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CRISIS MANAGEMENT IN THE CONSTRUCTION INDUSTRY OF JASHORE CITY IN BANGLADESH

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ABSTRACT

Crisis management is a way of overcome crisis by catching and assessing crisis signs and needs to take and implement required safeguards in order to overcome a crisis with a negligible damage. A construction firm can survive without considerable financial losses by perceiving the early warning signals. Considering all these issues, this paper is aimed to identify the potential factors that may lead to the crisis in construction projects and analyzing the factors governing the implementation of crisis management in the field of construction industries of Jashore city in Bangladesh. Risks and uncertain events are very common at construction industry in all over world. That's why the implementation of crisis management in a construction project is very vibrant to prevent construction costs and delay. In this research a detailed questionnaire survey was conducted among owners, engineers, contractors and laborer in the construction industry. This study identified major fourteen factors for crisis in construction project among them the poor initial estimation, financial issues and too many changes was governing factors for crisis management implementation in construction projects. In this study there were vital effects of the contractor's experience and worker strikes issues in crisis management of construction projects. Inadequate fund, inflation rate and political stability are also the vibrant cause of crisis in construction project. There was diverse observation between engineer, contractor, owner, worker for picking the crisis factor of project management.

Keywords:*Crisis management, Factors in crisis implementation, Questionnaire survey, Project management, Construction industry.*

1. INTRODUCTION

Negative event is the cause of crisis and thereby affects construction companies gradually in today's globalized world. Normally these events may occur suddenly or after a long process. When a crisis happens in an organization, then they are unable to maintain their normal routine procedure (Öcal et al., 2006). Companies have no or a very little control over environmental causes of crisis. These are generally related with economic, political, legal, natural and rivalry conditions, clients' expectations and technological developments (Health, 1998). Unexpected changes and uncertain events are the reasons behind this kind of situation. Crisis management is a continuous process and it is applied in extra-ordinary situations. Its aim is to identify the crisis signals, planning for response to the same and preventing its negative impacts on construction projects (Loosemore & Hughes, 1998).Management during the crisis starts with the preparation of a management plan so that they can guide both the management and the employees on what should be done to get the situation under control with minimum loss (Sahin et al., 2015). The management should not only maintain the crisis plan but also focus on increasing the productivity and the motivation of employees. Any action like buffering employees should be avoided at this stage (Öcal et al., 2006). Establishing an early warning system which provides some time to take required precautionary steps in confronting crises is one of the most important aspects of crisis management process and such a system helps the construction companies to successfully manage potential crises (Jia et al., 2013). A construction company can overcome any crisis with or without minimum damage by estimating a crises situation well and executing crisis management techniques effectively (Sahin et al., 2015). Crisis is inevitable in construction projects. Therefore, companies that deal in construction projects as an ongoing basis thus must learn to deal with such crises on a regular basis (Hillson, 1997). A crisis threatens to damage reputation of a company because it gives people to think negative regarding the company's performance (Coombs, 2007).

There are several studies concerning crisis management has been conducted in the construction management area. They are specifically about theory formulation (Loosemore, 1999), communication structure (Loosemore,1998e), contractual conditions (Loosemore & Hughes, 1998), real estate-based analysis (Kaklauskas et al., 2011), triple constraints composed of communication, sensitivity, and responsibility (Loosemore, 1998c), environmental and organizational factors(Öcal et al., 2006), organizational behavior (Loosemore, 1998b), reactive communication and behavior (Loosemore, 1998a), disorganization (Loosemore & Hughes, 2001), preparedness (Loosemore and Teo, 2000), social adjustment (Loosemore, 1997), and social network analysis (Loosemore, 1998d),the nature and management of crisis in construction projects (Hällgren & Wilson, 2008), the importance of crisis communication in construction project's crisis management (Vondruška, 2014), organization's preparedness for effective crisis management practices (Mitroff et al., 1987), crisis management in Turkish construction industry(Öcal et al., 2006), managerial competency of crisis managers (Tomastik et al., 2015),crisis management team effectiveness (King, 2002).A very few research was found on crisis manage in the construction project in all over the world especially in Bangladesh. Therefore, in this study, contribute on potentials factors lead to crisis and governing factors to manage crisis in the construction project at Jashore city in Bangladesh.

