

Applicability of EPC contracts in real estate sector in India

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Abstract

Real estate sector has been experiencing a huge growth potential however it is observed that the industry is basically subjected to time and cost overruns. The working mechanism in the sector reveals that the industry is categorically obsessed with traditional procurement systems. New procurement mechanisms are adopted by other sectors in construction trying to gap the challenges of cost and time. However it would be necessary to understand the dynamics of this sector to the adoption of these innovative changes. This works tries to understand the views of the industry experts to such novel procurement mechanism.

Keywords: Real estate sector, procurement, mechanisms, construction, EPC, cost and time

1. Introduction

Real Estate Sector is one of the fastest growing sectors in India. It is the second largest sector after Agriculture and tends to provide the highest employment potential. Presently it is not only attracting domestic but also foreign investors. This growth of industry is mainly attributed to a large population base, rising income level and rapid urbanization.

The contribution of the real estate sector in India's gross domestic product (GDP) has been estimated to 6.3 percent in 2013 alone. As per the report, the total investment in real estate industry is about INR 254,000 crores and this will help to generate revenues worth 370,000 crores. (Credai report).

However, numerous challenges have been faced by this booming sector inhibiting its growth such as high borrowing costs, lack of institutional funding, lengthy approval processes and slow and uneven infrastructure development. Thus initiating, the need of better ways and means to manage the sector, one of which could be adopting the Engineering, Procurement, and Construction (EPC) form of contracts into the development of this sector. However it would be necessary to study and understand the suitability of this form into the construction. Thus this work emphasis on

The common types of contracts used in small and large scale real estate projects.

The common issues that arise in EPC contracts

The advantages and disadvantages of EPC contracts

Feasibility of application of this contract form and the advantages to the stake holders

2. Literature Review

One main reason an owner may prefer an EPC arrangement is "certainty of cost and time". An EPC contract binds the contractor to deliver the project at a firm, predetermined price regardless of any increase in cost after the contract is signed. Though it may be a risk component build in the system still the procurement strategy ensures a well tracked project with time and cost certainty. However its application in the real estate is still debatable.

Abu Hassim *et al.*, 2011 ^[2]. In their research paper have emphasized that governing the pre-stage of project procurement is crucial as it will determine the successfulness of that project. For a successful project delivery they have elaborated on producing a clear project governance framework with allocation of responsibility and decision making towards the assigned authorities thus avoiding the confusion and interference.

Sergios Lambropoulos, 2012 ^[3]. In his research paper considers adopting a new approach toward procurement which can have the advantages of the predefined cost, time and quality constraints as provide in EPC form as well as guarantee lower price based on measured form of contracts.

Chen-Yu Chang, 2009 ^[4]. In his research paper has emphasized on procurement engineering. Procurement engineering needs to be developed that governs the interaction between the procurer and the contractor in the event of uncertainty. The formal modelling of this concept can help in project governance by integrating contract form, payment mechanism, financing structure of the contractor and choice of procurement systems into a logical coherent framework.

Ola Ladre, Kjell Austerg *et al.*, 2006 ^[5]. In their research work have elaborated that a typical procurement type cannot be applied to all projects as all have differing characteristics. The procurement route has to be tailored to each project, and there is no route that is suitable to all kinds of projects. At the same time, it is widely accepted that a proper selection of the procurement route improves the possibility for a successful project execution.

Various experts have opined on different strategies that could adopted for a successful execution of a project. Thus opening the need for understanding the application of the EPC type of procurement strategy in the real estate business and verify the feasibility and usefulness of such procurement mechanism.

3. Research Methodology

The research methodology adopted in the study was field survey targeting the segment of expert individuals belonging to the following categories:

- 1) Professionals working in the real estate sector.
- 2) Professionals having work experience in execution of EPC form of contracts.

