

## **Alternative Solutions for Construction Project Failure and to Improve Project Execution Plan in India using MADMA<sup>1, 2</sup>**

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### **ABSTRACT**

The construction projects are increasing rapidly in every developing nation all over India. Executing the project phase is likely to be shown more like a work breakdown. It is a procedure that defines in what way, at what time, and by whom a correct Agenda or a set of tasks to be finished. “The purpose of managing the project execution plan is all about managing all the characters within the project plan as all the job should be done to build the definite project run towards success”<sup>3</sup>. In this paper, we have used the Multi-Attribute Decision Making analysis and with that the additive weighting technique to determine the alternative solution from the better solution to the least solutions that should be integrated into the project execution phase. Based on this analysis, the project manager should know more about the data assessing of the respective project with the strategic communication within senior managers, also to consider with an organizational culture and teamwork also by peer review during executing the project. Since the improvement of the project execution plan will be the best control document for completing the projects on time with client satisfaction.

**Keywords:** Causes, Project Failure, Inadequate planning, Insufficient training, Project execution, Lack of resources, Scheduling risks.

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<sup>3</sup> Kuldeep A Pandit, P.P. Bhangale (09 December 2015). Major elements of project execution planning for construction of buildings. Retrieved from <https://www.irjet.net/archives/V2/i9/IRJET-V2I976.pdf>

## INTRODUCTION

India is the developing country over a distant future due to the lack of the most advantageous framework. “So, in order to come up with a same advantageous framework from the developed nations we should use the same standards that are being used by the developed nations”<sup>4</sup>.

Refinery projects are long time projects and most the times it involves complicated engineering. For project management, such complicated output requires in adapting the top management techniques to ensure the outputs on time. “This project involves the complicated engineering and the project management environment, so this projects usually undergoes project delay with respect to time and cost”<sup>5</sup>. “In refinery projects, Engineering-Procurement- Construction contractors, material suppliers, and maintenance are major stakeholders, in this particular environment hazard management the choice can be done with inspecting and evaluating the risk that occurs in every phase of the project execution”<sup>6</sup>.

According to Max Wideman, the project structure is all about comprising a project and their relations. The project success/ failure criteria are judged on the benchmark upon comparative achievement or breakdown of the project. “There are 3 basic set of criteria they are first, the funding business, proprietor or customer satisfaction, secondly, the old-style project management is unique of on phase, in economical or to the requirement and thirdly the project success”<sup>7</sup>. The project implementation plan will be the development of a professional event and also the estimated concise. This strategy will clique out an estimated plan towards supervision of the plan, illustrate all the strategies, stages and also the schedules those are going to be accepted. “The situation also defines the action in the connection between the materials outside the scope of major contract (the client's whole project may consist of several contracts for supply of materials and maintenance both from outside the organization and also inside the customer's association the situation that are processed and safeguarding agreements and by resources etc.) This will be done by the Project

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<sup>4</sup> Asif Equbal, Rajeev Banerjee, Zishan Raza Khan, Raj Bandhu Dixit (March 2017). Construction disputes in construction work sites and their probable solutions. Retrieved from [https://www.iaeme.com/MasterAdmin/uploadfolder/IJCIET\\_08\\_03\\_007/IJCIET\\_08\\_03\\_007.pdf](https://www.iaeme.com/MasterAdmin/uploadfolder/IJCIET_08_03_007/IJCIET_08_03_007.pdf)

<sup>5</sup> P.M.Deshpande. Singh (October 2016). Analysis refinery project risk with composite factor method. Retrieved from [https://www.researchgate.net/publication/312159132\\_Study\\_and\\_Analysis\\_of\\_Refinery\\_Project\\_Risk\\_with\\_Composite\\_Factor\\_Method](https://www.researchgate.net/publication/312159132_Study_and_Analysis_of_Refinery_Project_Risk_with_Composite_Factor_Method)

