Scientific Journal of Impact Factor (SJIF): 5.71

e-ISSN (O): 2348-4470
p-ISSN (P): 2348-6406

International Journal of Advance Engineering and Research Development

Volume 5, Issue 03, March -2018

A Critical Literature Review on Study of Safety Management for Infrastructure Projects

Jaykumar D. Chaudhary[1], Dr.Jayeshkumar R. Pitroda[2]

[1]*Parul University, Civil Engineering Department,Limda, Vadodara, Gujarat, India,*
[2]*Civil Engineering Department, BVM Engineering College*
VallabhVidyanagar, Gujarat, India,

Abstract - *Safety management is important consideration in any infrastructure construction project. The paper states about the safety management practices in infrastructure construction projects. The main aim of this study is to determine the analytical success factors which are responsible for the execution of safety management in construction projects and give most advantageous safety of infrastructure to society and also encounter the requirements of all the interested parties of the infrastructure projects. Little research work was done and studied for finding applied problems of safety management in a practical and current situation of an infrastructure project. Analysis and conclusions from a questionnaire survey and data analysis were done from the safety audits, problems pertaining to contractor's safety management in projects of the infrastructure.*

Keywords- *Safety Management, Infrastructure, Project*

I.INTRODUCTION

Infrastructure is the basic facilities like roads, schools, phone lines, sewage treatment plants, power generation and industries. The main goal of safety management is to minimize accidents and reach necessary level for safety nan infrastructure project which is effectively planned. Most big firms have a policies of safety on paper, but workers & employees generally doesn't have any knowledge about its existence. In inclusion, planners play as an important character in decreasing accidents, thereby accommodating a harmless work site for construction workforces. The safety of worker must be considered during process of policy and preferably, it must be continually updated during real construction tasks.The main focus of the paper is to identify the factors that are affecting safety management from the contractor's perspective in infrastructure projects.

II. PREVIOUSLITERATURE REVIEW

Mohamed et al. (1999) showed a pragmatic examination of safety for safety management actions and performance in construction in Australia. The writer showed a detailed report of pragmatic analysis carried out to survey the connection between the strength of safety in safety management promises and the general safety performances, pro- passiveness and data.[20]

Edwin Sawacha et al. (1999) discovered the effects of the factual, economical, technical, practical, and administrative and the ecofriendly matters are consider in terms of the factors that are related with the level of site safety. Seven group of factors find that can have an influence on the performance of safety on construction sites: 'historical', 'economical', 'psychological', 'technical', 'procedural', 'organizational', 'the working environment'. [11]

ThanetAksorn et al. (2007) compelling gauge wise survey around 70 defendants and try gapanalysis strategy for the final decision. Identified 16 factors subsidizing to the development of safety programs and then estimated their degrees of importance and actual rank based upon the defendants 'observations. Results of this study showed that all defendants rate management support as the most important factor, followed by suitable safety education and training, joint effort, clear and realistic objectives, and effective execution scheme. [18]

Mohammad S. El-Mashaleh et al. (2010) meet 70 different contractors and collect data in Jordanian society. Some past data presents in tables and give good idea about safety policies in construction work. Concluded the results and given suggestions on the basis of contractors planning. [12]

Adeeba A. Raheem et al. (2011) equates Asian continent countries safety performance. It was gathered through studies that the laws usually related to professional safety and well-being were too comprehensive to apply straight to safety in construction in Asian emerging countries. Comparative analysis was used and economical suggestions were given. [4]

Cheng Min et al. (2011) a progressive game model of construction safety management was developed to assess the performance of different people in the construction such as the contractor and government regulation department in the

construction process. According to the study it is known that the steady position of safety regulation in construction safety mainly relates to the amount of safety events, the possibilities of accidents and the fatalities of construction originalities at the same time disasters occur. [19]

Zubair et al. (2013) presented a study to determine the important factors that were affecting the safety schedules in construction industry in Pakistan. A survey was carried out wsing questionnaire for finding out the impact of the factors affecting construction safety. A questionnaire survey was assessed by AIM method and ranking test was done between different groups of appellants, to sum out connotation between various teams of appellants. Author finds that support from management is important factor for executing the safety schedules during and on the projects. From the test done arithmetically, author concludes that team members were mainly in favor of support from management as an important factor. 17]

