

Investigation of delay and cost overrun in the construction project of building

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Abstract –Literature review is very important stage involved in any research study as it provides the knowledge of subject collected by various researcher in past from time to time the reducing the effort of the new researcher in carrying out basic research thus paving way for the advanced research. The paper frames the theoretical background for the project by studying the previous research conducted by various researchers on the same topic on same line it becomes amply clear that delay in construction of building project owe a lot to various factors and sometimes dominant factors playing critical role resulting in domino effect on the entire project resulting in cost escalation, late delivery of project and strike on the reputation of contractors firm. Two types of research appear to have been done prominently the first one relates to factors that cause construction project delays, while the second one consists of analysis of reported project delays. Therefore, literature focusing upon project delay factors found to be relevant to this research is reviewed below

Key Words:delay, cost escalation, buildingconstruction

1.INTRODUCTION

Delay in construction projects has been attracting attention of the researchers of lately and it has become subject of fascination of researcher more so in the era of rapid economic growth. The literature review presented in paper is from the selective research conducted nationally and internationally conducted so far in the field regarding delay in construction and cost escalation

2. Literature review

(AftabHameedMemon, Ismail Abdul Rahman, Ade Asmi Abdul Azis , 2011)

Preliminary Study on Causative Factors Leading to Construction Cost Overrun highlight the common cost escalation phenomenon around the globe and Malaysia is no

exception to that the ultimate effects of project delay also results in exceeding cost.

It involved 5 experience respondents from each of three key groups involved in construction i.e. Client, consultant and contractor. Results showed that poor design & delays in design, unrealistic contract duration and requirements imposed and lack of experience, late delivery of materials and equipment, relationship between management and labour, delay Preparation and approval of drawings, inadequate planning and scheduling, poor site management and supervision and mistakes during construction are most significant and common factors affecting construction cost. Results also showed that the causative factors affecting cost overrun elected by experts are moderately similar to the previous studies

The study point out the 78 causes of delay in construction industry through questioner survey and make comparison using the average index it also identify 59 causes of cost overrun with the average index The study also compare the older study on subject with the current one

(Anant Narayan Shete,, VaibhavDurwasKothawade 2016)

An Analysis of Cost Overruns and Time Overruns of Construction Projects in India. The purpose of this research is to assess causes and effects of cost and time overruns in construction projects. This study is descriptive, designed to obtain views from, consulting firms, regulatory boards and construction firms in regard to causes and effects of cost and time overruns in construction projects in India. The main aim of this paper is to identify the major reasons for cost overruns in construction projects in India as well as the critical success factors that are helping to avoid the cost overruns.

According to author the effective critical success factors include appropriate planning in the initial stages, skills of

contractors and architects, good relationship and regular coordination

Among client and contractor, and early contribution of contractor with the project. The ideal methods that help to reduce cost overruns include efficient planning, proper management of site and supervision of the project, suitable planning and arrangement of project, proper methods for construction, regular meetings on development of the project, and hiring proficient subcontractors and suppliers.

(**ChidambaramRamanathan, SP Narayanan and Arazi B Idrus 2012**)

Construction Delays Causing Risks on Time and Cost - a Critical Review This study reviews 41 studies around the world which has surveyed the delay factors and classified them into Groups. The main purpose of this study is to review research which has categorized the causes responsible for time delays and cost overruns in projects and to check the validity of these causes in the Malaysian scenario

The collected list has 113 causes for delays which were categorized into 18 different groups. Most of the research has analyzed the responses from Questionnaire surveys. The collected data are used to rank the problem factors. The data are used to investigate and analyses the

Reported “Importance Index, , Severity Index, Relative Frequency Index, Importance Index, Relative Importance Weight, Weighted Average, Mean, Standard Deviation and Variance”.

