

Factors Affecting on Contractor’s Bidding Strategy in Residential Construction

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Abstract— General construction contractors develop bidding strategies to guide them in determining what jobs to bid and how to bid those jobs. The objectives of this paper are to identify the market conditioned lasted factors that the contractors consider when devising their bidding strategies and determine how they vary their bidding strategies based on those factors. Companies must have the capability to deal with various bidding situations successfully in today’s highly competitive construction market. The first step that the companies need to consider is whether to bid or not to bid when they received a tender invitation. The contractors’ decision is affected by various factors and influences. This decision is highly reliant to the specific project and the macro environment. It is difficult to make this crucial decision in a short time frame by the management team.

Key words: Competitive Bidding Process, Bidding Strategies, Relative important index (RII), Importance index (IMPI), Qualitative analysis, Quantitative Analysis

I. INTRODUCTION

There is much more to successfully bidding for construction work than accurately determining and pricing the material, equipment, and labour requirements for a job. The bidding process can be expensive, involving direct costs for information search, evaluation of specifications, subcontractor solicitation, and proposal preparation contractor cannot afford to haphazardly bid jobs. He must formulate some economical approach to obtaining work that will provide him the right volume at profitable prices. General construction contractors develop bidding strategies, either precisely or loosely defined, to guide them in determining what jobs to bid and how to bid those jobs. Contractors need to make strategic decisions in respect of: (I) project selection whether or not to bid for a job; and (ii) which mark-up should be included in the calculations. With limited response time to different bidding opportunities, contractors need to strive for projects that put them at an advantage in terms of pricing efficiency. We are examining right price of the bid. In this research, the study will focus on the bidders procurement stage in the project life cycle. The high complex process is a major characteristic of the bidding decision, which involves a large quantity of objectives and reflection of several internal and external factors. These common factors include: an increase in project size from that normally handled, doing work in an unfamiliar geographic location, taking on new types of work or moving between the public and private sectors, losing key personnel in one of three primary areas of operation, construction operations, administration and accounting, lack of managerial maturity in expanding operations, use of poor accounting systems, failure to evaluate project. Profitability, lack of equipment cost control, poor billing and collection

procedures and transition to a computerised accounting system from a manual one.

II. NEED OF THE STUDY

To study the factors affecting in the contractor’s bidding strategy and price and risk process in contracting bidding. In current market increasing the industry growth and project are more complex also client expecting.

more so bidding is more difficult in construction work. A bidding price may be dependent on the market or competitive environment in which it takes place. Also study regional market condition in construction industry. Furthermore the amount of competitors and their condition have to be taken into account in order to try to foresee their bidding strategy. If there are more projects available in the market or if there are just a few available to bid for will have significant impact on the bidding decision of contractors. With lots of projects available contractors can choose for what they bid for whereas the less projects are existent, the more likely contractors are forced to bid for works which may be partly out of their competence and therefore more risky in terms of successful implementation.

III. OBJECTIVE

- To study the competitive bidding process.
- To identify the key drivers affecting contractor’s competitive behaviour in construction projects.
- To evaluate contractors perspective regarding the critical factors affecting the competitive trend.
- To identify the approaches for solving the problem regarding to bidders competitive strategies.

IV. RESEARCH METHODOLOGY

The data collected to determine the most influential factors on project management of the project was done through a survey by explorative questionnaire to the respondents involved in daily activities of construction firms in various regions in the Gujarat region of India. The questionnaire was designed so that respondents can give the rank to their answers based on their opinions. The analysis of these data was done by a method named relative importance index (RII) method as well as important index (IMPI).