Samuel OladipoOlutuase et al. (2014) had specified the risky nature of the construction industry in Nigeria. Author estimated five main factors which were most operative to safety in construction work. It comprise selection of Safety Accountabilities to prime Workforces; Talks of safety directly with workers; Appropriate & supply of timely PPEs; Review of Safety Regularly; well-ordered Risk Identification; Valuation of Risk Level; Direction of safety for new/shifted workers; Pre-project safety exercises were be given; In-house reviews are arranged; Properly showing safety/ attention signs; Safety Officer at sites; Obtain ability& capability of clinical services; Fire Extinguishers; and Clearance of Emergency Exits. [2]

Tan Chin Keng et al. (2014) identify the problem of accidents by two case studies and then collect data from those case studies. Commencing the research conclusions, it was decided that usually the construction sites has well behaved and properly structured safety reforms namely safety program, education and training exercises, review of site safety, safety inspecting, meeting on safety, site safety association, individual protective equipment, emergency support and devices for calculating safety, fall defensive systems, and advertisings related to safety. [3]

T. Subramani et al. (2014) Collected data which comprised data regarding to organizational safety plan, exercise, conferences, equipment for safety, examinations related to safety, motivations and punishments, attitude towards safety from worker's side, labor turnover rates and agreement with safety regulation. Studied reveals several factors of poor safety management. [6]

K.MohammedImthathullah Khan et al. (2015) classify the precarious success factors which were liable for the performance for managing safety in construction projects. The main two factors that suggestively influence the characteristic of safety at construction sites were: 'Lack of knowledge about the necessary of soil linking for power tools', 'Lack of knowledge about cables defend from machine-driven injuries'. [1]

Pranav Patel et al. (2016) find the factors affecting safety practices of construction in Gujarat. 153 questionnaires find and then distributes. In those questionnaires some good points covered and then analyses the whole data by strategic methods. [16]

IV. CONCLUSION

Safety Management is based on assumption that uncertainty is the major factor in accident that affects the capability to finish the project on time. However there subsist many more admissible misconception practices which affects the expectations of safety such as pressure from outside, internal conflicts and false estimates to succeed the project which must be inscribed.

The following factors have been identified and classified into different groups as follows:

1. For pre-existing conditions, factors identified from Initial stage are as: Management commitment, Training and awareness.
2. For established goals, factors identified from planning stage are as: Emergency Response, Site layout plan and Housekeeping.
3. For implementing safety factors, factors identified from Execution and Controlling stage (stage-1) are as: PPE, Material Handling, Material Storage, Fire Preventation, Excavation, Confined Space and Electrical.
4. For change management factors, factors identified from Execution and Controlling stage (level-2) are as: Hot work, Form work and fall preventation.
5. For safety specific factors, factors identified from Execution and Controlling stage (level-3) are as: Hand and power tools, Motor vehicals, Drilling machines, Grinding machines and wood working.

REFERENCES

[1] K.Mohammed Imthathullah Khan1, K. Suguna and P. N. Raghunath (2015), "A Study on Safety Management in Construction Projects", International Journal of Engineering Science and Innovative and Technology (IJESIT), ISSN: 2319-5967, Volume 4, Issue 4, PP: 119

[2] Samuel OladipoOlutuase (2014), "A Study of Safety Management in the Nigerian Construction Industry", IOSR Journal of Business and Management (IOSR-JBM), e-ISSN: 2278-487X, p-ISSN: 2319-7668, Volume 16, Issue 3, PP: 01-10

[3] Tan Chin Keng and Nadeera Abdul Razak (2014), "Case Studies on Safety Management at Construction Site", Journal of Sustainability Science and Management (JSSM), ISSN: 1823-8556, Volume 9, PP: 90-108

[4] Adeeba A. Raheem, Jimmie W. Hinze (2011), "Comparative Analysis of Construction Safety in Asian Developing Countries", Sixth International Conference on Construction in the 21st Century (CITC-VI)

