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COMPARATIVE STUDY BETWEEN HYBRID ANNUITY MODE (HAM) & EPC BASED ON CONTRACT AGREEMENTS

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Abstract: India has consist of huge road networks and it is second largest in terms of road network in the world. The road network is basically consists of National Highways, Expressways, State Highways, Major District Roads, Other District Roads and Village Roads. Road Transport is a critical infrastructure for the economic development of a country. It impacts the pace, structure, and pattern of development. Historically, the government has made investments in the transportation sector. However, the Ministry has issued thorough policy guidelines for private sector participation in the construction of National Highways and improved management of assets associated to them from time to time in order to stimulate private sector participation.

Currently, the Ministry of Road Transportation and Highways is working on national highway projects using the EPC, HAM, BOT (TOLL), and BOT (Annuity) contracting methods. Since its beginning, MORTH has placed a strong emphasis on EPC and HAM contracts. This study examines the factors that may influence the execution of EPC and HAM contracts on various highway projects, taking into account their applicability. The study also identifies potential changes in the scope, time extensions, and project financing, as well as challenges associated with them. Interviews and questionnaire surveys were used to conduct research on various ongoing and completed EPC and HAM projects in order to discover the key issues that arose during the execution and effective contract management of NH projects for successful completion.

Keywords: *Annuity, Built Operate Transfer (BOT), Engineering Procurement and Construction (EPC), Hybrid Annuity Mode (HAM), MoRTH,*

I. INTRODUCTION

Time and cost overruns on infrastructure projects are typical in India. In 2014, the EPC was introduced. In industrialised countries such as the United States and Europe, the Engineering, Procurement, and Construction (EPC)/Turnkey Contract is well-established. However, it is a relatively recent concept in India. The widespread usage of EPC Contracts will result in a slew of issues. The Ministry of Road Transportation and Highway is now working on 1420 projects

with a total length of 41025 km and a project cost of Rs.3.63 lakh crore. In the EPC model, the government pays for the entire project. Increased reliance on EPC would put the government's funds under even more strain. Road development, on the other hand, is unable to meet the needs of the growing population due to a lack of finance. As a result, the Indian government recognises the importance of including the private sector in road construction. Following that, the Government of India adopted HAM in 2016. Currently, 6,388 km of roads are under construction, divided into 116 projects with a total investment of Rs. 1.39 lakh crore, and they are in various levels of completion. Approximately Rs. 62,000 crore has been invested by banks in these projects. Built Operate Transfer (BOT) Annuity and Engineering Procurement and Construction (EPC) model contracts are combined in the HAM model.

Objective of the Study:

The final goal of this study to compare hybrid annuity mode (HAM) & engineering, procurement, construction (EPC) based on model contract agreements issued by the Ministry of road Transportation & Highway. For that following objectives must be achieved in the following manner:

- To study of issues related to Project Financing.
- To study of the reasons for delay & provision of Extension of Time in the EPC/HAM Projects.
- To study of Provisions for COS & Price Escalation.
- To study of the Risk associated with Authority & Concessionaire
- To identify best suitable mode of contract.

II. Need of The Study

The mode of contract is frequent in construction of National Highways in India. More than 90% of the National Highways projects are executed under Ministry of Road Transportation & Highway by different subsidiary agency such as NHAI, NHIDCL, and State PWDs etc. Therefore, it is necessary to study the mode of contracts in depth. Study must be conducted is to establish most feasible mode of contract for current scenario and based on the suitability on the mode of contract for project. Although EPC project are time and cost bound project, but it has been observed that delay in (HAM & EPC) projects are now frequent, hence study of causes of delay or extension of time and among those factors which are more crucial. Also, it is necessary to find out he factors which is crucial in case of both HAM & EPC projects and may lead to change of scope in a particular project. Project financing is a very vital factor in the HAM contracts as it requires 60% private funding. Further, from project management point of view, it is necessary to study the possibilities of execution of the both the contracts efficiently and completing the project with allotted cost and time duration.

III. LITERATURE REVIEW

The research article contains the results of many research articles as well as the work of many authors. There have been studies of papers published in various national and international

publications, Ph.D. theses, reports, and books. This paper improves knowledge of the subject and provides extensive foundation to carry out tasks in a timely manner.

