

A Managerial Insight Of Government Funded Construction Projects Delays In Malakand Division Pakistan

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Abstract

This quantitative research study is aimed to know about the factors of construction delay in construction projects of Malakand division, Khyber Pakhtunkhwa Pakistan. Delay in construction projects has been one of the most significant issues throughout the globe and Pakistani construction industry is also facing the same specifically in government funded construction projects. Delay in construction may be defined as the difference between the planned completion as specified in contract and the original physical completion of that project. A number of factors contribute to delay a construction project from its timely completion including contractor or construction company, consultant, client, acts of Almighty God, labor, material, external factors, terrorism etc. impact of delay in construction projects may be reduced only if these factors are identified and managed properly. This study has its objectives to recognize the central causes of delay and magnitude of their impact in government funded construction projects. The current quantitative study was conducted on the basis of review of literature of the same nature studies and a questionnaire survey. A self administered questionnaire regarding ranking of construction delay factors was distributed among the constructors, consultants and clients of Malakand division. The data gathered through this questionnaire was analyzed to weigh up the relative importance of the factors causing delay in government funded construction projects of Khyber Pakhtunkhwa. As a result, the analysis of the questionnaires' data presented the key factors of construction delay in government funded construction projects of Malakand division and they were properly ranked. Efficiently planning the projects, proper monitoring and controlling, timely payment to construction firms by clients etc must be ensured to curtail delay in construction projects.

Keywords: Construction Industry, Factors, causes, contractor, consultant, client, construction delay.

Introduction

This study has been carried out with an aim to review critically the past studies regarding factors causing delay in construction projects and recognize the key factors of construction delay in Pakistani construction industry specifically government funded construction projects in Malakand division of Khyber Pakhtunkhwa Pakistan. The said aim was achieved by reviewing research papers published during the last twenty years in various project management related journals. As per Chandu et al. 2016

government has been the biggest client of construction industry in almost all the countries throughout the world. Many construction projects funded by government have been experiencing delay in their completion and hence exceed implementation period and budget as well.

Delay in construction projects can be defined as an extra time allotted to a project for its completion in addition to its own agreed time (Ogunde et al., 2017). In the view of Głuszak and Leśniak (2015) construction delay may be defined as exceeding the agreed time of

completion of a project as specified in the contract. They further explain that delay may be measured by the investor as a failure to achieve the benefits from his investment. It is such an important thing which may convert a profitable plan into a mess. In the same way it can make activities to cost more than the planned. Thus construction delay in projects plays a vital role in creating a situation where a contractor's profit transforms into a huge loss. Besides, his reputation also gets damaged in the construction industry due to the belated completion of project which harms his credibility and integrity in the market.

According to Chandu et al. (2016), delays from the economic and political view point have considerable repercussions because of the delayed completion of a project the concerned population has to wait unnecessarily longer for the availability of goods and services. Consequently, this construction delay limits the potential of economical growth of a country.

Occurrence of delays in construction projects is usual and hence every project gets delayed but they have different effects in different projects. In the implementation of a construction project, delay can take place from any of the factors which are of importance to the project's stakeholders. This may have an adverse effect by causing disturbance in the work, decrease in productivity, cost overrun, time overrun, various claim and even total abandonment (Tumi et al., 2009).

As stated by Thorat et al. (2017), the key project objectives in construction industry are timely completion, quality, cost and safety. But sadly, delays in construction projects badly affect all the stakeholders like clients, contractors, consultant etc. Whenever delay in completion of a project takes place we need time extension which ultimately breeds additional overheads and hence the project's cost increases. The main causes of delay must be identified in order to ensure the timely and within budget completion

of construction projects. The stakeholder can then manage to avoid the occurrence of these delays if they are properly recognized. For that reason identifying the factors is more essential to attain objectives of a project.

Project management can play a vital role in efficiently managing a project and avoiding delays. Project management is to utilize the skills, knowledge, tools, and techniques to a project in order to fulfill the needs of a project. It involves management of resources like machinery, material, money, employees etc. Those projects which are managed efficiently complete in time and inside the specified budget while those which are mismanaged consequently meet delay in their completion. Most of the delays in construction projects occur during the construction phase rather than in the pre construction phase. Any how it is needed to focus on the pre construction phase which is a time between the initial planning and contract awarding of a project (Frimpong et al., 2003).

