

STUDY OF SUPPLIER SELECTION PROBLEMS IN CONSTRUCTION SUPPLY CHAIN

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Abstract-- In this paper 'A survey s of supplier selection problem in construction supply chain', we have tried to find out the factors on which suppliers are selected in construction industry in today's scenario. We think that the supplier selection is a prerequisite for integrating them in the supply chain. A client would prefer to select a supplier who is trusted and who can be capable to maintain good quality and consistent supply of materials throughout the life of the project and also the supplier should be open for long term relationship. In our study we collected the primary data relevant to our study through questionnaire. On the basis of the feedback that were collected Relative Importance Index (RII) for each option for all the questions were calculated. Based on the RII values we have concluded about the various factors that play an important role in selection of suppliers in construction industry.

Keywords — Supplier Selection, RII, Construction Supply Chain Management.

I. INTRODUCTION

As we all know that construction industry is an unorganized sector where a lot of individual parties in Construction Supply Chain come together to complete one project. Sometimes many Supply Chain players in the construction firm come together for only one project and on completion of the project they go their separate ways. In such a situation it is difficult to form and understand the nature and necessity of formation of supply chain fit for use for the given project. In construction industry all the SC players involved look to safe guard their own profits and want their needs to be attended first. With such divided interests and lack of coordination between the participating members it is difficult to complete the project with minimum time and cost variance.

Stages Of Supply Chain Management:

Stage 1 (Supply chain assessment):In this stage the current work system and work strategy are accessed.

Stage 2 (Supply chain redesign) :In this stage the need in the current work technique are discovered and steps are taken to enhance the supply chain, to such an extent that the coveted outcome can be accomplished.

Stage 3 (Supply chain control) : Once the supply chain is upgraded it is imperative to keep a nearby control over the working and check if the desired objectives are accomplished or not.

Stage 4 (Continuous supply chain improvement) : As the objectives and necessities of an organization continues transforming, it is critical to continue changing the supply chain the stay aware of the changing prerequisites of the organization.

Supply chain Management incorporates all stages, specifically or in a roundabout way, in satisfying a client asks. The production network incorporates the producer and providers as well as transporters, distribution centers, retailers and clients. The primary goal of the supply chain management is to enlarge the general esteem created. The suitable plan of the supply chain will rely upon both the client's needs and the parts of the stages engaged with filling those necessities

Supplier scoring and assessments

When scoring and assessing suppliers, the following factors other than quoted price must be considered are Replenishment of lead time , On time performance , Supply flexibility, Delivery frequency/minimum lot size, Supply quality, Inbound transportation cost, Pricing terms, Information coordination capability, Design collaboration capability, Exchange rates, taxes and duties, Supplier viability.

Supplier evaluation system

The three general sorts of provider assessment frameworks utilized today are: Categorical strategy, Cost-Ration technique, Linear averaging technique, The managing factor in choosing which framework is best is: Ease of execution and Overall unwavering quality of framework.

II.LITERATURE REVIEW

The parts of supply chain management in development in this study, Supply chain administration (SCM) is an idea that has prospered in assembling, beginning from Just-In-Time (JIT) creation and coordination's. Today, SCM speaks to a self-sufficient managerial idea, albeit still to a great extent overwhelmed by coordination. SCM attempts to watch the whole extent of the store network. All issues are seen and settled in a production network viewpoint, considering the interdependency in the inventory

network. SCM offers a technique to ease the nearsighted control in the inventory network that has been fortifying waste and issues. Development supply chains are still loaded with waste and issues caused by nearsighted control. Correlation of contextual analyses with earlier research legitimizes that waste and issues in development supply chains are broadly present and persevering, and because of interdependency to a great extent interrelated with causes in different phases of the inventory network. The attributes of the development production network strengthen the issues in the development store network, and may well frustrate the use of SCM to development. Past activities to propel the development store network have been fairly incomplete. The non specific technique offered by SCM adds to better understanding and determination of fundamental issues in development supply chains, and gives bearings for development inventory network advancement. The viable arrangements offered by SCM, nonetheless, must be produced in development hone itself, considering the particular qualities and neighborhood states of development supply chains.