Following are the literature reviews based on Application of EPC Contracts in International power projects:

Jan Píchaa, (2015) according to his research Engineering, procurement, and construction (EPC) contracts are on their way to becoming the most common form of contracting used by the private sector to perform construction work on large-scale infrastructure projects.

He also discovered that proper contract management is required in any project; otherwise, it might have negative effects for all parties involved, including the client, contractor, lenders, government, and others. His research reveals the most important criteria in completing a project successfully under the EPC contract scheme. It was also discovered that the EPC contracting scheme could function well, particularly in circumstances when the contractor is well-versed in all legal aspects of the contract, including risk allocation. **[8]**

HANSEN (2015), there are at least 15 (fifteen), 5 (five), and 6 (six) options that the contractor, employer, and both parties can use, according to the study. Because EPC projects are by their very nature complicated, strong knowledge management and innovation implementation will help them to be more effective. His research focused on performance liquidated damages (PLD) in EPC projects, as well as EPC contractual elements, potential claims and variation orders in EPC projects, and potential disputes and dispute resolution. EPC projects are especially important since they provide a description of how to deal with EPC projects for all industry players. **[5]**

Jamadar (2017), the author discusses how the model EPC understanding combines top worldwide practises and incorporates an empowering authoritative framework for venture development in the most effective, temperate, and aggressive manner.

At both the pre- and post-contact stages of the project, loan specialists will be required. If lender backing is to be obtained, both the pre-contract and post-contract project processes must be bankable. Moneylenders complete the majority of funding and continue to earn lower returns than value investors. As a result, lenders are willing to take a risk and use their strong negotiating position to reduce risk and increase the chances of obligations being met, even when faced with a difficult situation. **[7]**

Mojtahedi (2018) in project management terms, it was discovered that the important criteria for better performance in EPC projects of different general contractors may be directly compared. The project triangle (cost, time, and scope) was the focus of his research since these parameters are more tangible for project stakeholders when judging project success. However, he went on to say that project success may also be measured by aspects like safety, sustainability, and satisfaction. **[12]**

Nikhil Kumar (2019), concludes that the traditional BOT and HAM models both have advantages and disadvantages, however when compared to the BOT model, the HAM model

proves to be a better option for highway construction projects. He discovered that under HAM, risk allocation is minimal, financial burden is shared to a large extent between public and private entities, and that such HAM enterprises have a brighter future.

He also stated that the government is doing all necessary to guarantee that HAM is prioritised for highway construction and growth across the country, and that the key reason for HAM's popularity is its capacity to control financial risk. In this case, the government is only responsible for paying 40% of the total cost in five instalments, leaving the other 60% to the private sector. **[14]**

MAJOR FINDINGS FROM LITERATURE REVIEW

From the literature review, following are the conclusions.

