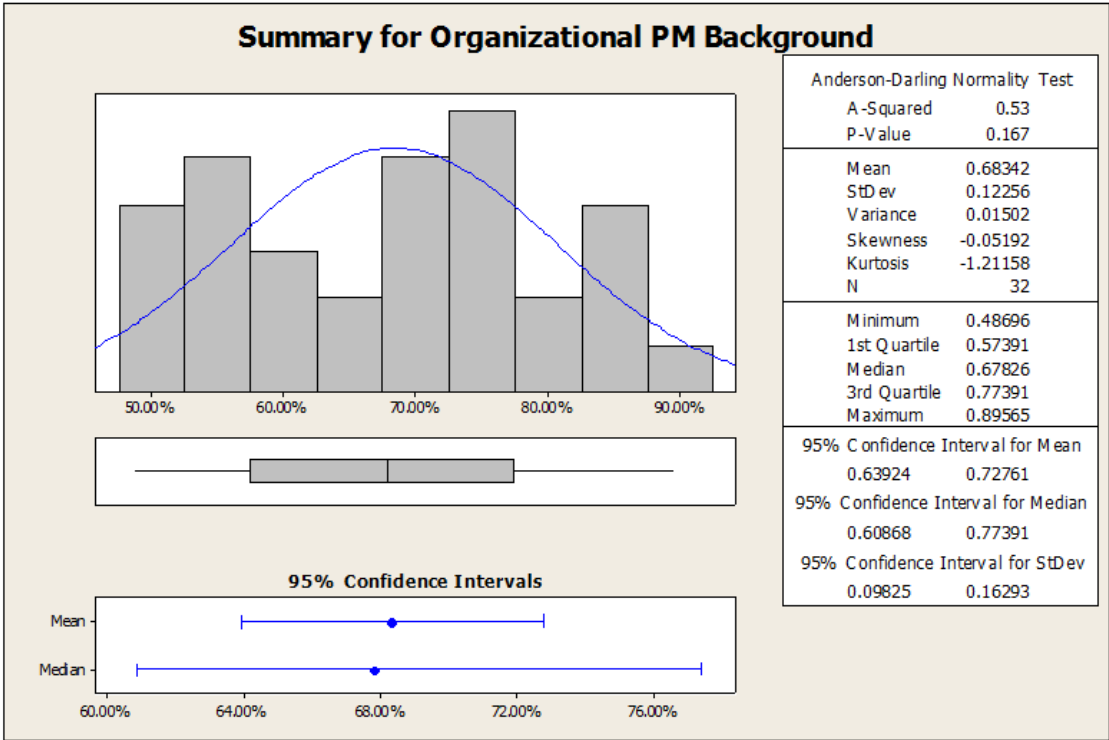


Figure 5.2 : Descriptive statistical information of respondents' organizational PM background