<sup>6</sup> MSc Thesis- Harshal V Patil (26 August 2016). Analysis of the refinery project execution strategy from an organisational effectiveness perspective. Retrieved from <https://repository.tudelft.nl/islandora/object/uuid:4f62f38a-63bc-4dfd-80b9-d857ab4cde79/datastream/OBJ/>

<sup>7</sup> Max Wideman comparative glossary. Projectnet Glossary, April 1997, on the website of the UK publication Project Manager Today, Nordic Project Management Terminology, NORDNET, Reistad Offset, Oslo, 1985. Retrieved from [http://www.maxwideman.com/pmglossary/PMG\\_P20.htm](http://www.maxwideman.com/pmglossary/PMG_P20.htm)

manager”<sup>8</sup>. “The development in the plan must judge in contradiction of project performance plan till the completion of the project and this plan must be altered and refined as required”<sup>9</sup>. The project performance plan will be the part of the wheel of life in a plan while a maximum of the work has done to produce the best outcome also the maximum time the project economical stage will be exhausted.

The researcher tried to realize why executing crash to achieve the goals? and what are the intrinsic and extrinsic impact of the project? Some extrinsic events also render a project to be unnecessary. Intrinsic events might cause the project to be delayed or cost higher than the expected cost. All the events that deliver on project success can be expected and accordingly the plans can be made.

“Projects cannot be successful by the project execution plan, but their achievement is guaranteed that there is a proper plan, that would be efficiently utilized”<sup>10</sup>. Why these risks cannot be avoided as much as possible? How can these be avoided? Finding solutions for this problem is very much important for the future. To have a clear vision on the issues that take place on the construction project, a Fishbone analysis has been made for the proper understanding of the subject

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<sup>8</sup> Kuldeep A Pandit, P.P. Bhangale (09 December 2015). Major elements of project execution planning for construction of buildings. Retrieved from <https://www.irjet.net/archives/V2/i9/IRJET-V2I976.pdf>

<sup>9</sup> Dr.Rajiv Bhatt, Abhishek Shah, Prof. J J Bhavsar. (28 July 2015). Ranking of causes of disputes and use of dispute resolution methods for the construction industry in Gujarat. Retrieved from <https://www.slideshare.net/abhishekshah798/ranking-of-causes-of-disputes-and-use-of-dispute-resolution-methods-for-construction-industry-in-gujarat-during>

<sup>10</sup> Karthikeyan. R. & Manikandan. T. (03 March 2017). A study on causes and effects of conflicts in Indian construction projects. Retrieved from <https://irjet.net/archives/V4/i3/IRJET-V4I3278.pdf>