The study with the help of statistical tool and graphic generate extensive comparison easy to comprehend among 15 countries and compare almost 113 causes of delay among these studies However the study present strong biases against opinion based survey

(**Desaimadhura .c, Prof.s.v.desale 2013**)

Study factors affecting of delay in residential construction projects for Nashik city Construction delays are common problems in private residential projects in Nashik city. This problem occurs frequently during life time leading to dispute and litigations. This research paper present list of construction delays causes retrieved from literature,

The study rely on the feedback of experts in construction industry obtained through survey. The participant of the survey include owner contractor, engineer, architect and consultant

Frequency index, relative importance index is used to analyses y the raw data to obtain refined results, top twenty delay causes of residential construction projects in Nashik city are found out and research gives recommendations to circumvent the factors causing delay in advance . the recommendation of project are lucid enough to be applied on construction sight in Nashik The research has limited area of Nashik under study and may not be applicable universally

(**Dinesh Kumar R 2016**)

The author conducted the detailed study literature and formulated exhaustive list of 103 factor that contribute to delay of construction of building in Chennai the parameter divided into 8 broad types of parties involved in the construction industry like **Owner Contributed Factors, Contractor Contributed Factors, Consultant Contributed Factors, Designer contributed factors, Labour Contributed Factors, Material Contributed Factors, Equipment Contributed Factors, External Factors** these factors rated by qualitative sample size of 40 construction professional sheds light on the factors contributing to delay in Chennai area. The conclusion were arrived at by using relative importance index and study also revels the effect of delay in perception of participants in survey

(**GhanimBekr 2015**)

The research deals with Causes of Delay in Public Construction Projects in Iraq. Study present the status of construction industry in Iraq which is marred by delay not just due to conventional factors but also factors unique to country like bloody civil war in country and other factors like terrorism and extortion

The survey conducted with the help of 65 causes identified by the author taking informed opinion of 136 constructional professionals.

Analysis was carried out to find the amount of delay suffered by the projects, as well as the indices related to frequency of occurrence, severity and importance of the four groups. In

addition, ranking of the 65 factors was carried out to identify the most crucial causes of delay. Security measures, government change of regulations and bureaucracy, official and non-official holidays, low performance of lowest bidder contractors in the government tendering system, design and changes by owner, design changes by consultants, delay in progress payments by the owner, problems with local community, owner's lack of experience in construction and economic local and global conditions etc. were identified by the author as the most important causes of delay in construction industry in Iraq

(HemantaDoloi , Anil Sawhney et.al 2011)

The need of a systematic analysis of the reasons of delays and developing a clear understanding among the industry professionals are highly crucial. Using a selected set of 45 attributes, this research first identified the key factors impacting delay in Indian construction industry and then established the relationship between the critical attributes for developing prediction models for assessing the impacts of these factors on delay questionnaire and personal interviews have formed the basis of this research. Factor analysis and regression modelling were used to examine the significance of the delay factors. From the factor analysis, most critical factors of construction delay were identified these finding are useful as the stand for India specific context in reducing delay in construction and develop clear understanding of the problem

Jamal M. Assbeihat

Factors affecting delays on Private construction projects in Jordan, the Jordan construction industry also suffers from same fate of delay in construction project

delays are nothing but loss of time and money such study was conducted to identify the factors that causes the construction delays. Therefore three groups consist of consultants, contractors and owners were questioned, Shortage of manpower (skilled, semiskilled, unskilled labour), Delay in the approval of contractor submissions by the engineer, Shortage of materials, The relationship between different subcontractors' schedules were the most important factors that cause delays in private projects sector in Jordan. Furthermore

one way ANOVA analysis conducted to select factors that share agreement between the three Groups.

The detail of factors causing delay in construction are laid out with apt recommendation to overcome the same

(KartikKalkani and ShakilMalek 2016)

This thesis work is done on concentrating on noteworthy factors creating Time overruns in Indian construction industry. A valid questionnaire for the overview was produced taking into account factors for time overruns recognized from writing survey factors are assembled into 9 groups for time overruns and disseminated among three parts in particular Real Estate, Infrastructure and Industrial of Indian Construction Industry The result accomplished from the survey revealed that the major cause for time overruns are Clearances on Delay, Drawing Revision and Clearances from Consultant/Client/PMC, Incompetency of Labor, Unrealistic Planning and not using Monitoring and controlling Tools & Technologies, lack of Leadership qualities in Managers, Procurement Planning and Procurement Process .