Literature Review

According to a study carried out by Mukuka et al. (2015) in South Africa, acknowledged that delays in construction projects are common and construction industry of South Africa is also facing the same issue in delivering construction projects timely. Their study verified the effects of delay in construction industry of Gauteng South Africa through distribution of The data was collected through a questionnaire which was distributed to construction 200 questionnaires which returned a response rate of 73 percent. They analyzed the data by making use of expressive statistical methods and confirmed that time extension, loss of profit, cost overrun, various disputes, contractor's bad reputation in industry and poor work quality were the key factors effecting timely completion of construction projects in South Africa.

A research study carried out by Gardezi et al. (2014) concluded that construction delay is

a universal fact and construction projects in Pakistan are not excluded from this phenomenon as well. The most important and major stakeholders of construction industry are client, contractor and consultant. They consulted the data of almost fifty construction projects throughout the world and identified twenty seven causes of construction delay from that data. They developed their questionnaire on the basis of these identified causes and gathered information from professionals of construction industry via the questionnaire. They came out with the conclusion that the country's domestic problems are the significant causes of construction delay.

In Cambodia Durdyev et al. (2017) recognized different factors which cause delay in construction projects specifically residential buildings. They calculated the relative importance index (RII) to evaluate the feedback of the respondents. After analysis of the different opinions from stakeholders they came to know that improbable scheduling of projects, material scarcity on construction site, lack of experienced labor, delayed payment by client to contractor, belated material delivery, project complexity, late delivery of work by subcontractor, mismanagement of construction site and accidents related to inappropriate safety measures are the leading factors which limit the timely completion of a construction project.

A questionnaire survey carried out in United Arab Emirates by Mpofu (2017) for identification of the major causes of construction delay where they distributed 500 sets of questionnaires and got 208 filled questionnaires in response. They identified the five most important factors causing delay in construction industry of UAE through their survey. The factors were: imperfect design at tendering time, client's unrealistic duration of contract, changes in scope and change orders, improper control and planning of project, poor project planning and scheduling.

Razzaq et al. (2018) examined the factors responsible for creating delay in construction

projects in Pakistan. They got one hundred and thirty responses out of which one hundred and thirteen were accepted to be valid and were statistically analyzed. After analyzing the data they came with a conclusion that the main factors causing delay in construction projects were design alterations during construction phase, advancement in drawings, suppliers or subcontractors bad performance, lack of technical workforce, inadequate performance by technical staff, material shortage, fluctuation in prices of material and land acquisition issues.

The most significant factors which generate delay in construction projects in Singapore are low experience of consultant, slow decision making by the client, contractors' difficulty in project financing, communication gap among the parties involved in project (Hwang & Leong, 2013).

During their study in Chinese Grain Bin construction projects Chen et al. (2019) looked into the key construction delay causes affecting timely completion of construction projects. They carried out a comprehensive review of literature and conducted fifteen semi-structured interviews as well. They distributed one hundred and eight questionnaires among the stakeholders having experience of working in the construction field of grain bin projects. They concluded in their study that 5 most significant factors causing delay in grain bin projects are not having sufficient equipment, communication gap among stakeholders of the projects, subcontractors' incompetency, design team's inadequate skills and clients' change orders.

The most important factors which cause construction projects to exceed from their original time of completion in Egypt were investigated in a study conducted by (Marzouk & El-Rasas, 2014). They determined 43 factors by reviewing literature and carrying out interviews with experts of construction industry in Egypt. Additionally they grouped all the identified factors into 7 categories namely; factors related

to (i) contractor (ii) consultant (iii) owner (iv) project (v) material (vi) equipments and labor and (vii) external conditions related factors. After calculating the relative importance index of all the factors/causes they produced a list of top 10 construction delay factors which are: scope changes by client or owner, late payment to contractor by owner for work done, sub-surface conditions, laborer's low level of productivity, ill planning of projects, contractor's financial capability to finance the project, bidding and contract award method, scarcity of construction materials, owner's belated revision and approval of design documents, inexpert staff.