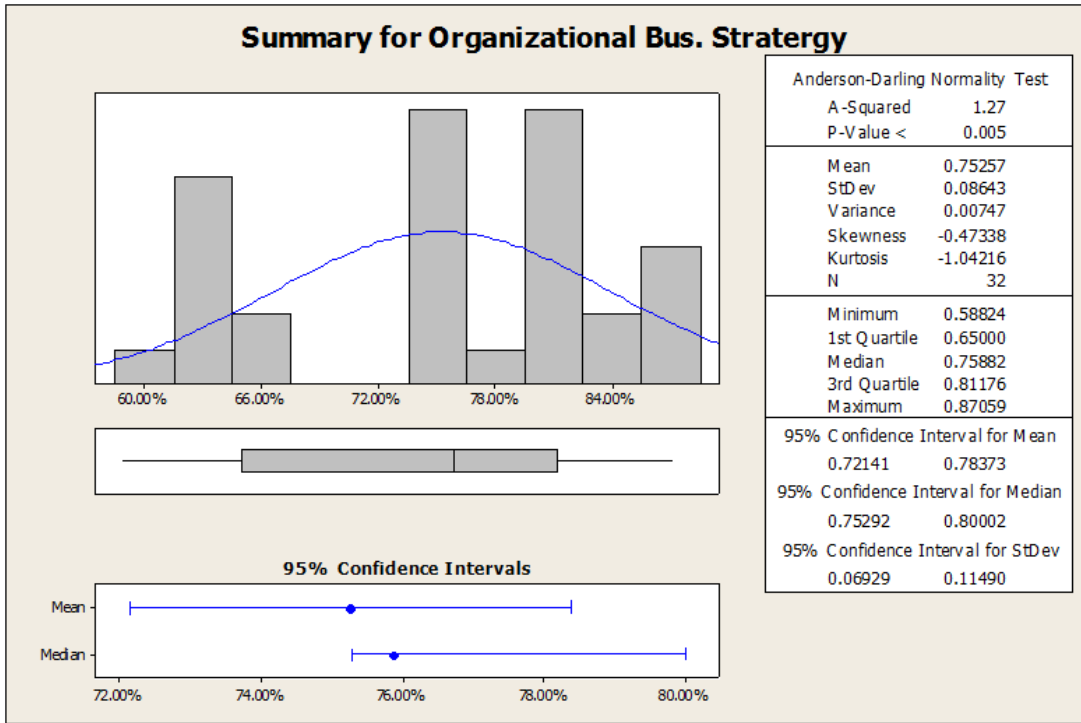


Figure 5.3 : Descriptive statistical information of respondents' organizational business strategy

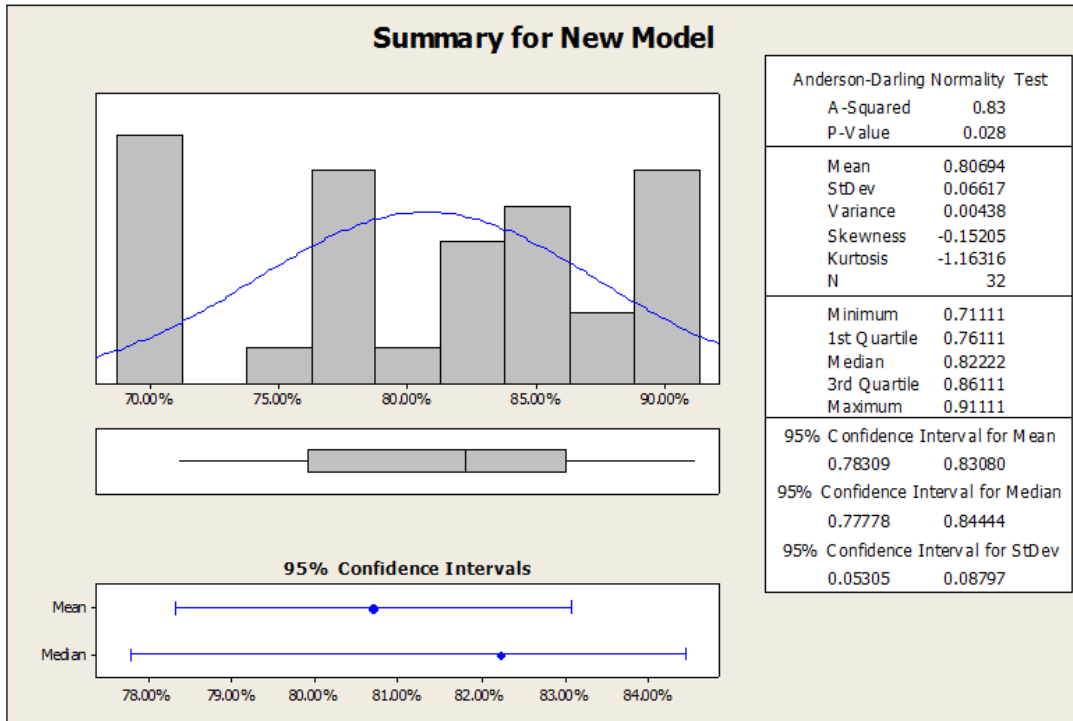


Figure 5.4 : Descriptive statistical information of new model

## 6. CONCLUSION

As the previous section outlined, BSC technique has been enabled to improve the strategic vision of a team of professionals whom they have a good PM background, their organizations using PM in their infrastructure development projects in a high stake and they have successfully viewed their organizational business strategy in their projects.

BSC has the visibility to organizational concerns such as internal perspective and Learning and Innovation perspective which have a stronger evaluation on strategic business terms in projects. For example; through BSC technique an organization/ project manager can view new

technology transfer to the organizational as revenue. Other than that BSC it can be customized according to the organizational needs so that it will perfectly define the business strategy depending on the situation of the project and its environment.

There are other advantages of the BSC technique over the traditional PM approach. BSC not only considers the individual organizational view of the project but also looks at other key stakeholders' aspects and concerns into the project.

BSC also provides a quick guide to project outline. So that whenever a quick decision has to be made, it is matter of properly structuring

the BSC measures, and then the solution is eminent.

With all recommendations it is concluded that the BSC is an effective project management tool for infrastructure development projects.

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