### FISHBONE ANALYSIS

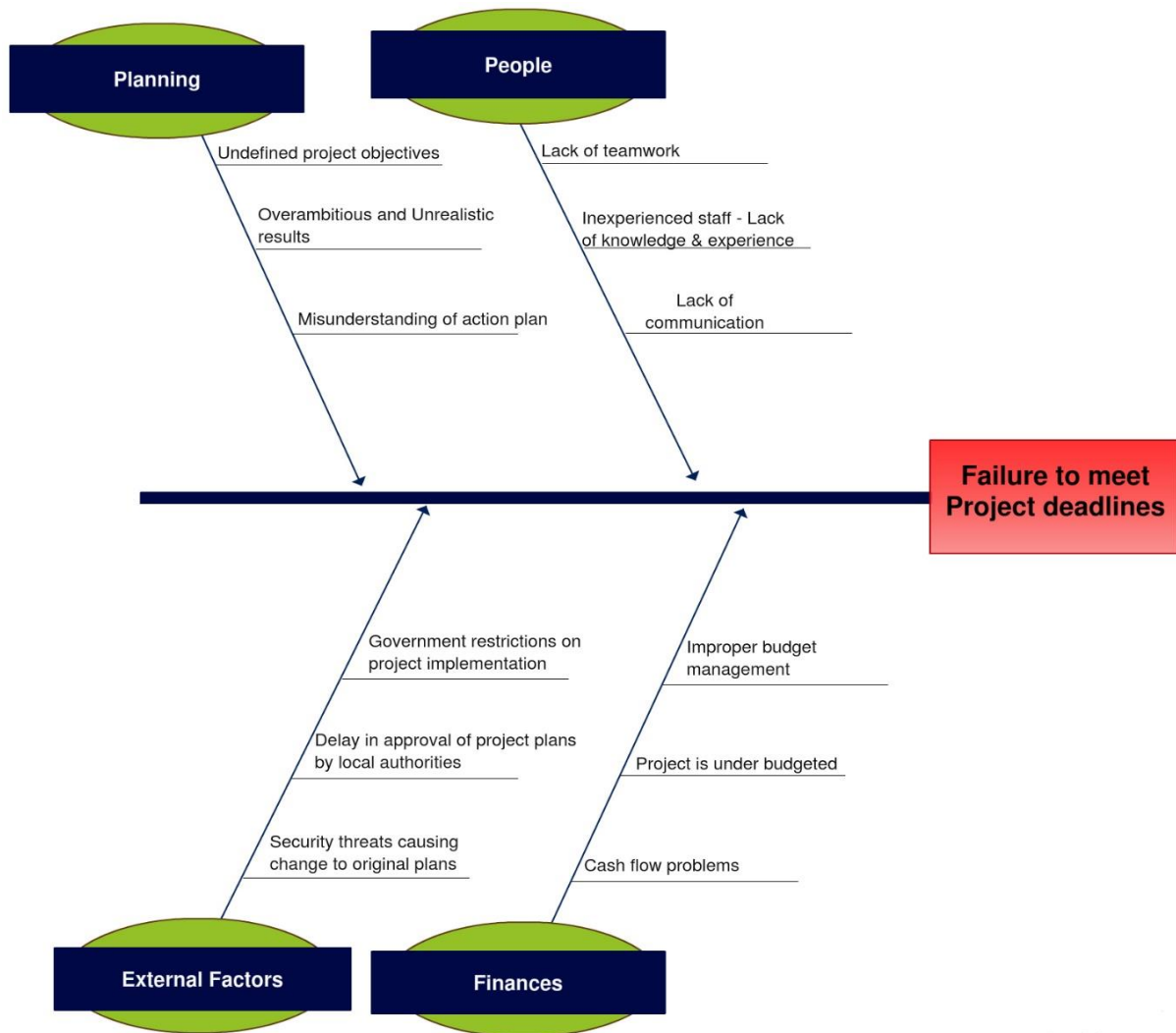


Figure1: “Fishbone Analysis: Why there are still issues to meet project deadline?”<sup>11</sup>

### Step 1- Problem Recognition and Evaluation

The author also intends to know the particular project requirements such as project outcome, project milestones, and the life cycle of the project. This also explains:

- What are the typical problems overcome during the project execution?

<sup>11</sup> “By Author” October 2018

- What are the risks likely to be faced on the project and how to overcome it?

While planning for the execution of the project it might be difficult, but it is not impossible to achieve. “A correctly planned path for the performance should be necessary so as to resolve such kind of problems so that we can reach the managerial targets and purposes”<sup>12</sup>.

## **METHODOLOGY**

### **Step 2: Summarize**

So, we examined about principal and purposefulness through this paper as we are going to reduce risk during the execution of the project and this may improve their overall performance and the growth by satisfying clients by delivering the project on time.

We need to identify the failure that has direct and the negative impact on the project while executing. “There are several obstacles to effective strategy execution; these are the major cause for the failure of the project”<sup>13</sup>:

- **Inflexible process and organizational structures** tend to the problem in adjusting with the change of business environment.
- **Lack of performance** measurement tools this will tend to the poor improvement process.
- **Lack of communication and execution** this will tend to critical mismanagement.
- **Less strategy execution** focus this will lead to the poor outcome of the project.
- **Lack of change in management** leads to poor delivery of the outcome.
- **No execution direction** leads to wastage of efforts.
- **No understanding by the employees** leads to a lack of interest towards the success.
- **Poor material allotment** leads to incompetence and miss opportunities.
- **Poor planning management** this leads to confusion and poor decision making.