The professions in the specific sector were targeted to get the opinion based on the experiences in the respective fields. In all 48 expert opinions were sorted from the industry of which 73 percent of the respondents surveyed were contractors, 21 percent were clients and developers and the rest were consultants. A mix composition of the respondents was selected so as to get the opinion from various stake holders of the project to the application of EPC in real estate. Following interpretation and inferences could be drawn from the questionnaire circulated.

4. Analysis

- 1) **The respondents were surveyed with reference to the sectors and type of projects they have worked previously.**

The question was basically asked to gather the responses of experts from the real estate and infrastructure projects to corroborate the risk associated with these two sectors. EPC form of contracts are commonly adopted in infrastructure sector; however it was necessary to understand the responses from the experts in infrastructure sector so as to comprehend the complexities of adopting the EPC form of contracts in real estate. The responses received have been shown in Fig. 1.

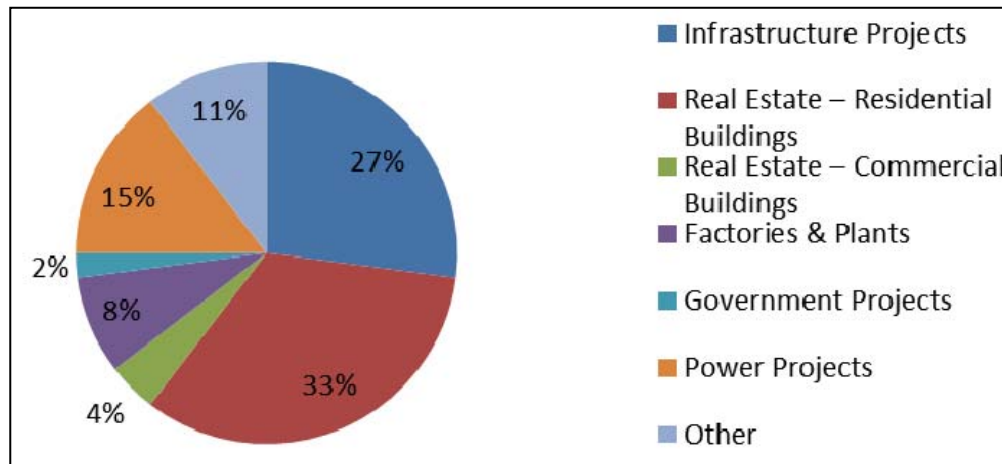


Fig 1: Experience of Respondents

Inferences: From Fig. 1 it is observed that the respondents surveyed were having work experience in both the sectors. Moreover it can be observed that a large population surveyed had experience in the real estate sector wherein 33 percent reported. The idea of having more respondents from the real estate was to understand the feasibility of adopting the form in the real estate sector.

Inferences: From Fig. 2 it is observed that the respondents surveyed primarily used the item rate form of contracts in real estate though other forms like the design build, lumpsum and EPC types are also in use. Thus from the complex types of professionals being surveyed the study will facilitate in understanding the issues associated to real estate sector in India.

- 2) **The respondents were surveyed with reference to the different forms of contracts they use in the real estate projects.**

The question was framed to get a view of the various forms of contracts being used in the sector and also to understand whether real estate sector also adopts the EPC type of contract and to study the suitability of this form of contract in the real estate sector. The responses received are graphically plotted in Fig. 2.

- 3) **The respondents were surveyed whether the organization has previously dealt with EPC (Turnkey) projects.**

The question was necessary to articulate the understanding of the respondents those who have worked in engineering procurement and construction types of contract. This would infer a more realistic opinion whether such a form a contract could be applied in the real estate sector. The responses received are shown in Fig.3.