A structured questionnaire survey was carried out by Bagaya (2016) for assessment of construction delay causes in projects of Burkina Faso by engaging one hundred and forty experienced stakeholders i.e clients, contractors, and consultants. They recognized the 5 serious factors of construction delay and got them ranked by making use of Relative Importance Index (RII). The factors shown after ranking were contractor's financial difficulties, Client's financial capability, equipments availability, delayed payment for work done and poor performance of subcontractor.

Types of delay in construction projects

Delay in construction has two main types, named excusable and non excusable delays. A delay whose responsibility is on the shoulder of contractor or supplier and there is no fault of client in it, is called non excusable delay. This is because construction firms or contractors are not

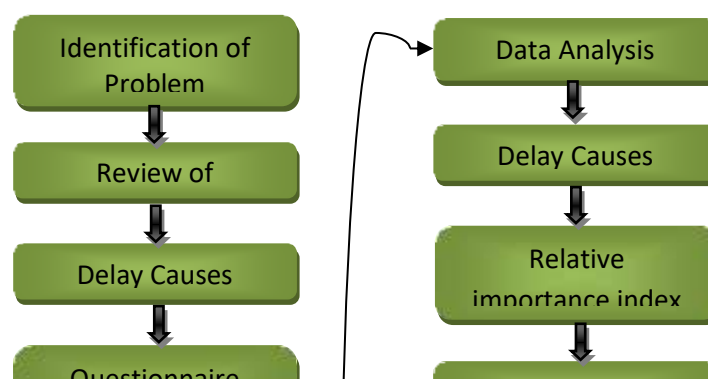
entitled for any relief in general and therefore, they should either work on project acceleration or compensate the client. Hence this type of delay usually does not result in extra money and time for completion. While the other type of delay i.e Excusable delay is further sub divided into two sub types. (i) Compensable and (ii) Non Compensable. Those delays whose cause is client or client's agent are called compensable while those delays which are caused by 3rd parties or occurrences afar the control of clients or constructors are called non compensable delays. They are commonly known as acts of God as no fault or responsibility falls on the shoulder of any of the parties involved there in (Chandu et al., 2016). Another type of delay called concurrent delay has also been specified by Alaghbari et al. (2007) which is known to be very usual in construction industry and is more complicated as compared to others. This delay often occurs when more than one causes are there to delay the completion of a project.

Methodology

Sources of data

The current study collected both primary and secondary data. Primary data collection was carried out by distribution of questionnaires among the experts of construction industry in Malakand division including construction firms owners, consultants, clients. Secondary data for this study was gathered by reviewing literature of the same nature studies throughout the world.

The methodology of the study has been described in the following manner:



Data collection and Questionnaire design

For the purpose of assessing the views of the three important stakeholders of the construction industry i.e clients, consultants and contractors, a self administered questionnaire was adopted which contained two sections. First section was about the respondents' information while the second section was regarding the factors of delay in construction projects of Malakand division. Respondents in the study area had to respond by using the likert scale from 1 - 5 for 64 identified factors of construction delay from the literature of previous studies. The overall 64 factors of construction delay were accommodated in the seven categories as shown below.

i) Client related ii) Constructor related iii) Consultant related iv) External conditions related v) Equipments and labor related vi) Material related vii) Project related.

The Likert scale from 1 (very low) to 5 (very high) was incorporated in the questionnaire for knowing regarding the importance of factors of construction delay in projects of Malakand division. Before going towards distribution of questionnaires among the participants, we carried out a pilot study by examining 5 number of participants from the 3 categories of stakeholders. This practice was carried out for ensuring the questionnaire's integrity and verification of its comprehensiveness in pointing out the factors of construction delay applicable for Malakand division. It was confirmed by the respondents that the questionnaire was suitable to capture the factors of construction delay. consequently, the

identified factors of construction delay from the literature were kept unchanged.