These are the major points that we will focus on and manage to find the best alternative solutions.

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<sup>12</sup> Mohammed Taha Al-Qershi, Ravinde Kishore. (07 November 2017). Claims and types in Indian construction industry- contractors perspective. Retrieved from <http://pubs.sciepub.com/ajcea/5/5/3/index.html>

<sup>13</sup> Syed Saad Wasim. (online) (2018). Vol.10, No.7, Causes of Construction project failures in Pakistan. Retrieved from <https://iiste.org/Journals/index.php/CER/article/viewFile/43665/44998>

### **Step 3- Alternative Solutions**

The project manager must cover all the primary basic engineering to minimize the risk and the confusions. Also, the elements to be considered such as procurement, constructability, and operation also maintenance schedule must be done to stay away from rework in future project stages. Also, the project manager should understand that the prior schedule engineering should be achieved parallel to speed up the job. “Hereafter the job complete scheduling must be compulsory and also the finest training required for the business to achieve project goals and the main purpose of managing the planning and scheduling is to introduce the new techniques and methodologies that has been best tested and proved which is associated with planning and scheduling which has been found to work on most project and most of the time”<sup>14</sup>. “Some of the key success factors to be considered for the success of the project are”<sup>15</sup>:

#### **1. Data Assessment**

Firms that are from small to big ranges are operating the data assessment for pursuing the best chances, lower price, construct competences, build superior also for speedier judgments by eventually raise their client’s fulfillment even this reflects at project, program and portfolio stages meanwhile this will enable companywide strategy. “One if the main reason for the failure of the project is not maintaining the data on time”<sup>16</sup>. In the construction project having a data collection and also the QA/QC of the project is mandatory to avoid unnecessary rework. For this matter, data assessment is necessary for achieving success in the project.

#### **2. Organizational culture**

Organizational culture is identified as a combined programming of the mind which individualizes the members of one organization from another. There is no doubt that different organizations have different cultures. This tends to develop the organization discover, invents or develop a solution to the problem. The organization operates by establishing terms to manage the project independently. “There is a high regard for experts in this culture and dependent on the right people to be brought into together by the right time”<sup>17</sup>. This structural culture will be connected towards

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<sup>14</sup> P.P Admin. (02 November 2015), (17 January 2016). Managing planning and scheduling. Introduction to managing planning and scheduling. What is the purpose of managing planning and scheduling? Retrieved from <http://www.planningplanet.com/guild/gpccar/introduction-to-managing-planning-and-scheduling>

<sup>15</sup> Alvaro Alfonso Carreño. (20 October 2015). Some key factors for project execution. Retrieved from <https://www.linkedin.com/pulse/key-success-factors-project-execution-alvaro-alfonso-carre%C3%B1o>

<sup>16</sup> Moria Alexander. (20 March 2017). How to use data analytics to improve project outcomes. Retrieved from <https://www.cio.com/article/3182352/project-management/how-to-use-data-analytics-to-improve-project-outcomes.html>

<sup>17</sup> Raufdeen Rameezdeen, Nishanthi Gunarathna. (November 2012). Organizational culture in construction: an employee perspective. Retrieved from

behaviors, trusts also with morals through the members they are going to share within the management. Project manager practices the linkage of using his skilled colleagues to share information and supervision earlier also during executing the project meanwhile by checking their social consequences, so it might not affect the project to run out of time.

### **3. Teamwork**

The project team is the group of people they are responsible for the complicated jobs for short time also they work naturally cross-functional containing the people with the balancing skills along with people they develop extreme regulations also with managing zone inside corporation (detailed engineering, procurement, construction, operation, and maintenance). The advantage of a cross-functional team is that they have the capacity to work on multiple activities simultaneously, rather than sequentially which saves time. “The function of the cross-functional group is performed towards a plan magnificently that trusts the capability that he can participate in his feasible experience also his knacks it might get issued between crew colleagues”<sup>18</sup>. Performing this kind, the situation shall adopt parallel actions to execute the project on daily basis. Consequently, underneath the idea, the overall time for executing the project can be shortened up accordingly attaining the superior outcome, well quality, improved output also by better client satisfaction could be attained.