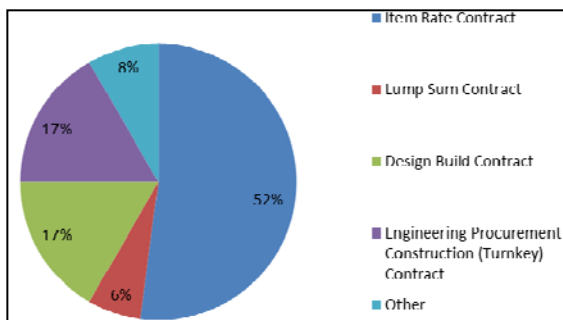


Fig 2: Various Forms of Contracts Adopted in Projects

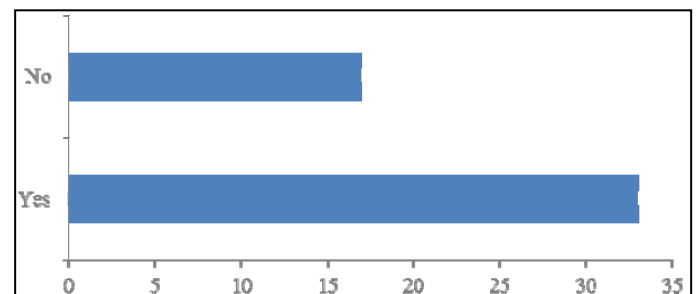


Fig 3: Respondents Worked in EPC form of Contracts

Inferences: From Fig. 3 it is observed that the respondents surveyed did have an experience in executing projects under the EPC form wherein around 66.66 percent have replied with positive.

4) The respondents were surveyed on common issues/challenges associated with real estate projects?

It was necessary to understand the challenges a real estate industry faces and thus the opinion of the respondents were taken. Various alternatives were provided to rank the same as per the priority along with option to map the addition challenges faced by the respondents in this sector. The responses received are plotted in Fig.4.

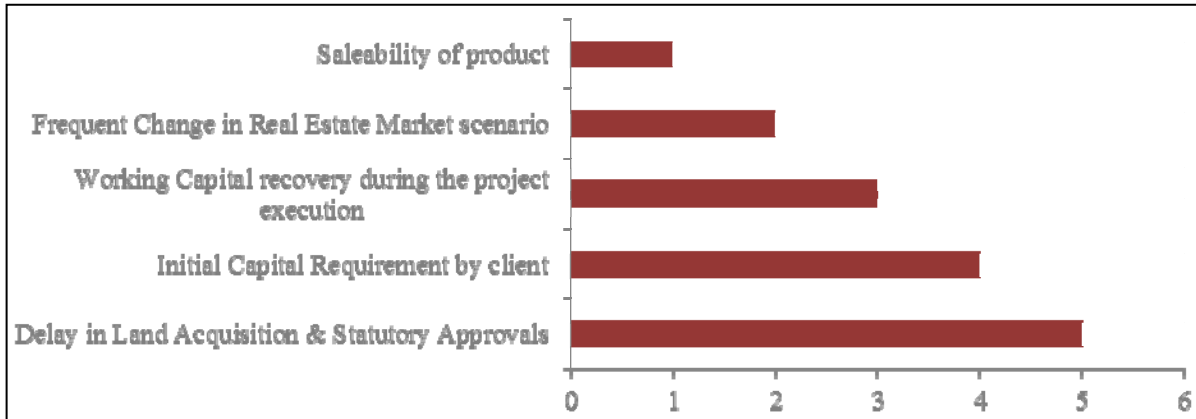


Fig 4: Ranking of most Critical Issues Associated with Real Estate Projects

Inferences: It is evident from Fig. 4 that among all the eight options provided respondents chose these five factors as per their frequency of repetition. As per the weightage assigned it can be observed that in case of real estate project the main challenges faced which leads to delay are

- i) Delay in land acquisition & statutory approvals.
- ii) Initial capital requirements by client.
- iii) Working capital recovery.

From various experts observation also it is seen that these

causes are the main challenges faced in the real estate industry despite any contract form and thus measures should be undertaken to mitigate such risks.

5) The respondents were surveyed on the major issues associated with EPC (Turnkey) projects.

This question was imposed to understand the difficulties the respondents would face in handling EPC type of projects. Various challenges as faced in the industry were provided as options to the respondents and the ranking of these were obtained which are shown in Fig. 5.