[5] SurajTatiyaa and Prof. Mrs. A. P.Biswasb (2015), "Development of Safety Policy for Construction Project", International Journal of Innovative and Emerging Research in Engineering (IJIERE), e-ISSN: 2394 – 3343, p-ISSN: 2394 – 5494, Volume 2, Issue 7, PP: 06-15

[6] T. Subramani, R. Lordsonmillar (2014), "Safety Management Analysis In Construction Industry", Int. Journal of Engineering Research and Applications, ISSN: 2248-9622, Vol. 4, Issue 6 (Version 5), PP: 117-120

[7] RizaYosiaSunindijo, Ph.D.; and Patrick X. W. Zou, Ph.D. (2013), "Conceptualizing Safety Management in Construction Projects", Journal of Construction Engineering And Management © ASCE

[8] V. Santos Kumar, PG Scholar (2016), "An Organizational Study about Safety Management", Engineering & Technology in India, ISSN 2472-8640, Vol. 1 Management, PP: 356-366

[9] Pranav Patel, Dr. Rajiv Bhatt, Dr. Jayeshkumar Pitroda (2016), "Identification of Factors Affecting Safety Performance on Construction Projects Gujarat", Engineering: Issues, opportunities and Challenges for Development, ISBN: 978-81-929339-3-1, PP: 128-140

[10] K. Mouleeswaran (2104), "Evaluation of Safety Performance Level of Construction Firms in and Around Erode Zone", International Conference on Engineering Technology and Science-(ICETS'14), ISSN (Online): 2319 – 8753, ISSN (Print): 2347 – 6710, Volume 3, Special Issue 1, PP: 1586-1594

[11] Edwin Sawacha, ShamilNaoum and Daniel Fong (1999), "Factors affecting safety performance on construction sites", International Journal of Project Management, Vol. 17, ISSUE No. 5, PP: 309-315

[12] Mohammad S. El-Mashaleh, Bashar M. Al-Smadi , Khalied H. Hyari and Shaher M. Rababeh (2010), "Safety Management in the Jordanian Construction Industry", Jordan Journal of Civil Engineering, Volume 4, Issue No. 1, PP: 47-54

[13] MistrySoham, Bhatt Rajiv (2013), "Critical FactorsAffecting Labour Productivity InConstruction Projects: Case Study of South Gujarat Region of India", International Journal of Engineering and Advanced Technology (IJEAT), ISSN: 2249 – 8958, Volume-2, Issue-4, PP: 583-591

[14] Waqas Ahmed[1]; Malik MuneebAbid 2 (2013), "Development of a Framework For Implementing Safety on Construction Sites", International Journal of Advance Research, IJOAR, ISSN 2320-9100, Volume 1, Issue 3, PP: 32-55

[15] ArefCharehzehi, AlirezaAhankoob (2012), "Enhancement of Safety Performance at Construction Site", International Journal of Advances in Engineering & Technology, ISSN: 2231-1963, Vol. 5, Issue 1, PP: 303-312

[16] Pranav Patel, Dr. Rajiv Bhatt, Dr. Jayeshkumar Pitroda (2016), "Evaluation of the Safety Performance Level of Construction Projects in Gujarat". IJARIIE-ISSN(O)-2395-4396, Vol-2 Issue-3, PP: 2442-2450

[17] Zubair Ahmed Memon, KanyaLalKhatri, and Allah BuxMemon (2013), "Identifying the Critical Factors Affecting Safety Program Performance for Construction Projects within Pakistan Construction Industry", Mehran University Research Journal of Engineering & Technology, ISSN 0254-7821, Volume 32, No. 2,PP: 269-276

[18] ThanetAksorn and B.H.W. Hadikusumo (2007), "Gap Analysis Approach for Construction Safety Program Improvement", Journal of Construction in Developing Countries, Vol. 12, No. 1, PP: 1-21

[19] Cheng Min, Chen Hui (2011), "Game Analysis of Construction Safety Supervision", Humanities and social sciences research project of the Ministry of Education:10YJC630030, 978-1-4244-8694-6/11/$26.00 ©2011 IEEE, PP: 1-4

[20] Mohamed, S. (1999), Empirical Investigation of Construction Safety Management Activities and Performance in Australia, Safety Science, 33(3), 129-142.