Factors
PROJECT CHARACTERISTICS
1. Duration of the project
2. Type of project
3. Job Start time
4. Methods of construction (manually, mechanically)
5. Location of the project
6. Type of equipment and type of labour required
7. Site clearance of obstruction and site accessibility

8. Design quality and team
9. Local climate
10. Degree of technological difficulties
11. Safety hazards
12. Completeness of drawings and specification
13. Type of procurement method
14. Degree of possible alternative to reduce cost
15. Expecting date commencing
BUSINESS BENEFITS
16. The benefits expected in terms of the company reputation
17. Need for continuity in employment of personal company reputation.
18. Establishing long relationship with client
THE CLIENT CHARACTERISTICS
19. Relationship with owner
20. The reputation among other contractors, with whom they had worked
21. The client requirement
22. Prompt payment habit of the client
23. The client financial capacity
24. Size of the client
THE CONTRACT
25. Type of contract and contract condition
26. Clearness of the work and specification
27. Fines for delay
28. Consultants' interpretation of the specification
29. The contract special requirements
PROJECT FINANCE
30. Original price estimated by the client
31. Work capital required to start the job
32. The possibility of delay or shortage on payment
33. The project mark-up size
34. Anticipated value of liquidated damage
35. Financial goals of the company
COMPANY CHARACTERISTICS/SITUATION
36. Availability of required cash
37. Ability of doing the job
38. Availability of required human resources
FIRM'S PREVIOUS EXPERIENCE
39. Past experience with similar project
40. Past profit in similar job
BIDDING SITUATION
41. Required bond capacity
42. Tendering duration
43. Bidding method
44. Prequalification requirements
ECONOMIC SITUATION
45. Risk involved in investment
46. Quality of available labour
47. Availability of equipment and materials
COMPETITION
48. Future project
49. Market condition

Table 1: Various Factors as below:

V. DATA COLLECTION

The target population included civil engineering and buildings construction firms of central Gujarat region of India. The contractors and developers of various

Ahmedabad and of various cities of Gujarat who work in Vadodara were targeted for survey. The details of various stakeholders and total numbers of were collected through internet. These details were considered as size of population to decide sample size of study.

We distributed over a 40 Questionnaires, out of which we received 30 questionnaires. The analysis of these questionnaires helped us calculate the Relative Importance Index and Important index of each clause. We received responses from a pretty diverse group of professionals i.e. contractors, builders, consultants, etc.

A. Relative Importance Index Technique

It is used to determine the relative importance of the various causes and effects of delays. The same method is going to be adopted in this study within various groups (i.e. contractors, project engineers, owner and site supervisor). The respondents were asked to rate each variable on a five-point Likert rating scale: 1= not important, 2= little importance, 3= moderately important, 4= important, and 5= very important is adopted and transformed to relative importance indices (RII) for each factor as follows:

$$RII = \sum W / (A * N)$$

Where, W is the weighting given to each factor by the respondents (ranging from 1 to 5), A is the highest weight (i.e. 5 in this case), and N is the total number of respondents.

B. Importance Index Technique

In this technique, for each cause/factor two questions were asked: What is the frequency of occurrence for this cause? And what is the degree of severity of this factor on project? Both frequency of occurrence and severity were categorized on a four-point scale. Frequency of occurrence is categorized as follows: always, often, sometimes and rarely (on 4 to 1 point scale). Similarly, degree of severity was categorized as follows: extreme, great, moderate and little (on 4 to 1 point scale).

C. Frequency Index

A formula is used to rank causes of delay based on frequency of occurrence as identified by the participants.

$$F.I. (\%) = \sum a (n/N) * 100/4$$

Where, a is the constant expressing weighting given to each response (ranges from 1 for rarely up to 4 for always), n is the frequency of the responses, and N is total number of responses.

D. Severity Index

A formula is used to rank causes of delay based on severity as indicated by the participants.

$$S.I. (\%) = \sum a (n/N) * 100/4$$

Where a is the constant expressing weighting given to each response (ranges from 1 for little up to 4 for severe), n is the frequency of the responses, and N is total number of responses.