2. METHODOLOGY

The scope of this study is to confine with the views of engineering and managerial personnel involved in the construction site for the successful implementation of crisis management in construction projects. A in depth questionnaire survey was used for this research. The questionnaire survey was conducted among 50 respondents including owners, engineers, andcontractors, workers. The questionnaire was included 20 questions, which mainly focused on 14 main factors. Those were poor initial estimation, financial issues, too many changes, political issues, natural issues, contractor's issues, scheduling variance issues, technical issues, natural issues, worker strikes issue, inadequate knowledge of worker, worker availability, conflicts between the contractor and other parties, compressing project schedule. Questions were arranged in three different groups. First type of questions were scaling question. Scaling was used for those questions. The questionnaire was framed

using five points scale rating system. Respondents were asked to express their agreement or disagreement of the choices of answers to a particular question on a five points scale, from 0 to 4(0 being 'strongly disagree', 1 being 'disagree', 2 being 'agree or disagree', 3 being 'agree' and 4 being 'strongly agree'). This type of question's answer was expressed by the pie chart. Thus, mean (xi)and variance co-efficient (V) values were calculated from all the responses in order to get the general tendency and the variations. Second group of questions were related with the scaling of the relative importance of each choice with respect to the others in that particular question. These type of questions were calculated by percentage. Third type of questions were not related with scaling. This type of question's answer was expressed by percentage. These types of questions were calculated by pie chart.

3. RESULTS AND DISCUSSION

In this study, the detailed and descriptive statistical analysis was performed to obtain the mean scores for fourteen identified major variables. The frequency analysis method was used for calculating the descriptive statistical analysis. The frequency analysis is based on the number of the point chosen by the respondents.

Table 1: Mean score analysis of crisis factors of project management.

Crisis Factor	Number of Respondents (N)	Standard Deviation	Variance (V)	Mean (Xi)	Rank
Poor initial estimation	50	0.4431	0.1963	3.74	1
Financial issues	50	0.4629	0.1251	3.70	2
Too many changes	50	0.5803	0.1568	3.70	3
Lacking of contractor's experience	50	0.6091	0.1701	3.58	4
Worker strikes issues	50	0.7060	0.1994	3.54	5
Inadequate knowledge of workers	50	0.7071	0.2020	3.50	6
Workers unavailability	50	0.5047	0.1450	3.48	7
Conflicts between parties	50	0.8628	0.2479	3.48	8
Target cost	50	0.5035	0.1455	3.46	9
Technical issues	50	0.9596	0.2961	3.24	10
Political issues	50	1.0214	0.3152	3.24	11
Natural issues	50	0.8806	0.2751	3.20	12
Schedule variance issues	50	1.2501	0.4496	2.78	13
Compressing project schedule	50	1.1350	0.4112	2.76	14

The crisis factors for project management in the study area have been illustrated in Table 1. The table is the self-explanatory for major factors of crisis management. The table showed that poor initial estimation is the main crisis factor in the construction project of Jashore city, Bangladesh. Financial issues and too many changes have 2ndhighest mean score of 3.70 but their numbers of variance are different. The number of variance of the financial issue is less than the number of variance of too many changes. That's why the financial issue is the 2nd major factor and too many changes is the 3rdvital factor that governs the implementation of crisis management in construction projects. It is then followed by lacking of contractor's experience (Xi =3.58, V=0.1701), labor strikes issue (Xi =3.54, V=0.1994). Likewise, the lowest-ranked factor is compressing the project schedule (Xi =2.76, V=0.4112).