[1]

ongoing year supply chain management has real subject of administration research and assembling theory the effect of different supply chain management improve on venture execution has been estimated through a blend of study and the advancement of recreation show. Supply chain execution estimation out and about venture has not been examined much today. Execution estimation utilizing the supply chain operation references (SCOR) will break down how the construction chain management of temporary worker. The point of study is to investigate construction supply chain in street venture. This estimation utilizing the SCOR display as key performance indicator (KPI) is ascertained utilizing weighted criteria expository process. The aftereffect of examination and estimation of store network execution are medium score or adequate for street venture. The factor that prompt the accomplishment of store network are because of contractual worker provider accomplice construction chain techniques.^[2]

The four parts of production network administration in development in this examination It is contended that because of development idiosyncrasies, supply chain management has four particular parts in development. Pragmatic activities in every part to propel the development supply chain are dissected. The present status of development supply chains is explored by methods for contextual analyses and a correlation with past research. Three primary conclusions are drawn with respect to the present status. Initially, even in typical circumstances the development inventory network has a vast amount of waste and issues. Also, the greater part of these is caused in another phase of the development store network than when recognized. Thirdly, waste and issues are to a great extent caused by outdated, nearsighted control of the development store network. These outcomes agree with the discoveries made on make-to-arrange supply chains by and large. At long last, the subjective and target confinements of the four parts are broke down, this being founded on experimental discoveries and the nonspecific hypothesis of supply chain management. Two issues welcome an exchange about development supply chains. slacking efficiency improvement and expanded financial weight of the inventory network.^[3]

The guarantee of supply chain management originates from its framework point of view on generation exercises. Such a point of view permits enhanced comprehension of firms' generation expenses and abilities (especially under the questionable and changing conditions that portray present day development destinations). This gives a judicious premise to enhance coordination and control on development ventures. Creation exercises can be better arranged and balanced and, by connecting to costs, contracts can be shaped that advance ideal inventory network execution. Additionally, upgraded comprehension of generation permits examination of the effect of office configuration on production network execution. The frameworks train of supply chain management stands out strongly from customary techniques for arranging, controlling and contracting for ventures that, taking a various leveled, decay approach, look for, best case scenario to streamline singular exercises. Along these lines while current development strategies tend to help the fracture that diseases development, supply chain management guarantees a building premise to configuration, design, and oversee development extends in a community oriented way.^[4]

III RESEARCH METHODOLOGY

The methodology is qualitative, which explores the "insider's view" of the process, and provides independent analysis of suppliers and subcontractors selection process in construction projects. The objective is to gain access to the participant's experiential insights on supplier selection process. The data presented in this research is primarily qualitative. The principal objective is to us the participant's experiences to find the criteria on which they select the suppliers. Specific research questions were developed for use in conducting the qualitative analysis through survey. These questions were designed to address the measures used to seek the basis on which suppliers are selected for construction projects.

The questionnaire was compiled on the basis of the following factors:

- The methods of selection of vendors
- The guideline considered for the selection of sub-contractor and suppliers
- Stages in which entanglement of the suppliers and sub-contractors would practically hold the project effectiveness
- Effect of specialized skill and project work
- Testing ability of the supplier
- Relationship with the provider
- Process to exhilarate subcontractor towards waste elimination process
- Supplier's geographical reach
- How proficient the supplier is
- Transparency and observance of supplier
- Possibility to ensure quality and timely of work from the suppliers
- Scope which the client briefing affected decision regarding supplier and sub-contractor selection
- Approach of client towards supplier selection

- Minimum capability requirement of subcontractors to execute the work
- Presses which would assure proper coordination on project work
- Supplier co-operate in situations to the frequent design changes
- Collision on material availability due to frequent design changes
- The encouragement provided by the client for on time delivery of the project
- Strategy for counteracting lack of concern on part of suppliers and sub-contractors
- Effect due to early investment of supplier and subcontractors in projects.

