

# A Survey on the Criteria for Measuring the Profitability of a Construction Organization

Aftab Hameed Memon

Department of Civil Engineering  
Engineering Quaid-e-Awam University  
of Engineering, Science & Technology  
Nawabshah, Pakistan  
aftabm78@hotmail.com

Mohsin Ali Soomro

Department of Civil Engineering  
Engineering Quaid-e-Awam University  
of Engineering, Science & Technology  
Nawabshah, Pakistan

Nawab Ali Lakho

Department of Civil Engineering  
Engineering Quaid-e-Awam University  
of Engineering, Science & Technology  
Nawabshah, Pakistan

Ammaar Noor Memon

Indus University  
Karachi, Pakistan

Muhammad Aslam Bhutto

Department of Civil Engineering  
NED University  
Karachi, Pakistan

**Abstract**—Any organization's performance depends on profitability which depends on several adopted criteria. The preference and level of adoption of these criteria varies, on different industries. This study focuses on investigating the criteria of profitability in the construction industry. This investigation involves a survey to seek the perception of the contractors involved in handling physical activities of construction works. The survey considered 63 questionnaire forms. Statistical analysis was performed to compute the frequency and the relative importance index. The results indicated that structural capital, lifetime values, capital structure and competitor actions are the top 4 criteria implemented in construction organizations to measure profitability.

**Keywords**—profitability; criteria of profitability; construction organization

## I. INTRODUCTION

Profitability is considered a fundamental aspect for any enterprise. The same apply for organizations in the construction industry, which is a very fast growing industry, especially in developing countries such as Pakistan. Several researchers have identified various metrics of profitability measurement such as intellectual capital, relational capital, human capital and structural capital [1]. Another study showed that criteria for measuring profitability include unexpected product reliability failures, firm innovativeness, product reliability, warranty costs, unexpected product failure costs, moderating effect of industry innovativeness and firm return on assets (ROA) as the major metrics of profitability measurement [2]. Comprehensive review of literature resulted in finding 24 criteria for measuring organization profitability which are presented in Table I.

## II. METHODOLOGY

Data was collected by conducting a survey amongst the representatives of contractor organizations handling construction projects in Pakistan. The survey was done using a

structured questionnaire form designed based on literature review as discussed in Table I. For collected completed questionnaire forms, frequency was computed with SPSS. Using this, frequency, average index (AI) for each criterion was calculated using the following equation:

$$R.I.I. = \frac{\sum_{i=1}^n a_i m_i}{5N} \quad (1)$$

where: a=constant expressing the weight assigned to each response, n=frequency of each response, N=total number of responses

TABLE I. CRITERIA FOR MEASURING PROFITABILITY

Criterion	References
Intellectual capital	[1, 3-8]
Relational capital	[1, 9-13]
Human capital	[1, 9-13]
Structural capital	[2, 9-14]
Unexpected product reliability failures	[2, 14-17]
Firm Innovativeness	[2, 14, 18-19]
Product reliability	[2, 15-16, 18, 20]
Warranty costs	[2, 17, 21-23]
Unexpected product failure costs	[2, 21-22, 24]
Moderating effect of industry innovativeness	[2, 14, 19, 20]
Firm Return On Assets (ROA)	[2, 17, 21-22, 25]
Capital Structure	[26-28]
Return on equity (ROE)	[26, 29-31]
Short term debt/total assets	[26, 29-31]
Long term debt/total assets	[26, 29-31]
Sales Growth	[26, 29-31]
Retention Resources	[32-34]
Customer actions	[32-35]
Competitor actions	[32-35]
Industry type	[26, 29-30, 32]
Annual revenue	[32-33, 35]
Firm size	[26, 29-30, 32]
Cross-buying	[32-35]
Lifetime values	[32-34]

III. RESULTS AND DISCUSSION

A. Demographic Information of the Respondents.

Demographic information presents the characteristics of the participating respondents. During the survey, 100 questionnaire forms were distributing and 63 completed forms were received back and analyzed. The results of various characteristics of the respondents which include academic qualification and experience are presented in Table II.