Population, sample size and Sampling technique

Simple random form of probability sampling technique was used to make data collection from the respondents. As per the website of Pakistan Engineering Council (PEC) the total number of construction firms register with PEC working in construction industry of Malakand division are 482. Among these 482 firms 50 number of construction firms were selected randomly in seven districts of Malakand division. 7 firms from each district of Malakand division were selected randomly for the purpose of questionnaire survey and data collection. Kregcie and Morgan formula was made use of for the purpose of calculation sample size of the population of this study. Distribution of questionnaires was either made personally or through friends related to construction industry of Malakand division. A total of 50 questionnaires were distributed amongst the experienced contractors, clients and consultants and all the 50 questionnaires were fully filled and returned back to us.

Calculation of Importance Index of each factor

Literature review of previous studies revealed that many researchers have gone through the process of calculating the Relative Importance Index of each and every factor causing the projects to delay. Table no. 1 shows the use of RII

by different researchers in different countries. The same method of calculating Relative Importance Index of each factor was used in this study to find out the impact of each and every factor which cause construction projects to delay in Malakand division.

The Likert scale from 1 (very low) to 5 (very high) was incorporated in the questionnaire for knowing regarding the importance of factors of construction delay in projects of Malakand division and changed the same value of likert scale to Relative importance index by the following formula:

$$RII = \sum W / A \times N.$$

"W" in the formula shows the weightage of factors by the respondent,

"A" indicates the highest weightage, in our case it is 5,

"N" indicates the total number of respondents.

Relative Importance Index has a value between zero and one. The closer the value of RII to one the more important the factor is to cause delay in construction projects. The RII of all factors as experimented by all the respondents was used for evaluation of the overall ranking in order to present an image of factors which cause construction projects in Malakand division to extend beyond their specified time frame.

S.No	Authors	Techniques	Country of study
1	Maqsoom et al. (2018)	Mean importance rating (MIR)	Pakistan
2	Mpofu et al. (2017)	Relative importance index (RII)	UAE
3	Al-Emad et al. (2017)	Average index (AI) Makkah	(Kingdom of Saudi)
4	Sambasivan et al. (2017)	Relative importance index (RII)	Tanzania
5	Durdyev et al. (2017)	Relative importance index (RII)	Cambodia
6	Chen et al. (2017)	Mean importance rating (MIR)	China
7	Aziz and Abdel-Hakam (2016)	Relative importance index (RII)	Egypt
8	Bagaya and Song (2016)	Importance index (II)	Burkina Faso
9	Marzouk and El-Rasas (2014)	Relative importance index (RII)	Egypt
10	Fallahnejad (2013)	Relative importance index (RII)	Iran
11	Akogbe et al. (2013)	Relative importance index (RII)	Benin
12	Kazaz et al. (2012)	Mean Importance Rating (MIR)	Turkey
13	Doloi et al. (2012)	Relative importance index (RII)	India
14	Fugar and Agyakwah-baah (2010)	Relative importance index (RII)	Ghana
15	Enshassi et al. (2009)	Relative importance index (RII)	Gaza Strip (Palestine)
16	Sambasivan and Soon (2007)	Relative importance index (RII)	Malaysia
17	Assaf and Al-hejji (2006)	Relative importance index (RII)	Saudi Arabia
18	Aibinu and Odeyinka (2006)	Relative importance index (RII)	Nigeria
19	Odeh and Battaineh (2002)	Importance Index (II)	Jordan

Results and Discussion

Age group categorization

Data of the respondents was analyzed and accordingly on the basis of their demography 14 number of respondents came out to be in the age group of 31 to 40 years, in the age group of 41 to

50 years 19 members were observed while 17 of them were found to be in the age group of above 51 years as shown in the table below.