The authors limit theirs study to the local area concerned and The scope of the Study is limited to the Real Estate, Industrial & Infrastructure Projects only d recommend the tailor made approach to avoid the delay in construction

Author take the help of 73 parameter in discerning the factors causing delay and utilizes relative importance index to formulate the ranking of the factors causing delay in construction and also find out correlation between the

common factors of delay in construction industry with the help of Spearman's rank correlation

(ManoharanKesavan, NavanesanGobidan, PujithaDissanayake 2015)

Analysis of Factors Contributing Civil Engineering Construction Project Delays in Sri Lankan Building Construction Industries

Delay in the completion of a construction project can be a major problem as for clients. These delays lead to costly disputes and adverse relations. Therefore a comprehensive survey was carried out to identify the critical factors in Sri Lankan building construction projects. From in-depth literature studies a Questionnaire survey was carried out among 58 selected building co

findings show that the delay in building construction projects in Sri Lanka help the industry practitioners in taking necessary measures to reduce or avoid the impact of delay of public delays sector on building construction projects. Paper also explores and provides some recommendations to construction projects in Sri Lanka.

(Michael Ghuszak, Agnieszka Lesniak 2015)

The study is titled as Construction delays in client's opinion – multivariate statistical analysis. Implementation of construction works (at the scheduled time) is vital for both the investor and the contractor. Yet construction projects, even those perfectly planned and organized, run the risk of delays. Paper presents the findings of a survey aimed at identifying the most important causes of delays in construction works from the client's perspective. A factor analysis that was performed allows to interpret the dependencies between them. The survey is carried out mostly from the point of view of participant like investor and contractor and gives insight into the ideal that should govern the relationship between article describes the results of research performed among Polish public investors. One of its aims was identification and prioritizing factors that investors believed to cause delays in works implementation.

The statistical analysis employed by the researcher is providing clear and distinct reason in the perception of investor in construction sector. The limitations of study is starkly seen considering it tend to ignore other parties involved in construction.

(Muhammad Akram Akhund1, Ali Raza Khoso et.al 2017)

Time Overrun in Construction Projects of Developing Countries Delay in timely completion is one of the main issues in public sector construction projects of developing countries. Time overrun can be defined as "a condition where a construction project does not complete within the designed schedule". Different stakeholders are responsible for delay in construction projects. This paper provides a conceptual framework to overcome this issue. Two important kinds of time overrun are considered in this study for developing the frame-work: one is excusable delay and second is non-excusable delay. Based on the frame-work it identifies the critical factors causing time overrun. This study is aimed to

Data collection was carried out using a structured questionnaire survey to understand the opinion of the construction practitioners to the time overrun factors. Average index value and rank of each factor causing time overrun according to excusable and non-excusable delay is carried out with 16 factor in excusable delay and 18 factor in non-excusable delay were found out. Suggestions to stockholders for controlling these excusable and non-excusable delays of time overrun in construction industry of Pakistan were laid down.

(Mulenga Mukuka, Clinton Aigbavboa, Wellington Thwala 2015)

Effects of construction projects schedule overruns: A case of the Gauteng Province, South Africa Construction schedule overruns are not uncommon on construction projects world over and the South African construction industry has not escaped the challenges. This paper assesses the effects of construction projects schedule overruns in the Gauteng – South African construction industry. The data used in this paper were derived from both primary and secondary sources. The secondary data was collected via a detailed review of related literature. The primary data was collected through a well-structured questionnaire which was distributed to construction professionals.

Data received from the questionnaires was analyzed using descriptive statistics procedures. Findings from the study revealed that extension of time, cost overruns, loss of profit, disputes, poor quality of work due to hurrying the project, creates stress to the client, acceleration losses, bad reputation with contraction team, claims and delay in getting profit by the client were the major effects of construction projects schedule overruns in Gauteng, South Africa. Since India and south Africa enjoy equal developmental status the study can prove to be useful for comparison.

(Dr. P. P. Bhangale 2017)

The study concentrate on the causes of delay in construction industry in Pune city and concentrate specially 6 high rise building project and assesses the project based on the

qualitative survey carried out with different parties involved in construction project. The study points out 80 different causes for delay in high-rise building dividing them into 4 broad categories and present the conclusion in concise form divided according to various construction parties like contractor, designer, client, consultant related so to be applied in field by construction professionals thereby reducing delay and saving scarce financial resources and avoiding inconvenience.