TABLE II. DEMOGRAPHY OF THE RESPONDENTS

Metrics of profitability	R.I.I. Value	% age	Cumulative %age
<b>Academic Qualification</b>			
Diploma	18	28.6	28.6
B. E	34	54.0	82.5
Masters	8	12.7	95.2
B. Tech	3	4.8	100
<b>Experience (Years)</b>			
0-5	23	36.5	36.5
6-10	15	23.8	60.3
11-15	9	14.3	74.6
>15	16	25.4	100

TABLE III. LEVEL OF IMPLEMENTATION

Metrics of profitability	Level of implementation					R.I.I. Value	Rank
	1	2	3	4	5		
Structural capital	2	8	16	21	16	0.73	1
Lifetime values	6	7	14	17	19	0.71	2
Capital Structure	2	12	16	19	14	0.70	3
Competitor actions	3	10	17	20	13	0.70	3
Unexpected product failure costs	3	12	16	19	13	0.69	4
Return on equity (ROE)	1	14	18	17	13	0.69	4
Industry type	5	8	17	21	12	0.69	4
Firm Return On Assets (ROA)	4	10	18	18	13	0.68	5
Firm size	7	6	16	23	11	0.68	5
Moderating effect of industry innovativeness	2	11	20	21	9	0.68	5
Firm Innovativeness	3	12	17	22	9	0.67	6
Long term debt/total assets	2	13	19	19	10	0.67	6
Sales Growth	4	11	16	24	8	0.67	6
Annual revenue	3	11	20	20	9	0.67	6
Product reliability	6	10	12	28	7	0.66	7
Human capital	3	12	22	15	11	0.66	7
Warranty costs	4	8	22	23	6	0.66	7
Retention Resources	7	7	22	15	12	0.66	7
Short term debt/total assets	6	8	21	19	9	0.65	8
Customer actions	7	12	14	17	13	0.65	8
Cross-buying	3	15	19	15	11	0.65	8
Relational capital	10	8	19	14	12	0.63	9
Intellectual capital	10	11	20	13	9	0.60	10
Unexpected product reliability failures	8	14	21	12	8	0.59	11

B. Level of Implementation

The respondents were asked to rank the level of implementation for each criterion of profitability adopted by their organization. The results obtained are presented in Table

III. From Table III it can be perceived that ‘structural capital’ is the most commonly implementing metric in the construction projects of Pakistan .

TABLE IV. LEVEL OF INFLUENCE

Criteria of profitability	Level of influence					R.I.I. Value	Rank
	1	2	3	4	5		
Lifetime values	5	9	11	14	24	0.74	1
Structural capital	2	10	11	27	13	0.72	2
Human capital	4	9	16	14	20	0.72	2
Firm size	4	11	15	14	19	0.70	3
Industry type	1	9	24	15	14	0.70	3
Retention Resources	3	6	23	19	12	0.70	3
Annual revenue	6	6	18	18	15	0.70	3
Product reliability	4	7	20	20	12	0.69	4
Cross-buying	5	8	17	22	11	0.68	5
Long term debt/total assets	4	12	17	15	15	0.68	5
Sales Growth	3	9	24	17	10	0.67	6
Capital Structure	4	14	16	15	14	0.67	6
Relational capital	3	12	17	24	7	0.66	7
Firm innovativeness	3	10	24	16	10	0.66	7
Unexpected product reliability failures	3	13	22	13	12	0.66	7
Customer actions	2	15	18	19	9	0.66	7
Competitor actions	6	10	18	18	11	0.66	7
Short term debt/total assets	6	11	18	16	12	0.65	8
Firm Return On Assets (ROA)	1	16	21	16	9	0.65	8
Intellectual capital	7	10	19	17	10	0.64	9
Warranty costs	5	14	18	16	10	0.64	9
Moderating effect of industry innovativeness	5	10	29	8	11	0.63	10
Return on equity (ROE)	4	15	21	13	10	0.63	10
Unexpected product failure costs	8	6	26	19	4	0.62	11

C. Level of Influence of Criteria on Profitability

Influence level of each criterion on profitability was measured according to the 5 point Likert scale and analysis results based on relative importance index values are shown in Table IV. From Table IV it is observed that the criterion ‘lifetime values’ cause extremely high influence on the company’s profitability.

IV. CONCLUSION

This study investigated the level of implementation and influence of various criteria used to measure profitability. Investigation involved a survey through structured questionnaires. Against 100 distributed questionnaire forms 63 were finally received and then statistically analyzed to calculate frequency and relative importance index values. The results indicated that ‘structural capital’, ‘lifetime values’, ‘capital structure’ and ‘competitor actions’ are the top 4 criteria implemented in construction organization to measure profitability.

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