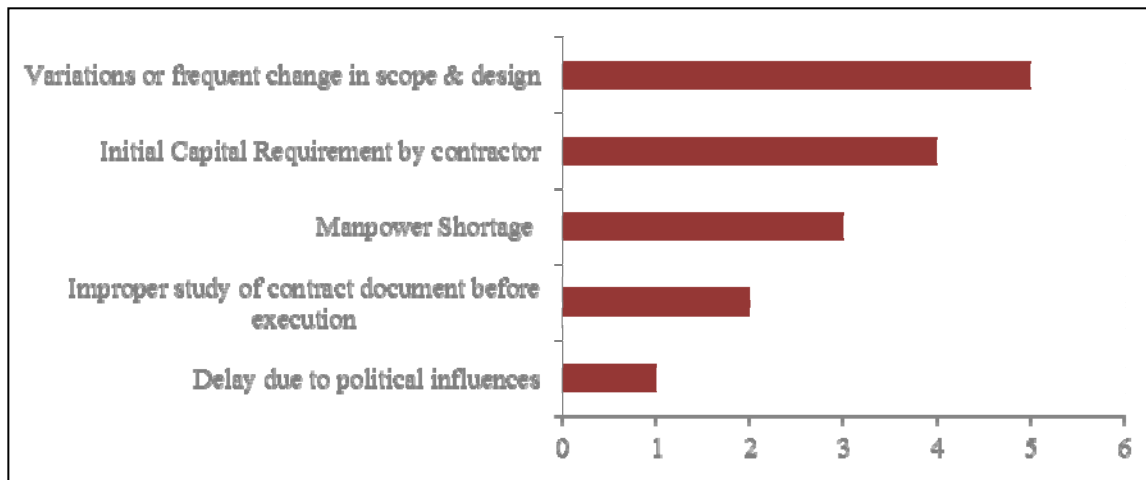


Fig 5: Ranking of most Critical Issues Associated with EPC Projects

Inferences: It is observed from Fig. 5 that amongst all the options provided, the respondents selected few key factors as being critical. On ranking these, considering the frequency of repetition based on the weighages assigned, it is seen that in any project which is based on an EPC form, following are the key issues which causes delay

- i) Variations or frequent change in scope & design
- ii) Initial capital requirement by contractor
- iii) Manpower shortage

Thus it can be inferred from above that an EPC contract form can be successfully applied in any project if it is framed in an

adequate manner. Since it is noted that contract scope change and design changes are common issues in EPC contract, proper detailing out in the contract document needs to be undertaken, so that cap could be exercised on the extent of variation in scope and design.

In an EPC contract the contractor has to manage the working capital on his own. Payments under such project would be achieved on milestone basis however the contractor would be required to maintain cash flow, undertake initial procurement, and bear cost towards mobilization of resources and initial progress. In large scale projects these requirement tend to become larger and even more crucial. Thus it would be necessary to select a financially strong contractor through stringent prequalification procedures.

Manpower shortage generally has an effect on the productivity of project and will ultimately consume all the available floats

in project and lead to delay. Delay thus will attract liquidated damages and penalties.

Thus it would be essential under an EPC project care of these three crucial issues needs to be addressed and incorporated in the tender documents.

6) The respondents were surveyed on the reasons of EPC contracts not being used in real estate projects in India.

The intention behind this question was to identify whether the industry avoids this form of contract (EPC) in real estate projects. A few notable issues as observed from the literature review were put forth and the respondents were indicated to give their opinion on the criticality of these issues. The responses received were ranked and weightages assigned to understand the main causes of non- implementing of EPC in real estate. The response are shown in Fig. 6