The study however fails short for its universal application and can not be assumed to be standing equally strong for entire India as study focused on Pune city only and working condition and environment in Pune and other area can vary considerably

(P.ASMITHA 2019)

Time Delay and Cost Overrun In Construction Projects This study evaluated factors contributing to overruns of highway projects and their impact on projects performance at Tamil Nadu in India . Data collection for project was made through questionnaire administered to professionals in the industry. Frequency index were employed to analyse data collected. Increase in material cost, inaccurate materials estimation and underestimating of project costs among others are the most significant cost factors while the most significant time factors include unexpected site condition, increase in project scope, lack of timely progress payment and inadequate planning Although study is about the construction delays in road some the point in observation are equally valid for construction of buildings

(Stanley Department of Quantity Surveying 2015)

The aim of the study was to identify the principal causes of construction project delays The methodology adopted was pilot survey method. projects in Enugu State, Nigeria Survey technique with area and random sampling procedures were employed for the study. The questionnaire where 91 respondents made up of clients, contractor, consultant, and designer participated

Primary data were obtained with the instrument of 5 point likert scale questionnaires. The data collected were presented

in tables and analyzed using Importance Index (IMP.I). A total of fifty-six causes of delay were identified, arranged in eight groups for analysis. It also revealed that the strategies of minimizing construction delays are to ensure available The limitation of research being that it belong to least developed county and situation may be unique to that country

(SubhavSingh ,anujBala et.al 2018)

The aim of this study is to identify the construction-phase related factors which cause delay in a residential project. The researcher adopted the research methodology of qualitative survey through questioner to various parties involved in construction project and the purpose of this project is to identify the project management factors, causing time overrun and analyse them to overcome. The main objective of project is to find out construction-phase related factors due to which a construction project delays in delivery, Analyse and prioritise the construction-factors, to give recommendations to improve the situation researchers utilises the Relative importance index to arrive at conclusion and rank the factors according to their relative importance in causing delay

(TsegayGebrehiwet, HanbinLuo 2017)

Analysis of Delay Impact on Construction Project Based on RII and Correlation Coefficient: Empirical Study as the title of study indicate the study sets out with the literature review of same context and This study investigates the typical causes of delay at different stages of construction and its effect in the Ethiopian construction projects. Using a questionnaire with 52 causes and 5 effects of delay, data were collected from 77 participants The methodologies used in this research are relative important index (RII) and correlation coefficient. Based on the comparison, the impact of delay is found as, construction stage, pre-construction stage, and post-construction stage sequentially

The strong point of study being that it takes into account the factors causing delay in preconstruction, during construction and post construction stages and the result given are also sorted accordingly and according to study the critical effects of delay investigated are cost overruns, time overrun, termination of contract, arbitration, and litigation sequentially.

Although, the research is conducted on the Ethiopian construction projects which brings limitation to the universal applicability, but it can also apply to other countries and further study.

(VenkateshParath, Renuka S M, et.al 2012)

The research dwells on **Evaluation of Critical Factors Influencing Resource Allocation in Indian Construction**

Projects, The effective resource management is a prerequisite for project success. This paper aims to identify the critical factors that influence the resource allocation in Indian construction projects in private and public sectors. The research methodology adopted of opinion provides genuine fact regarding resource allocation in construction industry. The collected data was analysed using the descriptive statistical method and the factors were measured and ranked under each group with Impact index

The findings reveal that the eleven top most critical factors such as materials selection and changes in types and specifications during construction, improper maintenance of equipment, shortage in construction materials, financing between the owner and contractor, force majeure (Fire, Wind damage, Hurricane, Flood), shortage of labours, poor procurement of materials, skill of labours, available of equipment and poor quality of materials

The research document goes on to give recommendation regarding the better resources management technique and procedure to be adopted

The study has limitations considering small and medium size firm dominate the market in India

3. CONCLUSIONS

The literature survey conducted on topic under consideration i.e. causes of delay in construction of a building and consequence of it makes it amply clear that the delay in construction of building is always to the disadvantage of the all parties involved and client seems to share huge burden for the same as compared to other parties

Literature survey also lay out the path for further study by revealing the problems faced by the construction industries in the past. And this survey is going to form the foundation of knowledge of researcher on issues In construction industry

thereby helping indirectly in framing problem statement in new perspective.

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