E. Importance Index

The importance index of each cause is calculated as function of both frequency and severity indices, as follows:

$$IMPI (\%) = [F.I. * S.I.]/100$$

VI. RESULTS

A. PART – 1 RII Results

Top 10 causes ranked by Relative Importance Index (RII) technique the relative importance index, RII, was computed for each cause to identify the most significant causes. The causes were ranked based on RII values. From the ranking assigned to each cause of delays, it was possible to identify the most important factors or causes of delays in Indian construction industry.

Base on the ranking, the 10 most important causes of material management by RII were:

No.	Factors	RII
1	Prompt payment habit of the client (Terms of payment)- A	0.882
2	Type of project- B	0.879
3	Availability of required cash- C	0.822
4	Work capital required to start the job- D	0.812
5	Establishing long relationship with client- E	0.780
6	Past experience with similar project- F	0.736
7	Market condition- G	0.730
8	Quality of available labour- H	0.726
9	Availability of equipment and materials- I	0.695
10	Completeness of drawings and specification-J	0.546

Table 1: Top 10 factors by Relative Importance Index (RII)

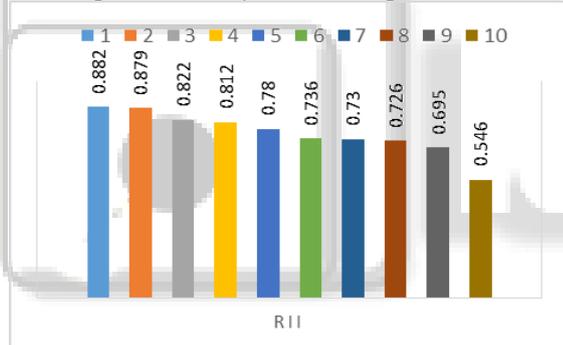


Fig. 1:

B. PART-2 IMPI Results

Top 10 factors ranked by Importance Index (IMPI) technique. (based on all respondent)

No.	Factors	IMPI (%)
1	Quality of available labour- A	19.35
2	Location of the project - B	18.26
3	Availability of equipment and materials- C	17.61
4	Type of project- D	13.98
5	Design quality and team- E	13.95
6	Completeness of drawings and specification- F	13.25
7	The client financial capacity - G	12.29
8	Degree of possible alternative to reduce cost- H	11.70
9	Financial goals of the company - I	10.73
10	Job Start time -J	8.40

Table 2: Top 10 factors by Importance Index (IMPI)

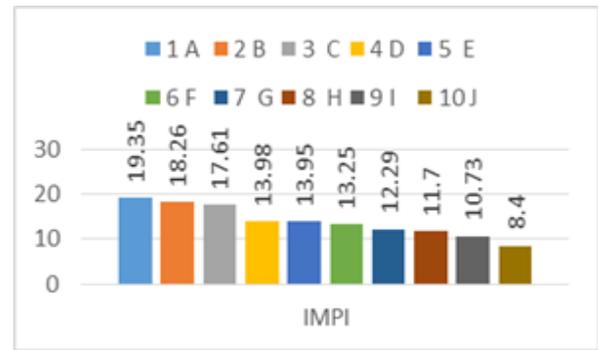


Fig. 2:

VII. CONCLUSION

The focus of this thesis is to study the competitive bidding Procedure and study about how the contractor can make strategy. Contractor's bidding strategy are greatly influenced by various factor. Contractor have specialization, experience, utilization of their perceptions.

Present study is focused on identified critical factors affect contractor's bidding strategy in Gujarat region of India. Factors are studied based on their relative importance, frequency, severity and importance of the phases. The importance index of each factor/event was calculated as a product of both frequency and severity index. According to the findings above, following points can be recommended

- This study can be a very useful tool for future research related to contractor's bidding strategy.
- This can be used by incorporating Cost Analysis or by extending the Scope of research's methodology or by changing the area of study or by changing geographical area of study.
- Researchers may carry out research by considering any one or two methods in one or two cities.

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