Demographic Characteristics		
Age	Frequency	Percentage
31-40	14	28
41-50	19	38
Above 51	17	34

Job designation categorization

Similarly on the basis of job designation 10 respondents represented their company with the title of CEOs, 5 with Chief Engineers, 1 with Engineer, 1 with GM, 2 with Executive Officers, 11 with Managing Directors, 8 with Senior Engineers, 2 with SDOs, 9 with Site Engineers and 1 represented his organization with the tile of Technical Head as shown below in the table:

Job Designation of the Respondent		
Chief Engineer	5	10
Chief Executive Officer (CEO)	10	20
Engineer	1	2
Executive Officer	2	4
General Manager	1	2
Managing Director	11	22
Senior Engineer	8	16
Site Engineer	9	18
Sub Divisional Officer	2	4
Technical Head	1	2

Organization categorization

Analysis on the basis of their category of organization it was found that 2 number of the respondents were clients, 46 were contractors while 2 were consultants as shown in the table below:

Type of Organization the respondent is working in		
Client	2	4
Contractor	46	92
Consultant	2	4

Experience Categorization

Analysis on the basis of experience of respondents showed that 10 i.e. 20 % of the respondents belonged to the experience category of 11 to 15 years, 14 (28%) belonged to the category of 16 to 20 years of experience, 15 respondents (30%) belonged to category 21 to 25, 8 respondents (16%) belonged to category 26 to

30 while 3 respondents (6) percent belonged to the category 31-35 years of experience in construction industry as shown in the table below:

Respondents Experience	Frequency	Percentage
11 to 15	10	20
16 to 20	14	28
21 to 25	15	30
26 to 30	8	16
31 to 35	3	6

Ranking of top five factors of construction delay in projects of Malakand division

2nd section of the questionnaire gathered primary data from contractors, consultants and clients of Malakand division. After analysis of the same data RII of each and every factor was calculated. On the basis of RII all these factors were ranked. The ranking made it possible to know the vital factors which delay construction projects in Malakand division of Khyber Pakhtunkhwa Pakistan. The top 5 factors related to the three most frequent categories are as shown in the table below;

S.No	Factors	RII	Rank
Contractor's related factors			
1	Belated approval and finalization of drawings	0.992	1
2	Laziness in making decisions	0.984	2
3	Belated evaluation & approval of designs	0.98	3
4	Variations in specifications	0.976	4
5	Delayed supervision of site	0.964	5
Consultant related factors			
1	Financial capability of contractor (funding for project)	0.996	1
2	Disputes in sub contractors' implementation schedule	0.992	2
3	Frequently changing sub contractors/suppliers	0.984	3
4	Delayed delivery of material at the construction site	0.984	4
5	Belated work of sub contractor	0.98	5
Client related factors			
1	Delayed payment of bills	0.99	1
2	Suspension and postponement of work activities	0.99	2
3	Belated site delivery to contractor	0.98	3
4	Belated approval and finalization of drawings	0.98	4
5	Slowness in making decision	0.98	5

Ranking of top 10 factors related to all the categories

The most significant and frequently occurring 10 factors causing delay in construction projects of Malakand division of Khyber Pakhtunkhwa as recognized by this study were; Contractor's Financial capability (0.996), conditions of weather (0.994), Environmental limitations (0.994), belated permissions (0.993), delayed

inspection and certification by third party (0.993), protests, strikes etc., (0.992), Terrorist activities in construction area (0.992), Acts of God (Earthquake, Flood or any other natural disaster) (0.991), delayed bill payments (0.990), Suspension and postponement of work activities (0.988) as shown in the table below:

S.No	Factors	Category	RII of impact	RII of Freq	Over All RII	Rank
1	Financial capability of contractor (funding for project)	Contractor	0.996	0.928	0.92	1
2	Weather effect (Snow fall, hot, rain, etc.)	External Factors	0.996	0.924	0.92	2
3	Delay in performing final inspection by third party	External Factors	0.996	0.92	0.92	3
4	Terrorist activities in the area of the construction site	External Factors	0.996	0.908	0.9	4
5	Earthquake, Flood or any other natural disaster	External Factors	0.996	0.896	0.89	5
6	Delayed payment of bills	Client	0.992	0.864	0.86	6
7	Suspension and postponement of work activities	Client	0.992	0.856	0.85	7
8	Belated approval and finalization of drawings	Consultant	0.992	0.852	0.85	8
9	Disputes in sub contractors' implementation schedule	Contractor	0.992	0.844	0.84	9
10	Shortage of construction materials in market	Material	0.992	0.84	0.83	10