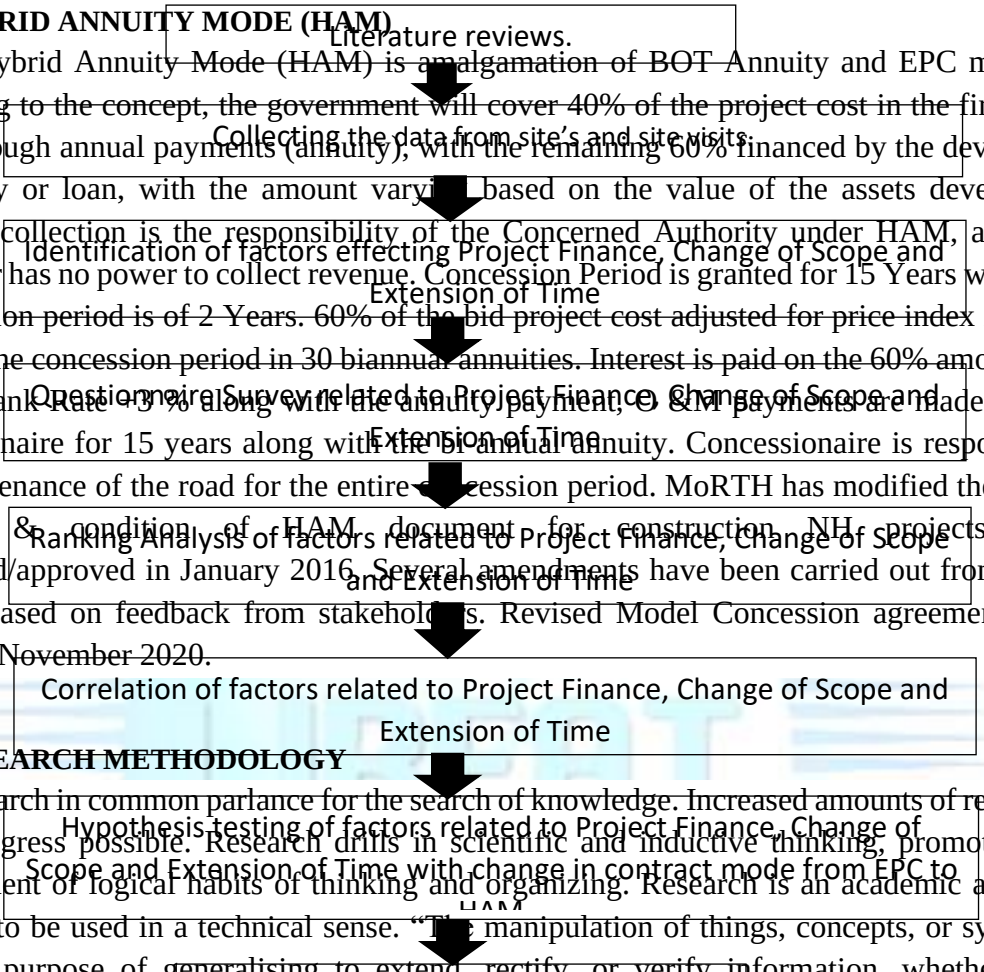
1. EPC project is very complex by its nature, a good knowledge management and innovation implementation will improve its effectiveness.
2. Attention required for liquidated damages contractual aspects, possible claims and variation & possible disputes and disputes settlement of EPC projects
3. Much attention required by the contractor in pre-bid stage regarding probable risk associated with the projects, thereby required vigilant PMC & Design Team.
4. The financing strategy is the biggest strength of HAM model. It reduces the problem related to failure of project due to financial viability.
5. Limitations in HAM model are change of scope, this clause may lead the project to cost and time overrun.

IV. ENGINEERING PROCUREMENT & CONSTRUCTION (EPC)

Model Concession agreement for EPC is based on the Silver book of the FIDIC i.e., condition of contracts for EPC/Turnkey projects. EPC is a type of contract in which the EPC Contractor is responsible for all aspects of the project, including design, procurement, construction, commissioning, and handover to the client/authority, at a specified price and on a scheduled time. Performance standards of the product is also hallmark of EPC Contract. EPC Contract incentivizes innovation and best practices. Contractor’s ability to manage risk (probability that, despite careful project costing and planning, unforeseen events will occur during the implementation of a project which will affect the final cost and completion time scale) in design, procurement and construction phase is critical for success of contract. Single point responsibility: All the responsibilities related to construction are imposed upon the EPC contractor, for design, procurement and initial maintenance EPC contractor is a single point of contact. On the other hand, Authority is liable for payment & procurement of necessary permissions. EPC also provides an efficient, economic, and competitive environment for the Contractor, minimizes time, and cost over-runs, gives opportunity for innovation and faster delivery, increases Efficiency of the contractor, fewer variations are observed in EPC contract, improve risk management.

V. HYBRID ANNUITY MODE (HAM)

Hybrid Annuity Mode (HAM) is amalgamation of BOT Annuity and EPC models. According to the concept, the government will cover 40% of the project cost in the first five years through annual payments (annuity), with the remaining 60% financed by the developer via equity or loan, with the amount varying based on the value of the assets developed. Revenue collection is the responsibility of the Concerned Authority under HAM, and the developer has no power to collect revenue. Concession Period is granted for 15 Years whereas construction period is of 2 Years. 60% of the bid project cost adjusted for price index is paid off over the concession period in 30 biannual annuities. Interest is paid on the 60% amount @ rate of Bank Rate +3% along with the annuity payment, O &M payments are made to the concessionaire for 15 years along with the bi annual annuity. Concessionaire is responsible for Maintenance of the road for the entire concession period. MoRTH has modified the BOT Annuity & condition of HAM document for construction NH projects was developed/approved in January 2016. Several amendments have been carried out from time to time based on feedback from stakeholders. Revised Model Concession agreement was issued in November 2020.