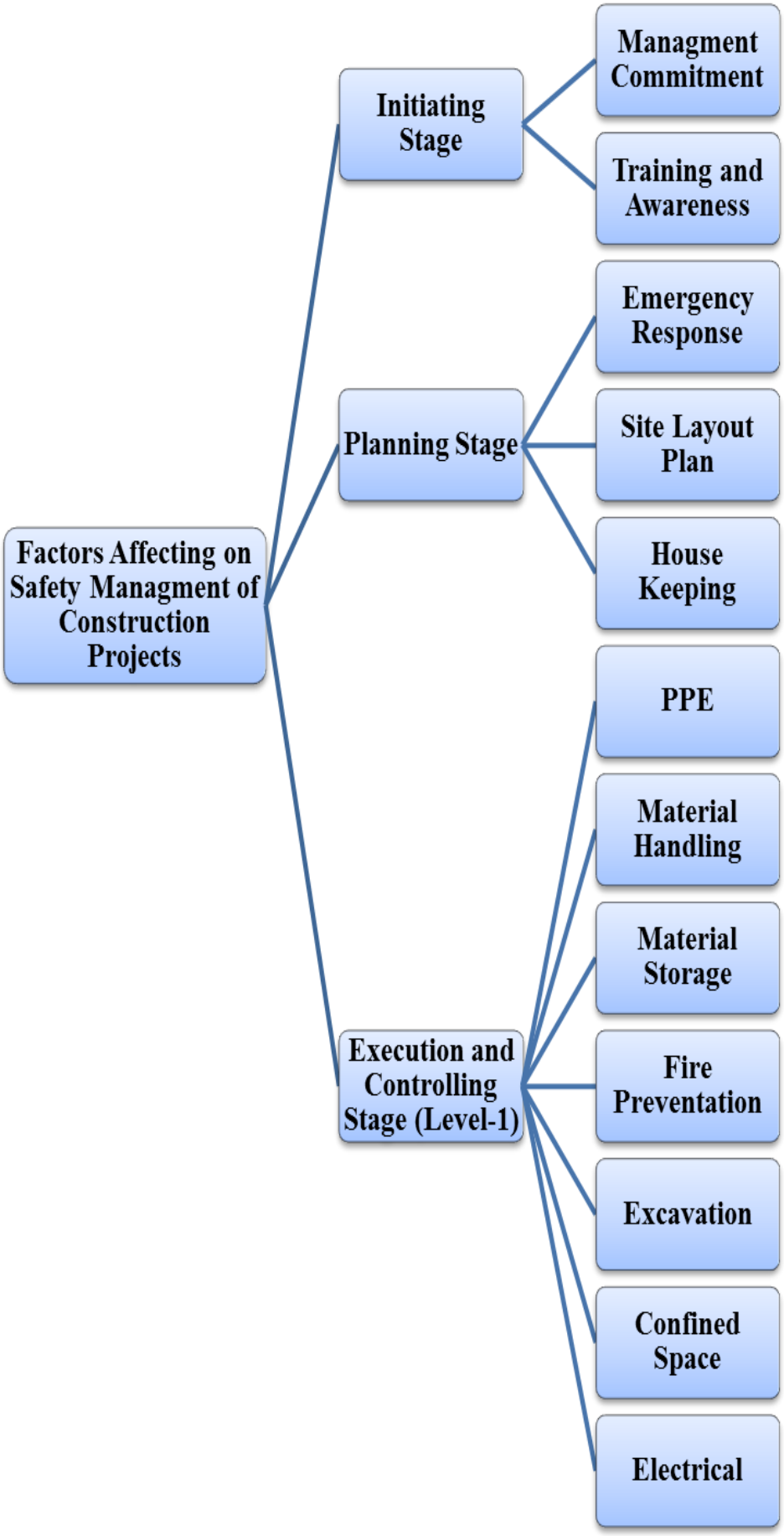

Figure 1(a) : Integrated framework for assessing factors affecting Safety Management in Infrastructure projects