Categories wise ranking on the basis of RII

Analysis of categories on the basis of RII showed that Factors related to External conditions were on the top of all with RII value of 0.99 followed by factors related to material with RII value of

0.98 while third number has been captured by factors related to Contractor on the basis of RII value of 0.96. In a similar way factors related to Construction site, Consultant and Client having the same RII value of 0.95 are 4th while factors related to labor are 5th as shown in table below:

S.No	Category	RII	Rank
1	Factors related to External conditions	0.99	1
2	Factors related to Material	0.98	2
3	Factors related to Contractor	0.96	3
4	Factors related to Construction site	0.95	4
5	Factors related to Consultant	0.95	5
6	Factors related to Client	0.95	6
7	Factors related to Labor	0.91	7

Ranking of 7 districts of Malakand division on the basis of RII

Raking on the basis of RII of all the 7 districts of Malakand division showed that district Swat with

RII of 0.6251 is on the top followed by Shangla with RII of 0.6203 while Dir lower with RII of 0.6123 is third. Similarly Dir upper with RII 0.6066 is 4th, Buner with RII 0.6054 is 5th,

Chitral with RII 0.6046 is 6th while Malakand with RII value of 0.5960 is 7th as shown in table below:

S.No	District	RII	Rank
1	Swat	0.6251	1
2	Shangla	0.6203	2
3	Dir Lower	0.6123	3
4	Dir Upper	0.6066	4
5	Buner	0.6054	5
6	Chitral	0.6046	6
7	Malakand	0.596	7

Overall ranking on the basis of impact and occurrence frequency

The tables below show the overall ranking of all the 64 identified factors of construction in delay

in projects of Malakand division of Khyber Pakhtunkhwa Pakistan.

S.No	Factors	RII	Rank
1	Financial capability of contractor (funding for project)	0.996	1
2	Weather effect (Snow fall, hot, rain, etc.)	0.996	2
3	Environmental restrictions	0.996	3
4	Slowness in permission by government/municipality	0.996	4
5	War against terror, protests, strikes etc.	0.996	5
6	Delay in performing final inspection and certification by a third	0.996	6
7	Terrorist activities in the area of the construction site	0.996	7
8	Earthquake, Flood or any other natural disaster	0.996	8
9	Delayed payment of bills	0.992	9
10	Suspension and postponement of work activities	0.992	10
11	Belated approval and finalization of drawings	0.992	11
12	Disputes in sub contractors' implementation schedule	0.992	12
13	Shortage of construction materials in market	0.992	13
14	Shortage of labours	0.992	14
15	Low productivity level of labours	0.992	15
16	Traffic control and restriction at job site	0.988	16
17	Belated site delivery to contractor	0.984	17
18	Belated approval and finalization of drawings	0.984	18
19	Laziness in making decisions	0.984	19
20	Frequently changing sub contractors/suppliers	0.984	20
21	Delayed delivery of material at the construction site	0.984	21
22	Changes in material types and specifications during construction	0.984	22
23	Equipment availability and failure	0.984	23
24	Unavailability of utilities in site	0.984	24
25	Belated evaluation & approval of designs	0.98	25
26	Belated work of sub contractor	0.98	26
27	Effects of subsurface conditions (e.g. soil, high water table, etc.)	0.98	27
28	Slowness in making decision	0.976	28
29	Variations in specifications	0.976	29
30	Delay in material delivery	0.976	30
31	Fluctuations in cost/ currency	0.976	31
32	Ambiguity about material	0.972	32
33	Changes in government regulations and laws	0.972	33
34	Delayed supervision of site	0.964	34
35	Use of inappropriate methods of construction	0.96	35
36	Ineffective planning and scheduling of project	0.96	36
37	Delay in site mobilization	0.96	37
38	Details lacking in conceptual drawings	0.956	38
39	Unqualified Engineers and other staff	0.956	39
40	Human resource issues with contractor	0.956	40
41	Unqualified workforce	0.956	41
42	Slowness in giving instructions	0.952	42
43	Variations in original drawing	0.936	43
44	Unrealistic completion time concerns	0.936	44
45	Passage of electricity high power transmission line over the site	0.932	45
46	Lack of communication between the parties	0.932	46
47	Weak supervision of construction site	0.928	47
48	Accident during construction	0.928	48
49	Corruption	0.924	49
50	Communication gap with the contractor	0.924	50
51	Unskilled consultancy staff at site	0.924	51
52	Unavailability of consultant's staff at the site	0.924	52
53	Problem with neighbors	0.916	53
54	Rigidity of Client's representative	0.908	54
55	Disputes of contractor with client and consultant	0.904	55
56	Communication gap with contractor	0.884	56
57	Consultant's rigidity	0.88	57
58	Clients interruption	0.872	58
59	Conflicts among labor force	0.868	59
60	Injury of labors during work	0.868	60
61	Communication gap with other parties	0.864	61
62	Rigidity of contractors staff with labor force	0.864	62
63	Wages problems	0.844	63
64	Labor's nationality	0.836	64