VI. RESEARCH METHODOLOGY

Research in common parlance for the search of knowledge. Increased amounts of research make progress possible. Research drills in scientific and inductive thinking, promotes the development of logical habits of thinking and organizing. Research is an academic activity which is to be used in a technical sense. "The manipulation of things, concepts, or symbols with the purpose of generalising to extend, rectify, or verify information, whether that knowledge aids in the building of theory or the practise of an art," according to the definition of research.

Figure 1: Research Process

VII. DATA COLLECTION AND ANALYSIS

Data has been collected from the ongoing projects under EPC and HAM mode of contracts of Gujarat, Maharashtra, West Bengal, Haryana-Himachal Pradesh, & Nagaland. Personal Interview with the various stakeholders has been conducted and also online questionnaire survey has been conducted through google survey form. Four type of stakeholder involved in EPC & HAM mode of contract for roads are targeted in this research Authority/ Owner/ Employer, Developer/ Concessionaire/ Contractor, Authority's Engineer/ Independent Engineer/ Project Management Consultant, and Financial Institutions/ Lenders.

RELATIVE IMPORTANCE INDEX (RII)

Based on the responses received ranking of factors that occurs related to project financing, change of scope, extension of time is done using RII. This is done by the analysis of responses given by respondent to particular issue or factor on the scale of 1 to 5 in which 1 as very low or no impact and 5 as very high impact. Respondent gave their perspective based on their experience and knowledge. RII analysis is done for the 46 factors for EPC mode of Contract and HAM mode of contract.

$$\text{Relative Importance Index RII} = \frac{X_i Y_i}{Z_i} \text{ X } 5 \qquad \ldots\ldots\ldots (1)$$

where,

RII = Relative Importance Index

X_i = number of responses to the factors

Y_i = the value of rating

Z_i = total number of responses to the factor

Ranking of the factors varies with mode of contract and Table 1 shows the comparison Table of criteria related to Project Financing between HAM & EPC.

Table 1: Comparison Table of criteria related to Project Financing between HAM & EPC

Ranking	HAM	EPC
	Factors	**Factors**
1	Impact of Revenue collection in project financing.	Impact of Revenue collection in project financing.
2	Impact of the credit reputation of developer in project financing.	Impact of continuous & timely funding.
3	Impact of credit reputation of the Employer/Government Institutions.	Governance and institutional capacity issues.
4	Impact of credit assistance from Employer/Government Institutions.	Impact of concession period in project financing.
5	Impact of percentage equity of Developer in securing project financing.	Impact of percentage equity of Developer in securing project financing.

Ranking of the factors varies with mode of contract and Table 2 shows the comparison Table of criteria related to Project Financing between HAM & EPC.

Table 2: Comparison Table of criteria related to change of Scope between HAM & EPC

Ranking	HAM	EPC
	Factors	**Factors**
1	Lack of information in scope of work	Insufficient land width at site
2	Insufficient land width at site	Change in design
3	Change in Road profile	Extra work proposed by client beyond the original scope
4	Change in Road Alignment	Failure of client in procuring land to concessionaire / contractor
5	Improper estimation	Change in Road Alignment

Ranking of the factors varies with mode of contract and Table 3 shows the comparison Table of criteria related to extension of time between HAM & EPC.