IV ANALYSIS OF RESULTS

After preparing the questionnaire, responses to the questions were collected by sending the questionnaire through e-mail. The respondents were working professionals with engineering background. To analyze the responses given by the respondents and to get the criteria on which suppliers are selected in construction industry. Relative Importance Index method was used. Relative Importance Index (RII) is the process where weight is given to each type of response as per the judgment of the user.

In this case;

- Strongly Disagree = 1
- Disagree = 2
- Undecided = 3
- Agree = 4
- Strongly Agree = 5

Once the weights are decided then the total numbers of responses for each option of each question are found out. Then RII for each option is calculated using the equation;

$$RII = (W1*n1 + W2*n2 + \dots) / A*N$$

Where W = Weight of the option as decided by user,
 n = Number of responses under each option,
 A = Highest weight given and
 N = Total number of respondents.

The option with the highest RII for a question is the preferred option for that question

Method of selection of vendors

Response: Method of Selection

Sample calculations:

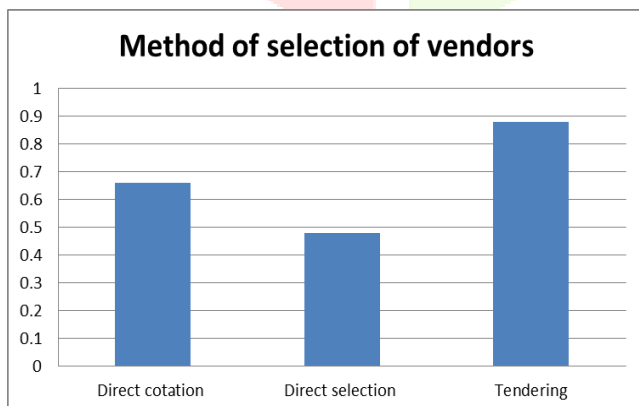
$$n1=2, n2=4, n3=1, n4=7, n5=5, \\ w1=1, w2=2, w3=3, w4=4, w5=5$$

$$RII = (W1*n1 + W2*n2 + \dots) / A*N$$

$$RII = (1*2 + 2*4 + 3*1 + 4*7 + 5*5) / 5*20$$

$$RII = 66 / 100 = 0.66$$

Response	Strongly disagree	Disagree	Undecided	Agree	Strongly agree	RII
Direct quotation	2	4	1	7	5	0.66
Direct selection	6	6	4	2	2	0.48
Tendering	2	0	1	7	10	0.83



V CONCLUSION

1. During this study we found various criteria which are use full for effective selection of supplier.
2. Based on the review of literature on formation of supply chain in construction industry, we found that construction industry is too fragmented and too adversarial to adopt supply chain management practices. We believe that a Supply chain initiative in Construction industry is the way forward to reduce delays and cost and time overrun.
3. In this regard, we attempt this study to participate the suppliers/subcontractors in formation of supply chain. We say that for the downstream integration in construction supply chain, integration of suppliers/subcontractors is the important link. Thus, this study has assumed the research on supplier selection as the pre-requisite for downstream integration in construction supply chain.

REFERENCES

1. pp 179-193. 2. Vrijhoef Ruben & Koskela Lauri., [1999]. Role of “Supply Chain Management In Construction.” Research Paper. University of California.
2. M. Agung Wibowo, Moh Nur sholeh[2015]“Analysis of supply chain performance measurement at construction project”
3. pp 179-193. 2. Vrijhoef Ruben & Koskela Lauri., [1999]. “The four Role of Supply Chain Management In Construction.” Research Paper. University of California
4. O’Brein William.J [2009]. “Construction Supply Chain Management A vision for advanced coordination, costing and control.”University of florida
5. Chopra Sunil and Meindl Peter., [2004]. “Supply Chain Management: Strategy, Planning, and Operation.” 2nd ed. New Jersey: Prentice-Hall (Pearson education).
6. . Kothari C R., [2002]. Research Methodology Methods and Techniques.2nd ed. New Delhi: Wishwa Prakashan.
7. . O’Brein William.J., Formoso Carlos T., Vrijhoef Ruben and London Kerry A., [2009]. “Construction Supply Chain Management Handbook.” New York: Taylor and Francis Group.