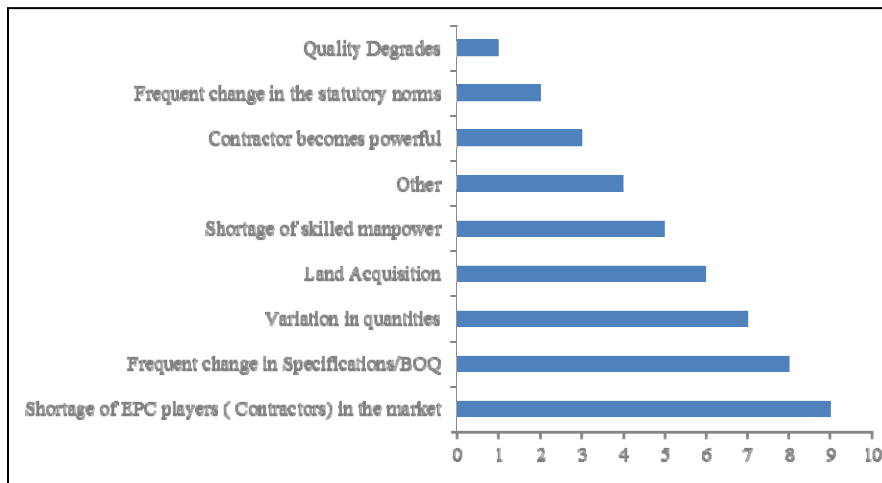


Fig 6: Reasons of Non-implementation of EPC in Real Estate Projects

Inferences: From Fig. 6 it is observed that the main reasons provided by the respondents for avoidance were

- i) Shortage of EPC players (Contractors) in the market
- ii) Frequent change in the specifications & BOQ
- iii) Variations in quantities

Thus it can be seen that the industry basically faces a shortage of EPC players in the market. Any EPC project to be executed successfully and completed within estimated time span, competent and strong EPC players (Contractors) are needed. However this can be well connected to the risk that a contractor has to bear under an EPCC project. Small contractors thus hesitate to take the responsibility of such

projects wherein maximum risk has to be borne by the executing agency only. The Initial capital also is another big hurdle that keeps them in participating in such projects.

Frequent changes in specifications and BOQ lead to change in quantities and cost on account of the complexity of the project. This though is a major cause of concern in EPC project however this can be limited by putting a cap through appropriate conditions in contract and transferring the liability on client beyond a certain limit.

7) The respondents were surveyed about their view on EPC contracts being feasible in real estate sector in India.

The responses received have been shown in Fig. 7.

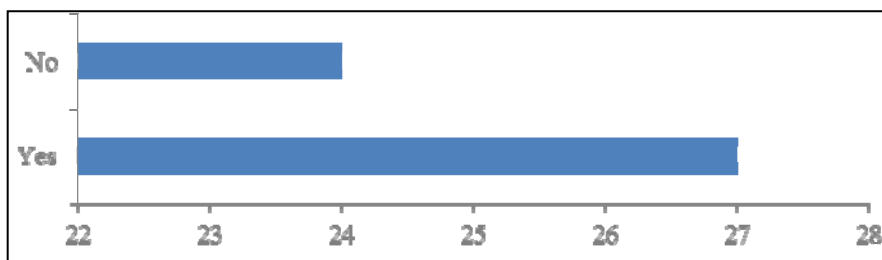


Fig 7: Responses on Feasibility of EPC Projects in Real Estate Sector

Inferences: From Fig. 7 it is noticed that the respondents feel that an EPC type of contract can be implemented in the real estate sector. Around 56 percent of the respondents have expressed their opinion in positive. It could be highlighted here that only 33 percent of the respondents surveyed were from the real estate sector.

8) The respondents were surveyed with the impact the project may have, if an EPC (Turnkey) contract is implemented in real estate sector.

This study was necessary to understand whether the implementation of the EPC in real estate project will have any impact on the quality, cost, duration or scope change in the project. The responses received have been shown in Fig. 8.