Table 3: Comparison Table of criteria related to extension of time between HAM & EPC

Ranking	HAM	EPC
	Criteria	Criteria
1	Delay in approval of submittals, design drawings, etc.	Delay in handing over of construction site to contractor
2	Delay in handing over of construction site to contractor	Unrealistic enforced contract duration
3	Difficulties in financing the project by contractor	Delay in approval of submittals, design drawings, etc.
4	Owner's failure to revise and approve documents (design, drawings, other submittals, etc.)	Deficiency in planning and scheduling of project.
5	Unrealistic enforced contract duration	Delay of financing and payments by owner

SPEARMAN CORRELATION

Correlation between top five factors related to project finance, change of scope and extension of time for EPC and HAM contracts based on the responses given by respondents are calculated using Spearman correlation formula,

$$r = \frac{\sum XY - \frac{\sum X \sum Y}{N}}{\sqrt{\left(\sum X^2 - \frac{(\sum X)^2}{N}\right)}\sqrt{\left(\sum Y^2 - \frac{(\sum Y)^2}{N}\right)}} \quad \text{.....(2)}$$

Where X and Y are value of responses given by respondent to each issue.

Result obtained from the spearman correlation shows that highest value of spearman correlation is between Institutional Capacity and Concession Period. It means that these two issues are highly correlated with each other as the government institutional capacity is required more for the projects having much more concession period & both these two issues can happen for project financing. Similarly, for HAM contracts the issues related to project finance, highest value of spearman correlation is between Revenue Collection and Credit Assistance from Employer. It means that these two issues are highly correlated with each other as amount of credit assistance is usually depends on the probable revenue collection estimation, with increase in revenue collection capacity of the employer is increased for higher credit assistance.

Further, highest value of spearman correlation is between Insufficient Land Width and Change in design. It means that these two issues are highly correlated with each other as insufficient land width leads to change in the design & both these two issues can leads to change in scope. Similarly, for HAM contracts highest value of spearman correlation is

between Change in Road profile and Change in Road Alignment. It means that these two issues are highly correlated with each other as change in road alignment is going to effect in the profile of the road and thereby going to impact in the change of scope and vice-versa. Further any changes in the profile & alignment have direct impact on the project cost.

Further, highest value of spearman correlation is between Enforced project duration and delay in approval of submittals EPC. It means that these two issues are highly correlated with each other as for enforced project duration a little in approval of the submittal will effect largely in project completion schedule and thereby leads to extension of time. Similarly, for HAM contracts highest value of spearman correlation is between Delay in revising & approving Documents and Enforced project duration. It means that these two issues are highly correlated with each other as Delay in revising & approving Documents is going to impact in the extension of time, similarly in case of enforced project duration delay in revising & approving the documents has impact in the extension off time.

HYPOTHESIS TESTING BY Z TEST METHOD

In decision-situations, we are interested in knowing whether the parameters for responses of these two modes of contracts are alike or different. The null hypothesis for testing of difference between these two modes is generally stated as $H_0 : \mu_1 = \mu_2$, where μ_1 is population mean of responses of EPC contracts and μ_2 is population mean of responses of HAM contracts. Alternative hypothesis may be of not equal to as stated earlier and accordingly we shall determine the acceptance or rejection regions for testing the hypotheses. Here, it has been considering that null hypothesis is as there is no change in the impact of the criteria with change in the mode of contract from EPC to HAM.

$$z = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{\sigma_{p1}^2}{n_1} + \frac{\sigma_{p2}^2}{n_2}}} \quad \text{.....(3)}$$

Where, σ_{p1} & σ_{p2} are variance for the responses for EPC & HAM

Table 4: Result of Z test on the issues related to Project Financing

Issues	Z Value	Z Critical two-tail	Remarks
Willingness of financial institutions in financing the project.	-6.6253492	1.959963985	Null Hypothesis Rejected
Impact of the project cost in the project financing.	-6.9420303	1.959963985	Null Hypothesis Rejected

Impact of credit reputation of the Employer/Government Institutions.	-8.6444781	1.959963985	Null Hypothesis Rejected
Impact of the credit reputation of developer in project financing.	-9.8144499	1.959963985	Null Hypothesis Rejected
Impact of percentage equity of Developer in securing project financing.	-4.415204	1.959963985	Null Hypothesis Rejected
Impact of credit assistance from Employer/Government Institutions.	-8.4139366	1.959963985	Null Hypothesis Rejected
Viability of the sources of financing.	-3.5760248	1.959963985	Null Hypothesis Rejected
Impact of continuous & timely funding.	0.8063952	1.959963985	Failed to Reject Null Hypothesis
Impact of project type & project Locations.	-2.9486046	1.959963985	Null Hypothesis Rejected
Impact of concession period in project financing.	-3.1812681	1.959963985	Null Hypothesis Rejected
Governance and institutional capacity issues.	-3.0308356	1.959963985	Null Hypothesis Rejected
Impact of Revenue collection in project financing.	-7.3685955	1.959963985	Null Hypothesis Rejected