### **4. Colleague reviews**

Essentially, a quality assurance procedure always will be performed during executing the project by most of the clients. Main commitment of this is to sort out that the plan and the objective in the executing during the project are benchmarked. The technique was conducted by adding the experts to review the projects underlying assumptions, decision logic, alternatives and future ideas and also by authenticating, productively inspiring report during a decision support package. Customer review group professional mostly from the management. This team focuses on the key areas such as marketable, assessment value, administrative assembly inside execution crew, well-being, ecosystem, and security, project performance also the methodological. “The customer review crew

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[https://www.researchgate.net/publication/279637533\\_Organisational\\_Culture\\_in\\_Construction\\_An\\_Employee\\_Perspective/download](https://www.researchgate.net/publication/279637533_Organisational_Culture_in_Construction_An_Employee_Perspective/download)

<sup>18</sup> Marte Pettersen Buvik, Monica Rolfsen. (19 June 2015). Prior ties and trust development in project teams- A case study from the construction industry. Retrieved from <https://fenix.tecnico.ulisboa.pt/downloadFile/1970943312272182/22%20Prior%20ties%20and%20trust%20development%20in%20project%20teams%20-%20A%20case%20study%20from%20the%20construction%20industry.pdf>

glance will test the project crew so that they can check whether the work has been done or the assigned tasks and also describes the strategy to execute the project for its achievement”<sup>19</sup>.

## **5. Strategic Communication**

The project manager should have a key role in communicating about the project. Good communication between project team members is important for its achievement. Lack of interaction is the common risk that can be identified in the projects. Communication within the construction projects is complicated fact covering multiple disciplinary fields, several organizational levels as well as several assessments and clarifications. “Every member in the project should assign, arrange also participate with the meaningful quantities of data so that they can be familiar with the objectives”<sup>20</sup>. This alternative is becoming familiar in every project for the last two eras. This is nothing but introducing communication efforts with an agenda and a master plan. This controlling plan includes supporting the brand in association, advice team members for performing definite schedules, towards the success of the project.

To assess the different alternatives which are in details above, we have set a list of attributes the will enable to rank the best solutions to the least one. “Those attributes are selected accordingly on how the project failure occurs during executing the project”<sup>21</sup>:

- 1. Planning:**
- 2. People:**
- 3. External factors:**
- 4. Finances:**
- 5. Resources:**

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<sup>19</sup> Joe Gregory. (2002). Chapter: 7. Chevron Texaco Project development and execution process. Proceedings of government/ Industry forum: The owner’s role in project management and pre-project planning. Retrieved from <https://www.nap.edu/read/10343/chapter/8#32>

<sup>20</sup> Prof. Anita Ceric. (7 June 2010-2011-2012). Communication risk in construction projects: Application of principal-agent theory, The impact of asymmetric information on communication risk in construction projects: Project managers perceptions. Retrieved from [https://bib.irb.hr/datoteka/609927.EPOC\\_2010-2011-2012\\_June\\_7.pdf](https://bib.irb.hr/datoteka/609927.EPOC_2010-2011-2012_June_7.pdf)

<sup>21</sup> (n/a). (01 August 2018). (Online). Designing Buildings Wiki. The risk in building design and construction. Retrieved from [https://www.designingbuildings.co.uk/wiki/Risk\\_in\\_building\\_design\\_and\\_construction](https://www.designingbuildings.co.uk/wiki/Risk_in_building_design_and_construction)



### Step 4 – Selection Criteria

“In this paper, we have used “Multi-Attribute Decision-Making analysis” method for selecting the best solutions accordingly with respect to the selected attributes”<sup>22</sup>. Here the alternative solution is ranked based on the attributes as very high, high, neutral, low, very low. Here the color difference varies from green, yellow and red whereas red indicates low and very low, while the yellow indicates neutral and the green indicates high and very high.