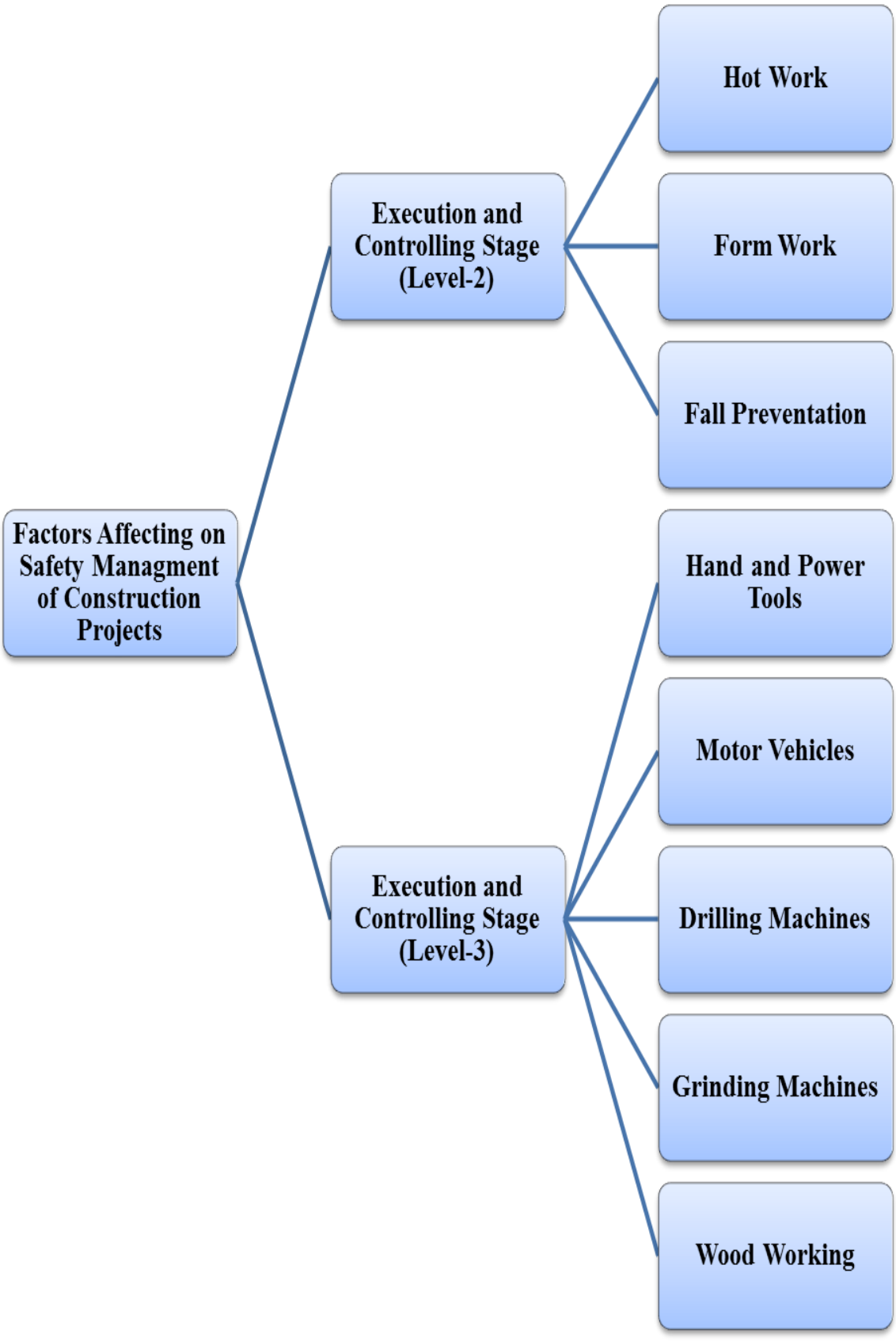

Figure 1 (b): Integrated framework for assessing factors affecting Safety management in Infrastructure projects