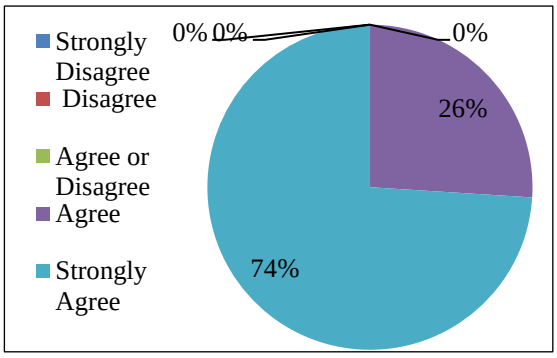

Figure 1: Crisis occurs due to financial poor initial estimation in construction project.

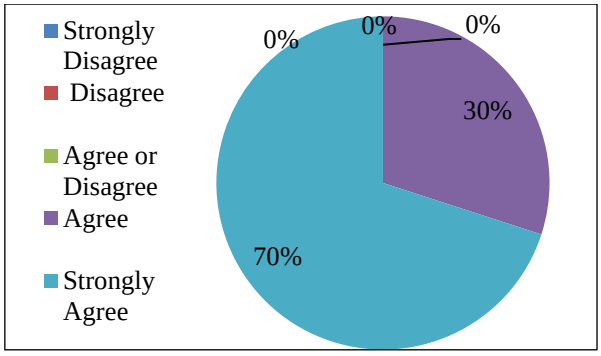

Figure 2: Crisis occurs due to financial problem in construction project.

The crisis occurs in the study area due to poor initial estimation and due to financial problems in the construction project that have been described in Figure 1 and Figure 2. It has been found that no participant strongly disagreed, disagreed, agreed or disagreed but 26% of the participants agreed and 74% of the participant strongly agreed that crisis occurs due to poor initial estimation as described in Figure 1. From Figure 2, it has been found that no participant strongly disagreed, disagreed, agreed or disagreed but 30% of the participants agreed and 70% of the participants strongly agreed that crisis happened due to financial issue. It can be concluded that greater than 4% of the participant strongly agreed that crisis occurs due to poor initial estimation compared to financial problems in the construction project. The accurate estimation considering current market price by the engineering or actual will be the solution to manage poor initial estimation and financial related problems.

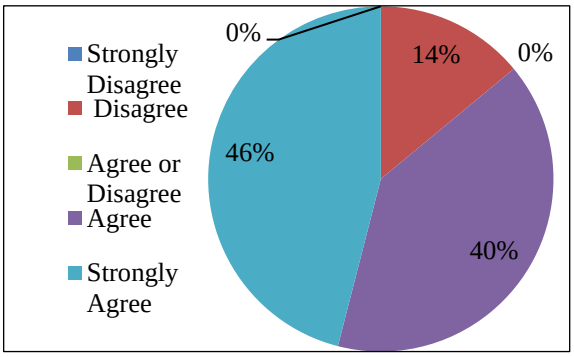

Figure 3: Crisis occurs due to target cost incident in construction project.

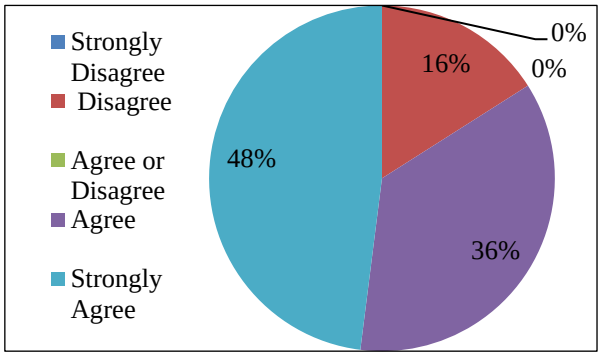

Figure 4: Crisis occurs due to too many changes in the construction project.