**Table 1- Multi-Attribute Decision Matrix** <sup>23</sup>

ALTERNATIVE SOLUTIONS /ATTRIBUTES	DATA ASSESSMENT	ORGANIZATIONAL CULTRURE	TEAM WORK	COLLEAGUE REVIEW	STRATEGIC COMMUNICATION
PLANNING	very high	neutral	very low	low	high
PEOPLE	low	neutral	very high	very low	high
EXTERNAL FACTORS	very high	low	high	very low	neutral
FINANCES	very high	low	neutral	very low	high
RESOURCES	very high	neutral	low	very low	high

## FINDINGS

### Step 5 – Analysis and Selection of Best Alternative Solutions

To utilize the approach which we have shown in table 1, we need to represent the alternatives quantitatively for the analysis. So, we need to start converting the relative scorings (very high, high, neutral, low, very low) as a dimensionless value.

**Table 2- Quantitative representation of the attributes**<sup>24</sup>

ATTRIBUTES/ RELATIVE SCORING OPTIONS	PLANNING	PEOPLE	EXTERNAL FACTORS	FINANCES	RESOURCES
VERY HIGH	1	1	1	1	1
HIGH	0.75	0.75	0.75	0.75	0.75
NEUTRAL	0.50	0.50	0.50	0.50	0.50
LOW	0.25	0.25	0.25	0.25	0.25
VERY LOW	0	0	0	0	0

Now, we shall use the above-mentioned dimensionless values relative rank or weight for each of the alternatives.

<sup>22</sup> Sullivan, Wickes& Kroelling (2014). Engineering Economics 15<sup>th</sup> Edition Then the second step is to calculate the relative weighting of each attribute. Retrieved from <http://www.planningplanet.com/guild/gpccar/managing-change-the-owners-perspective>

<sup>23</sup> “By Author” November 2018

<sup>24</sup> “By Author” November 2018

**Table 3- Relative weighting<sup>25</sup>**

ALTERNATIVE SOLUTIONS /ATTRIBUTES	DATA ASSESSMENT	ORGANIZATIONAL CULTURE	TEAM WORK	COLLEAGUE REVIEW	STRATEGIC COMMUNICATION
PLANNING	1	0.50	0	0.25	0.75
PEOPLE	0.25	0.50	1	0	0.75
EXTERNAL FACTORS	1	0.25	0.75	0	0.50
FINANCES	1	0.25	0.50	0	0.75
RESOURCES	1	0.50	0.25	0	0.75
<b>TOTAL</b>	<b>4.25</b>	<b>2</b>	<b>2.50</b>	<b>0.25</b>	<b>3.50</b>

Now, we will use the “**additive weighting technique**”<sup>26</sup> by ranking each of the attributes by their importance. The sum of each solution can be compared to the normalized weight of 1.50, which is the score to be reached out. So, the attributes are ranked from most important to the least important (**Planning >People >Resources >External Factors >Finances**) according to this arrangement we can now use this technique.

**Table 4- Additive weighting technique<sup>27</sup>**

ALTERNATIVE SOLUTIONS /ATTRIBUTES	RELATIVE RANK/ WIEGHT	NORMALIZED WEIGHT	DATA ASSESSMENT		ORGANIZATIONAL CULTURE		TEAM WORK		COLLEAGUE REVIEW		STRATEGIC COMMUNICATION	
			1	0.50	0.50	0.25	0	0	0.25	0.125	0.75	0.375
PLANNING	5	0.50	1	0.50	0.50	0.25	0	0	0.25	0.125	0.75	0.375
PEOPLE	4	0.40	0.25	0.10	0.50	0.2	1	0.4	0	0	0.75	0.3
EXTERNAL FACTORS	2	0.20	1	0.20	0.25	0.05	0.75	0.15	0	0	0.50	0.1
FINANCES	1	0.10	1	0.10	0.25	0.025	0.50	0.05	0	0	0.75	0.075
RESOURCES	3	0.30	1	0.30	0.50	0.15	0.25	0.075	0	0	0.75	0.225
<b>TOTAL</b>	<b>15</b>	<b>1.50</b>	<b>TOT</b>	<b>1.20</b>	<b>TOT</b>	<b>0.675</b>	<b>TOT</b>	<b>0.675</b>	<b>TOT</b>	<b>0.125</b>	<b>TOT</b>	<b>1.075</b>