Results obtained in the above Table 4 shows that the Null Hypothesis i.e. there is no effect of the changes made on the EPC agreements on the HAM mode of Contracts for 11 factors. It has been observed that null hypothesis has been rejected for the eleven factors out of twelve factors related to project financing. Only for criteria of continuous & timely funding in project is failed to be rejected in the Z- test. Hence, impact of this criteria remains unchanged if the mode of contract changes from EPC to HAM.

Table 5 : Result of Z test on the issues related to Change of Scope

Issues	Z Value	Z Critical two-tail	Remarks
Lack in DPR prior to work	3.2443243	1.959963985	Null Hypothesis Rejected

Insufficient land width	3.2511214	1.959963985	Null Hypothesis Rejected
Extra work proposed by client beyond the original scope	0.5529514	1.959963985	Failed to Reject Null Hypothesis
Change in design	0.9266971	1.959963985	Failed to Reject Null Hypothesis
Improper estimation	-1.5935993	1.959963985	Failed to Reject Null Hypothesis
Failure of client in procuring land to concessionaire / contractor	0.3701339	1.959963985	Failed to Reject Null Hypothesis
Work done by other agency	0.4060686	1.959963985	Failed to Reject Null Hypothesis
Change in methodology of work	-1.3107515	1.959963985	Failed to Reject Null Hypothesis
Change in Road profile	-2.4070464	1.959963985	Null Hypothesis Rejected
Change in Road Alignment	-0.6053745	1.959963985	Failed to Reject Null Hypothesis
Lack of information in scope of work	-3.7175575	1.959963985	Null Hypothesis Rejected

Results obtained in the above Table 5 shows that the Null Hypothesis i.e. there is no effect of the changes made on the EPC agreements on the HAM mode of Contracts. It has been observed that null hypothesis has been rejected for the four criteria related to change of scope i.e. lack in detail project report prepared, insufficient land width, Change in Road profile & lack of information in scope of work. Hence, these four criteria are effected and made impact in Extension of time or delay of the project with change in mode of contract. Therefore if the mode of contract is considered as Hybrid Annuity mode then much more consideration to be taken for these four criteria related to change of scope. Remaining 6 criteria are also has impact in the change of scope or cost variation of the project whereas their impact does not changes significantly with the mode of contract as per the responses of the respondent.

Table 6: Result of Z test on the issues related to Extension of Time

Issues	Z Value	Z Critical two-tail	Remarks
Delay in decision making	-0.5271398	1.959963985	Failed to Reject Null Hypothesis

Issues	Z Value	Z Critical two-tail	Remarks
Owner's failure to revise and approve documents (design, drawings, other submittals, etc.)	-0.5275039	1.959963985	Failed to Reject Null Hypothesis
Delay in handing over of construction site to contractor	0.1527935	1.959963985	Failed to Reject Null Hypothesis
Delay of financing and payments by owner	1.0777254	1.959963985	Failed to Reject Null Hypothesis
Unrealistic enforced contract duration	0.3625636	1.959963985	Failed to Reject Null Hypothesis
Lack of experience of owner in project type	-2.2114803	1.959963985	Null Hypothesis Rejected
Difficulties in financing the project by contractor	-0.6983424	1.959963985	Failed to Reject Null Hypothesis
Deficiency in planning and scheduling of project	0.3884852	1.959963985	Failed to Reject Null Hypothesis
Delay in approval of submittals, design drawings, etc.	-1.3157882	1.959963985	Failed to Reject Null Hypothesis
Late delivery on site is caused by a deficiency of material on site or in the market.	3.8443538	1.959963985	Null Hypothesis Rejected
During construction, the material type and specifications is changed	0.1406982	1.959963985	Failed to Reject Null Hypothesis
Difficulties in procuring specially manufactured materials.	-0.3500149	1.959963985	Failed to Reject Null Hypothesis
Late procurement of materials.	-1.588199	1.959963985	Failed to Reject Null Hypothesis
Escalation of material cost.	-0.9050335	1.959963985	Failed to Reject Null Hypothesis