A crisis occurs due to the target cost incident and too many changes in the construction project that have been pronounced in Figure 3 and Figure 4. From Figure 3, it has been found that no participant strongly disagreed, agreed or disagreed but 14% of the participants disagreed, 40% of the participants agreed and 46% of the participants strongly agreed. From Figure 4, it has been found that no participant strongly disagreed, agreed or disagreed, but 16% of the participants disagreed, 36% of the participants agreed and 48% of the participants strongly agreed. From the Figure 1 and Figure 2, it can be picked up that greater than 2% of the participants strongly agreed that crisis occurs compared too many changes than target cost and 2% of the participants disagree that crisis occurs due to too many changes than due to target cost in the construction project. These crises can be controlled by proper initial design and professional managerial behavior.

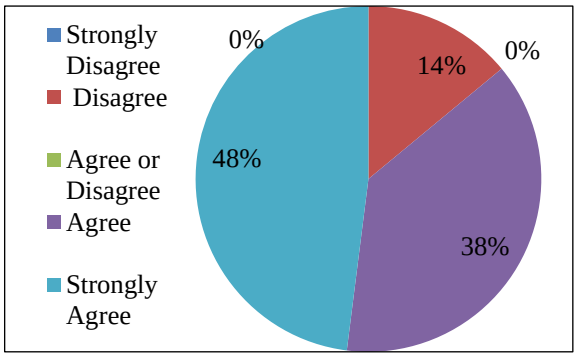

Figure 5: Crisis occurs due to political issue in the construction project.

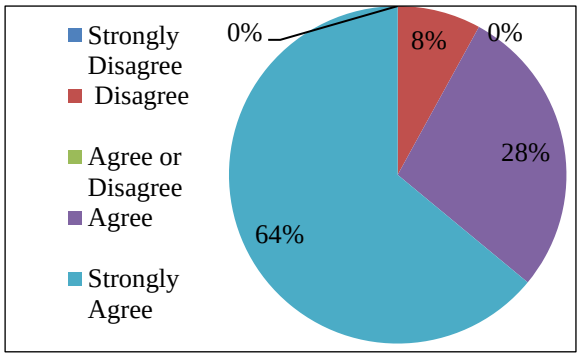

Figure 6: Crisis occurs due to conflict between two parties in the construction project.

The crisis occurs due to political issues and conflict between two parties in the construction project that have been narrated in Figure 5 and Figure 6. It has been found that no participant strongly disagreed, agreed or disagreed but 14% of the participants disagreed, 38% of the participants agreed and 48% of the participants strongly agreed as explained in Figure 5. From Figure 4, it has been found that no participant strongly disagreed, agreed or disagreed, but 8 % of the participants disagreed, 28% of the participants agreed and 64% of the participants strongly agreed. It can be finalized that greater than 16% of the participants strongly agreed that crisis occurs due to conflict between two parties than due to political issue in construction project and greater than 6% of the participants disagreed that crisis occurs due to political issue than due to conflict between two parties in the construction project. Creating democratic environment and equality between contractors would be the solution to handle political issue and conflicts related project crisis.

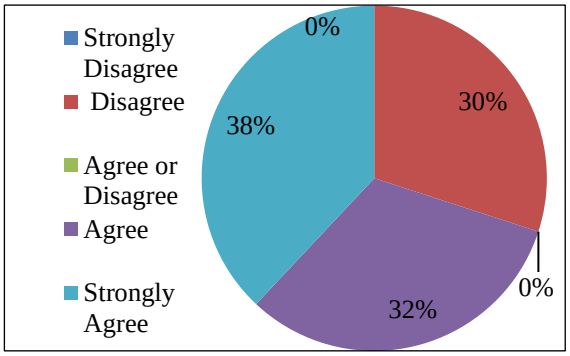

Figure 7: Crisis occurs due schedule variance in the construction project.