**Step 6 – Selecting and Re-arranging the Best Alternative Solutions**

After ranking the attributes according to their importance for the project execution by the use of “additive weighting technique”, we can now see the difference between all alternatives has been reduced precisely and now we can say that the most important factor to be considered will be the “data assessment” and “strategic communication” and then we should consider with the "organizational culture" and "teamwork" factor and finally we should also take into consideration with the “colleague review”, So according to this factors that every project must integrate this success factors to avoid project delays and also to avoid risk.

<sup>25</sup> “By Author” November 2018

<sup>26</sup> Sullivan, Wickes& Kroelling (2014). Engineering Economics 15<sup>th</sup> Edition. Adapting from planning planet. Retrieved from <http://www.planningplanet.com/guild/gpccar/managing-change-the-owners-perspective>

<sup>27</sup> “By Author” November 2018

### **Step 7- Performance Monitoring and Post-Evaluation of Results**

This analysis is performed to find the best solutions among the chosen alternatives, which confirms that how well we can avoid the risks while executing the project. Here we assume that integrating this type of alternative solutions, the chances of getting delays will be reduced, and all the team members in the project will perform efficiently and make the project as a successful project. Thus, the best alternative solutions are data assessment, strategic communication, followed by organizational culture and teamwork last but not least is customer review. Those 5 alternative solutions do not involve performing on trial and they are price and time savers for the entire project phase.

Indeed, this should be a long-term analysis as we know that especially in the execution phase, construction projects often have longer durations for the whole project, maybe even for completing the project phase it may typically take longer durations

The performance can be monitored by using the data assessment for the project must be done by 85% ( $4.25/5 \times 100$ ) before executing the project then the strategic communication must be done with 70% ( $3.5/5 \times 100$ ) followed by teamwork should be done with 50% ( $2.50/5 \times 100$ ) and the organizational culture should be done with 40% ( $2/5 \times 100$ ) and the last phase before or after the completion of the project the customer review must be done with 5% ( $0.25/5 \times 100$ ). This all solutions must be managed by the project managers to overcome the risks involved in the execution phase integrating this solution we can avoid the project delays, cost and time overrun.

### **CONCLUSION**

The objective in the paper stood to give solutions for the subsequent queries: Why there are still issues on meeting project deadlines? What is the risk likely to be faced during project execution and how to overcome this problem? And what are the best alternative solutions that should be implemented to overcome the project failure?

Through this paper, we have highlighted the most considerable alternative solution to the least considered alternative solution to resolve the problems on execution phases such as Data Assessment, Strategic Communication, Organizational culture, and Customer Review. We have explained each alternative solution and selected the best solutions accordingly with respect to our topic. The data assessment and the Strategic Communication process should be highly considered to minimize risk as much as possible. “In fact, in the construction project, engineering procurement and construction should be analyzed clearly, the goals and scope and the desires of customers also agreement as given during the executing the plan, should be done by documentation by confirming the requirements that meet exactly to the project”<sup>28</sup>. The second

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<sup>28</sup> Kuldeep A Pandit, P.P. Bhangale (09 December 2015). Major elements of project execution planning for construction of buildings. Retrieved from <https://www.irjet.net/archives/V2/i9/IRJET-V2I976.pdf>

step is to perform the project with teamwork and the organizational culture. And finally, by the customer review. Also, with the detailed planning, the cases of the unanticipated delays can be minimized, also it will help for the proper documentation of statements in the initial stages, which could check risks during the project execution.

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