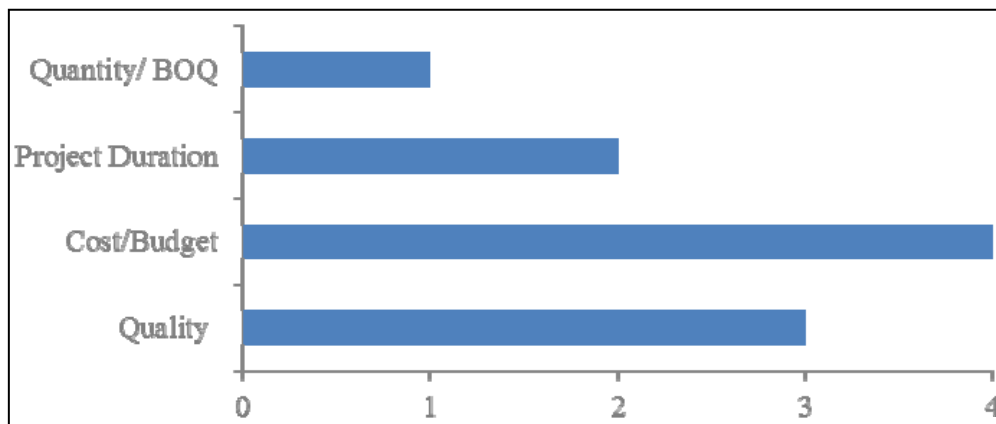


Fig 8: Factors Influencing Implementation of EPC Contract in Real Estate

Inferences: From Fig. 8 it is seen that the respondents have implied that adopting of an EPC project may have an impact on its cost. Since clients may not be interested in spending additional money just for a change of form of contract it is noticed that the clients to refrain from using this mode in construction though there is a credibility of time certainty under the form.

On the preliminary level it is observed that the respondents have reported that the quality of the project may also get affected by using this form. This may occur in situation where proper quality checks on the project are not established by the clients, thus necessitating the need for drafting the conditions of contract in a suitable and appropriate manner. These processes may help to establish the quality checks and approvals necessary for execution.

9) The respondents were surveyed on why design build contract being more used over EPC type of contract.

The reason behind this question is to find out the reasons design build contracts are being more preferred than EPC contract in real estate projects though both the forms have nearly similar concept. The responses received have been shown in Fig. 9.

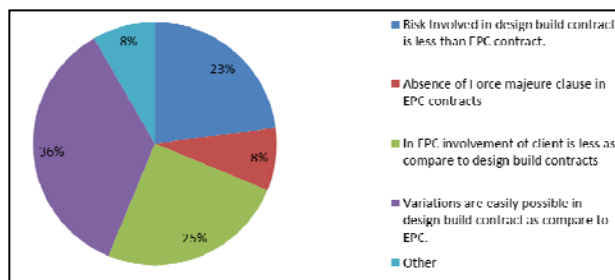


Fig 9: Reasons of Design Build Contract being more used over EPC

Inferences: From Fig. 9 it is observed that the most suitable factor in case of design build contract is that the variations in

design and specifications can easily be accommodated as compared to EPC contracts where specifications are pre-decided by the client.

In case of real estate projects it is observed that the client doesn't transfer full rights and responsibility to the contracting agency. However in case of EPC it is necessary to transfer all the rights to the contracting agency leading to zero involvement which may not be a acceptable proposition for the client. EPC forms are best suited to projects where client has negligible information about the technicalities of the project and thus would not cause much interference from the client side.

10) The respondents were inquired over profit margin that could be availed in an EPC projects.

The question was asked to know why contractors are hesitant to enter into EPC contracts even though the margin of profit is higher as compared to other projects in real estate. The responses received have been plotted in Fig. 10.

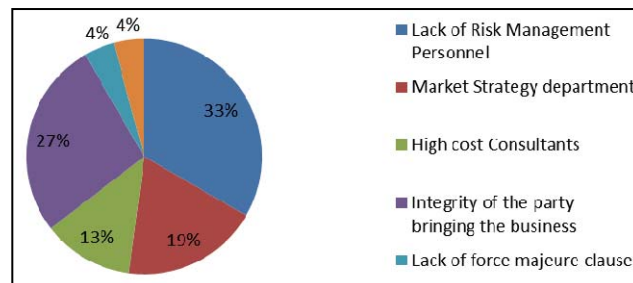


Fig 10: Responses over Profit margin in EPC Projects

Inferences: From Fig. 10 it can be noticed that the contractors find a higher risk being involved in EPC in comparison to the other forms of contracts wherein 33.33 percent of respondents have reported. Thus it could be observed that the main cause of EPC not being implemented in the real estate sector is due

to the higher risk pattern and thus implies a need to revisit this form of contract.