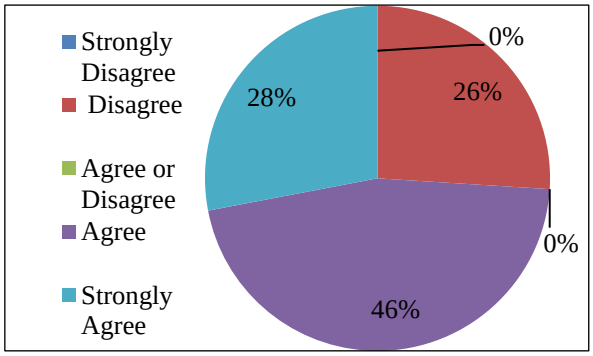

Figure 8: Crisis occurs due to compressing project schedule in the construction project.

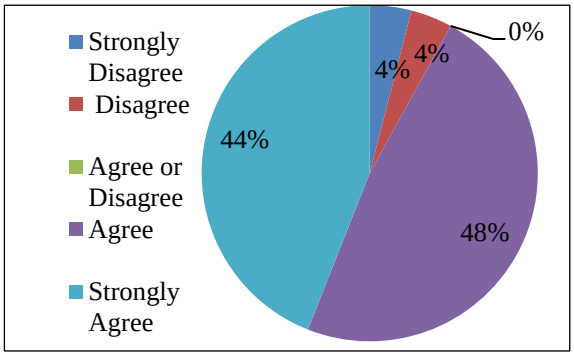

Figure 9: Crisis occurs due technical issues in the construction project.

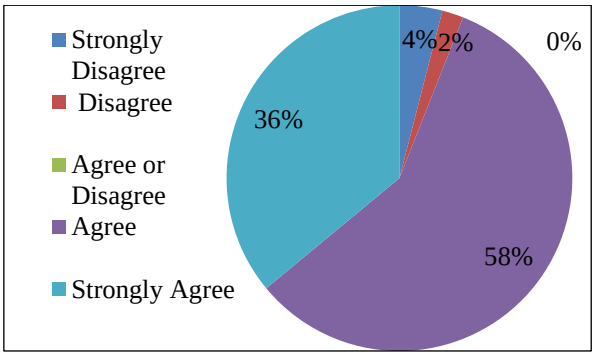

Figure 10: Crisis occurs due to natural issues in the construction project.

The crisis in construction project occurs due to schedule variation, compressing project schedule, technical issues and natural calamities have been self-explained in Figure 7 to Figure 10 respectively. From the Figure 7 and Figure 8 it could be flashed that greater than 10% of the participants strongly agreed that the crisis occurs due to schedule variance than compared to compressing project schedule in construction project and greater than 4% of the participants disagreed that crisis occurs due to schedule variance than compared to compressing project schedule in the construction project. Considering all datas it can be narrated that the technical and natural issues related crisis are more vibrant than schedule variation and schedule compression of a construction project.

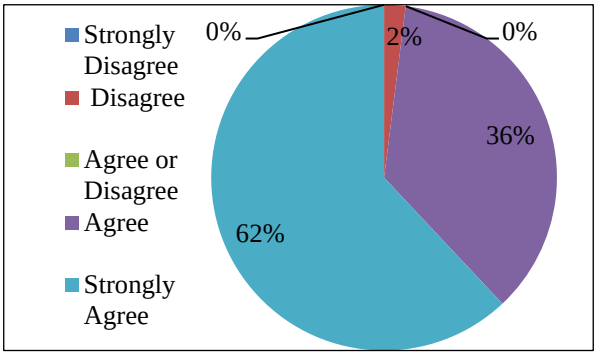

Figure 11: Crisis occurs due to lack of the contractor's experience in construction project.

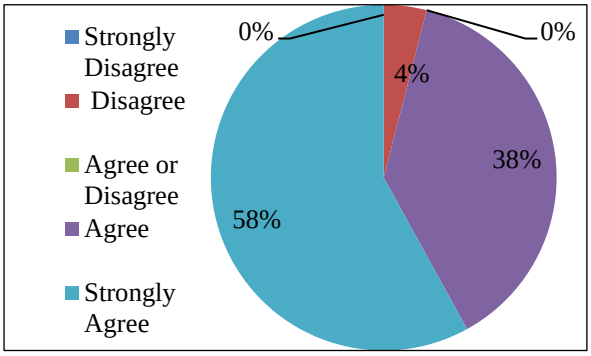

Figure 12: Crisis occurs due to worker's inadequate knowledge in construction project.