Conclusion and Recommendations

The study of delay factors in construction projects of Malakand division mainly focused on the analysis of factors which cause a project to exceed its stipulated time of completion. It was aimed to know about those factors in order to improve the construction industry of Malakand division to avoid or struggle to minimize the effects of these factors. Pakistan is a developing country and the population is increasing tremendously which in turn creates pressure on the existing infrastructure facility. This increase in population will need more and more space for accommodating which in turn increases the infrastructure projects for the people in form of schools, colleges, universities, hospitals, houses etc. For that reason with the development in the construction industry it is need of the time to empower the project manager with the knowledge how to avoid delay in construction projects and lower its impact. It means the project manager and construction management team must be able to understand the causes, effects and measures to minimize the impact of these causes on the timely completion of the project.

A questionnaire survey was carried out in all the seven districts of Malakand division in order to know the factors of construction delay in government funded construction projects. The questionnaire gathered data from the stakeholders mainly contractor, consultants and clients working in the construction industry of Malakand division. From the questionnaire we came to know that financial capability of contractor, weather effect i.e. hot, snow fall, rain, etc., belated final assessment by a third Party, delayed payment of bills to contractor for work done, earthquake, flood or any other natural disaster, terrorism activities in the area of the construction, suspension and postponement of work activities, belated approval and finalization of drawings, disputes in sub contractors' implementation schedule, shortage of construction materials in market are the most important factors of delay in

government funded construction projects of Malakand division, Khyber Pakhtunkhwa, Pakistan.

Though many project management skills are there for controlling delay in construction industry even then many projects face the same issue. Numerous construction projects have been suffering due to delay on the part of the owner/client as they supply some of the material very late to the contractor, making late payment of running bills or delayed payment for work done to the construction firm. All these issues in combination with many other problems on the part of contractor and consultant make it hard for the project to complete with in time. In spite of all the facts discussed above, improved project management techniques can improve the situation and bring more development to the economy.

The current study provides the stakeholders of construction industry especially constructors, clients and consultants with the central knowledge of project execution without delay in completion. It enables them to understand the potential of project management and trim down those factors which cause delay in completion of construction projects. Decisively, this research study has been able to meet the objectives it had planned. The important stakeholders of the construction projects are needed to plan and perform more carefully in the process of construction management prior and during the execution of a project.

There are some methodical steps as discussed below which can be recommended for

reducing the impact of construction delay causes;

- Payment clauses in the contract agreement should be properly reviewed by the partners.
- An obvious, visible and achievable timeline for the project should be unambiguously fixed by the client,

contractor and consultant in the agreement.

- At the planning stage it is recommended to make a schedule for payment in order to ensure timely payment to the firms.
- It is urgently needed to improve the management skills of staff related to construction industry. PEC may take the initiative to arrange such trainings for the construction firms registered with them.
- Construction firms are advised to monitor their site regularly to ensure the quality of their construction works for the purpose to stay away from errors which could lead to rework.
- The government should make simpler governmental measures for the construction firms to ease the permitting process.
- Contractors should act early for obtaining various approvals related to government agencies for avoiding delays.
- In addition, the planning team is recommended to constantly watch the progress of construction project and get solutions to frequently occurring problems which lead to delay the project from its completion time.

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