Second major point is the integrity of the party bringing the business. Contractor and client should not only legally be responsible to each other but also nurture faith and mutual trust in their relationship. In EPC model as whole risks are generally transferred to contractors, hence the integrity and reputation of the client and party bringing the business plays major role.

11) The respondents were surveyed on the assured mechanism of recovery of expenditure in real estate projects.

As EPC form of contract are performances oriented and incorporate conditions on potential recovery of expenditure, it was necessary to understand the most appropriate mechanism of recovery of expenditure in real estate projects. The responses received have been shown in Fig. 11.



Fig 11: Mechanism of Recovery of Expenditure in Real Estate Projects

Inferences: It is observed from the responses received that the most appropriate mechanism of recovery of expenditure in real estate project is

- i) Built as per requirement
- ii) Outright selling

Thus it could be observed that the means of recovery is moreover related to the marketing strategies adopted to attract the investors which may be more customer oriented and also depend upon many factors like reliability, location, price, etc which may be challenging and time consuming. However in the case of EPC forms being applied in the industrial sector like the chemical industry, the product finds its entry in the

market which relates to the recovery immediately on project completion. Thus if the means and mechanism of recovery of spending is overcome the EPC model could be implemented in real estate.

12) The respondents were surveyed to find out which type of projects in the real estate sector EPC model is best applicable.

Since real estate itself consists of various sectors like hospitality, commercial, township etc., it was necessary to understand the sector that would be the most appropriate for EPC approach. The responses received have been shown in Fig. 12.

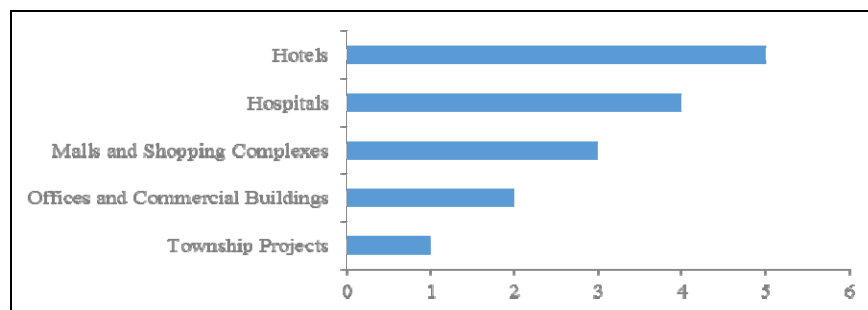


Fig 12: Real Estate Sector Appropriate to EPC Model

Inferences: From Fig.11 it is noticed that the EPC mechanism is not the most appropriate model in case of real estate projects. However from the survey conducted on a specific target segment it is noticed that this form would be the best applied to hotels and hospital building. This could probably be on account of certainty of cost and time. An EPC form is a fixed time and price contract irrespective of the changes a contractor may undergo. However, changes to specifications initiated by the owner may be incorporated through a "scope change order".

5. Conclusions

A well-defined EPC contract can significantly reduce the cost and time overruns in real time however is still avoided in the real estate sector. From the study the following conclusions could be drawn.

Unpredictable market conditions and price fluctuations make it almost impossible to bid for an EPC form of contract as it involves substantial financial investments.

Access to project financing can be a major issue for many contractors not to opt in for an EPC form of contract.

On account of high risk involved contractors tend to avoid the EPC form of contracts.

EPC form can be applied to the hospitality and hotel industry and thus such projects could be applied wherein the project performance criteria can be well laid and defined.

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