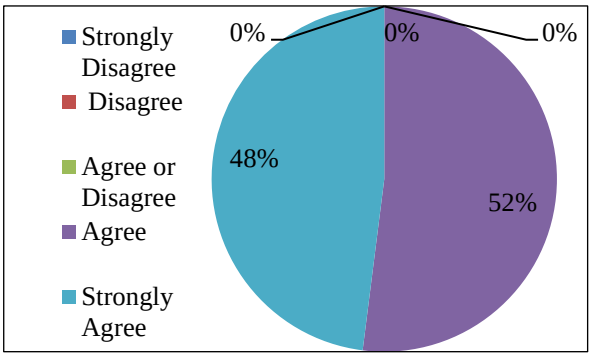

Figure 13: Crisis occurs due to workers unavailability in the construction project.

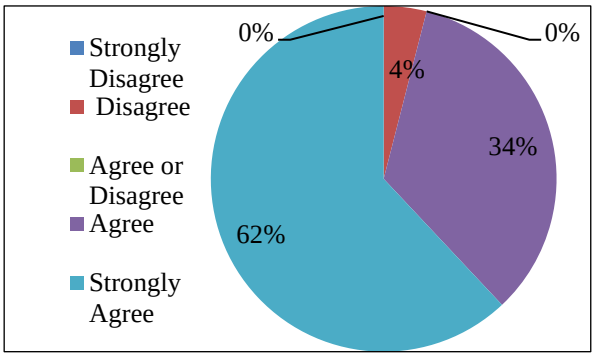

Figure 14: Crisis occurs due to worker strikes issues in the construction project.

The crisis in construction project occurs due to lack of contractor's experience, inadequate knowledge of workers, worker unavailability and worker strikes issues in construction project have been showed in Figure 11 to Figure 14 respectively. The above figure could be self-explanatory and easily understandable to narrate crisis in construction site. From the Figure 11 and Figure 12, it is found that greater than 4% of the participants strongly agreed that crisis occurs due to lack of the contractor's experience compared to worker's inadequate knowledge in construction project and greater than 2% of the participants disagreed that crisis occurs due to worker's inadequate knowledge than due to lack of the contractor's experience in the construction project. From the Figure 13 and Figure 14, it is obtained that more than 14% of the participants strongly agreed that crisis occurs compared to worker strikes issues than workers unavailability in the construction project and higher than 4% of the participants disagreed that crisis occurs relative to worker strikes issue than due to workers unavailability in the construction project. The above crisis will be solved by proper training of contractors, worker and application of construction laws.

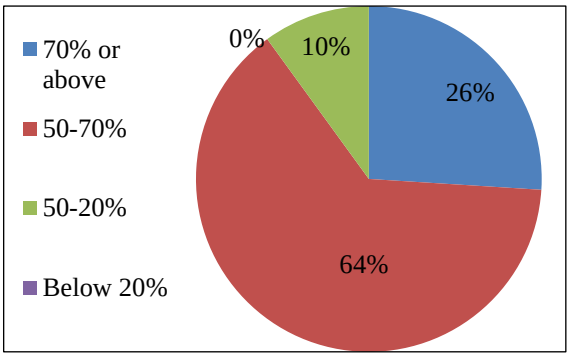

Figure 15(a): Construction project having inadequate fund.

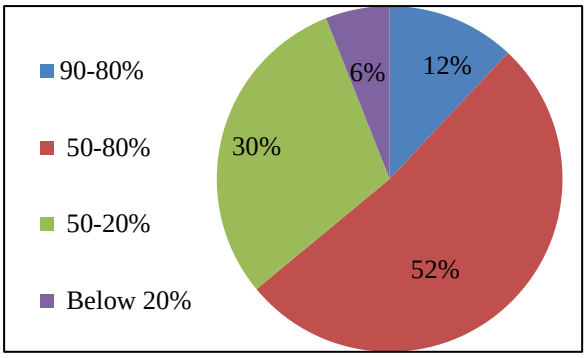

Figure 15(b): Effects of inflation rate on construction projects.