Issues	Z Value	Z Critical two-tail	Remarks
Poor quality of construction material.	-0.2643633	1.959963985	Failed to Reject Null Hypothesis
Suspension of work	0.8307534	1.959963985	Failed to Reject Null Hypothesis
Changes to the project by owner	2.8297761	1.959963985	Null Hypothesis Rejected
Delay in handing over process or approval of completed work by owner	-0.2233499	1.959963985	Failed to Reject Null Hypothesis
Poor site management and supervision	0.4267065	1.959963985	Failed to Reject Null Hypothesis
Delays related to sub-contractors work	-0.0720508	1.959963985	Failed to Reject Null Hypothesis
Less experienced & qualified staff of contractor.	3.3330854	1.959963985	Null Hypothesis Rejected
Inappropriate construction methods	2.6963242	1.959963985	Null Hypothesis Rejected
Poor communication and coordination between stakeholders.	1.7493568	1.959963985	Failed to Reject Null Hypothesis

Results obtained in the above Table 6 shows that the Null Hypothesis i.e. there is no effect of the changes made on the EPC agreements on the HAM mode of Contracts. It has been observed that null hypothesis has been rejected for the five criteria i.e. Lack of experience of owner, Shortage of material at site, Changes to the project by owner, lack of experience of owner & inappropriate construction methods. Hence, these five criteria are effected and made impact in Extension of time or delay of the project with change in mode of contract. Therefore if the mode of contract is considered as Hybrid Annuity mode then much more consideration to be taken for these five criteria related to extension of time. Remaining 18 criteria are also effect in the delay of the project whereas their impact does not changes with the mode of contract as per the responses of the respondent.

VIII. CONCLUSION

Research work is tried to carry out the survey about factors which influence the mode of contracts. The research work oriented towards prevailing issues which is going to affect successful implementation of the mode of contracts in highway projects.

1. From literature review, we able to identify that both EPC & HAM projects are required complex knowledge in management & innovation. EPC & HAM projects are not immune to change of scope, extension of time and requires much attention and mechanism to be avoided.
2. Revenue collection is highly correlated with governance & institutional capacity in case of EPC mode of contract. for EPC mode of contract, the revenue collection is majorly depending on the governance & institutional capacity as the revenue collection risk lies with government agencies. In contrary to this in case of HAM mode of contract Revenue collection is highly correlated with credit assistance as amount of credit assistance is usually depends on the probable revenue collection estimation. Further as much as the credit assistance from authority and as higher is the revenue collection, it will work as guarantee to the investor for timely return of their investments.
3. In project financing, credit reputation of the developer, credit reputation of the employer is second & third respectively most impactful key factors in project financing for a HAM mode of contract. Whereas Continuous & timely funding and governance & Institutional capacity are the second and third most impactful factor for project financing/funding for the EPC projects.
4. Also, insufficient land width is a topmost criterion for EPC projects & it is highly correlated to Change in Design in case of EPC mode of Contracts. As insufficient land width will always lead to change in design or design modifications.
5. In case HAM mode of contracts Insufficient Land width is second top key factor related to change of scope and it is highly related to change in profile as insufficient land width leads to change in road profile to accommodate the road in the available land. Further, in case of HAM Lack of information in scope of work and change in road profile are the first & third respectively, most impactful key factors related to change of scope.
6. RII result also depicts that insufficient land width as key factor which governs change of scope in both EPC & HAM contracts.
7. Also, insufficient land width is a topmost criterion for EPC projects & it is highly correlated to Change in Design in case of EPC mode of Contracts. As insufficient land width will always lead to change in design or design modifications.
8. Again, along with delay in approval of submittals, delay in delivering site to contractor & difficulties in financing the project by the contractor are Second & third topmost criteria related to extension of time for HAM mode of Contract. HAM mode of contract is subjected to huge funding from private sector. Hence it is observed that funding from private sector requires huge time and thereby leads to delay in the project or extension of time.

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