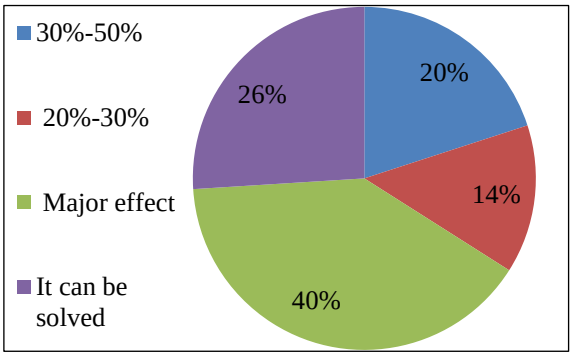

Figure 15(c): Effects of political instability on projects.

Questionnaire survey results of construction project having inadequate fund, inflation rate and political stability have been designated in Figure 15(a) to 15(c). Figure 15(a) labeled that the almost 64% of participant thought that 50-70% of project have inadequate fund in their organization. Figure 15 (b) showed that the 52% of participant responded that 50-80% negative effect is occurred due to inflation in projects. Approximately, 40% of participant thought that political instability has major negative effect on the projects illustrated in Figure 15(c).

Table 02: Causes of estimation inaccuracy in construction project.

Factors	Respond (%)
Poor estimation delay and inflation	6%
Lack of detailed plan, too many changes in order and big sap between market price and official price	38%
Too many changes in order and unpredictable inflation	56%

Table 03: Reasons behind the too many changes in construction project.

Factors	Respond (%)
Poor feasibility study	0%
Poor feasibility study and unpredictable issue	14%
Poor understanding client's requirements and clients change their mind	68%

Table 04: Effects of political issues in construction project.

Factors	Respond (%)
Due to political reasons some projects complete	8%
Due to political reasons some projects are almost closed	12%
This type can be controlled	64%
No adverse effect on project	16%

Table 2 to Table 4 showed as a self-explanatory regarding estimation inaccuracy, too many changes and effects of political issues. Table 2 narrated that the participants, almost 56% of the participants thought that most often estimation are not accurate due to too many changes in order and unpredictable inflation and 38% of the participants responded that most often estimation are not accurate due to lack of detailed plan, too many changes in order and big sap between market price and official price. Table 3 showed that almost 68% of the participants responded that the factor causes too many changes in order in project are poor understanding client's requirements and clients change their mind and 18% of the participants responded that the factor cause too many changes in order in project are poor feasibility studies allocated time of feasibility studies is too short. It can be found that almost 64% of the participants responded that effect of political issues on project can be controlled and 16% of the participants responded that no adverse effect of political issues on project has been described in Table 4.

4. CONCLUSIONS

Fourteen major variables are identified and critically analyzed by this paper which is influencing on crisis management implementation in construction projects of Jashore city in Bangladesh. Those are poor initial estimation, financial issues, too many changes, lacking of the contractor's experience, worker strikes issues, inadequate knowledge of workers, workers unavailability, conflicts between parties, target cost, technical issues, political issues, natural issues, schedule variance issues, compressing schedule. The study found that the variables i.e. poor initial estimation, financial issues and too many changes showed greater mean scores as the governing factors for crisis management implementation in construction projects. The study also confirmed that there is a significant influence of the variables such as lacking of the contractor's experience and worker strikes issues in crisis management implementation for construction projects. This study also found that the crisis in construction project happened due to inadequate fund, inflation rate and political stability. Also, it found that the causes of estimation inaccuracy, too many changes and effects of political issues were affecting points of construction project. There is diverse perception between engineer, contractor, owner, worker for choosing the crisis factor of project management.

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