

Integration of Value Management (VM) Process in Bangladesh: Disaster Management (DM) projects

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Abstract

Over the past decades global leaders and communities' attention have increased to the management of natural and human induce disasters because of significant intensity and frequency of disasters all over the world. Now a day's disaster and its management have intersected and transcend country's local boundaries and geographical area. From the time immemorial Bangladesh is one of the worst and wide varieties of disaster victim countries in this world which are tropical cyclones, floods, tornadoes, storm surges, river and coastal erosion, torrential rains, earthquake, droughts, epidemics and arsenic contamination. The main reasons behind this are - geographical location, multiplicity of rivers, land characteristics, coastal morphology and the monsoon climate. For that reason so many projects and programs are running in this country to face the problem and manage hazards. Critical learning from over decades with many programs and projects a mentionable initiatives "Comprehensive Disaster Management Program" (CDMP) in Bangladesh is a holistic collaborative effort of GoB, UNDP, DFID and a host of stakeholders. But overall result is still unsatisfactory. To overcome (DM) problems and establish an effective DM system in Bangladesh, it is important to evaluate current systems and projects structures. In contemporary world (VM) as a tool is now widely accepted for offering more values of the projects by engaging stakeholders at all stages of a project. VM always gives more emphasis on people's participation from policy making to implementation. One of the most important matters in VM is quality assurance of project. Before initiating DM project, it also set plan or actions, workshops for feedback from all level stakeholders, assess needs, follow up meeting, training etc. to improve merit and adequate confidence about optimally fulfilling the customer's expectation which carry out the spirit of VM. VM tools and techniques are generally used by practitioners to instigate projects providing support and adding value. So, for establishing an effective DM system in Bangladesh integration VM techniques in different stages of DM projects is very much essential.

Keywords: Value, Disaster Management, Bangladesh, Sustainable Disaster Management

1. Introduction:

Bangladesh is a natural disaster prone and extreme vulnerable country for its topography and geographical location. According to "The Centre for Research on the Epidemiology of Disasters" report 2010 from 1979 to 2008 around 229 million people had been affected directly by natural disasters with more than 191,415 killed

and US$5.6 billion economic damage. This country is also one of the most risky from world climate change impacts. “The German Watch Global Climate Risk Index” estimated that Bangladesh is one of the10 most vulnerable countries for its acute and chronic disasters and problem will be increased in coming decades. Understanding the magnitude and level of vulnerability and risks GoB has invested a lot from its own and with the help of development partners for risk reduction, emergency management and preparedness. Different types of programs and projects are running in this purpose. But reality is that we need to go far way to get better result. A robust system of disaster management can be developed for real-solution by integrating VM process or techniques. So, in this research an attempt to integrate VM process in Bangladesh different DM projects to examine its effectiveness. We know VM is a wide excepted important management tools and techniques which main focus on stakeholders to offer thoughtful and creative opinion to reduce project cost, solve problems and achieve desired outcome. According to PRINCE2 (2009, p. 313) stakeholders are “People or groups, who are in any individual group or organization that can affect, be affected by, or perceives itself to be affected by initiative program, project, activity, risk”. From the review of literature it can be said that VM involves all parties of project from the initial stage to implementation stage by a set of workshops to find out problems, to reduce its unnecessary costs and providing latest information to project team for taking appropriate decisions. Hamilton (2002) carried out a research in 1999 and explained an example case study and argued that if we would like to achieve real success of any project in this global market we need to integrate VM from its define stage. He argued that integration of VM can ensure active participation of stakeholders to present strong voice for better outcomes and achieving real success in projects. By implementing VM tools and principles GoB can overcome some challenges to achieve the real performance of project, manage risks and help to take effective management decisions.

2. Research Rational:

As an effective management tool VM and its area of research has been developed a lot in construction, manufacturing industry, service sector but its application in disaster risk management is new area of research. Bangladesh is highly risky country for its common and frequents various types of disasters. Moreover, it is one of the highest densely populated countries in the world. All most 160 million people with 2.2% growth rate, per head income are US$280.00 and the rate of literacy is only 44.43%. Most of the people live in village and their main sources of income is still agriculture. Countries agricultural sector always depend on its vagaries weather system that is seasonal and most of the time unfavorable which make the country worst victim of natural disasters and unpredictable loss of innocent lives and assets. Furthermore, according to the World Risk Report of 2012 Bangladesh is 5th high risk country for worst vulnerability and extreme exposure of its natural disasters hazards like- floods, cyclones, droughts, earthquakes and sea level rise. From another report published by UNDP (2013a) about disaster of Bangladesh it can be seen that total 219 different types of natural disasters happened in this country between 1980 and 2008 which caused of damages more than US$16 billion (UNDP, 2013a).

As high risky zone of disaster, Bangladesh has many relevant projects to manage and mitigate disaster hazard. But overall result is still unsatisfactory. Chief of UN Humanitarian ‘Valerie Amos’ expressed in a press release about effective disaster management that different types of disasters are part and parcel of our life but we should be much more alert about the impact of it. Because worst impact and casualty of disaster should not be part of

our life(UNDP, 2013b). Learning from this and keeping in mind this message Bangladesh Govt. with different NGOs are trying their level best to manage disaster hazards and advancing long way. So, Spirit of VM which is public participation in all stages of project to earn better result might be an integral part and parcel in Bangladesh for effective DM system and reduces disaster related risk. According to Kelly and Male (2002), "value management has reached a level of maturity within manufacturing and construction whereby the style and content of the various workshops is reasonably predictable". Bone and Robertson (2003) explained an example of "early childhood service" Best Value review workshop in their research and revealed that "value management works as effectively in the public services as it does in industry and construction". So, here is an attempt to integrate VM and explore it in disaster management project in Bangladesh to know its successful use.

3. Research Scope:

From the active initiative of GoB and its development partners in Bangladesh lots of DM projects are running where millions of poor people are beneficiary of it. But outcome is still not in expected level. In order to reduce damages from natural disasters and get better results VM process can be included in Bangladesh different stages of DM projects. VM process always tries to involve its stakeholders in every stages of project from policy making to implementation to know real problems, needs and expectations of victims through a set of workshops. Considering all relevant aspects, this study will try to fulfill research aims and objectives and give satisfactory answers of research questions.

4. Methodology:

.This study is based on secondary data analysis from credible sources of journals, publications, books of University of Bedfordshire digital library, Google scholar, Scopus, World Bank library journals. Moreover, national statistics, various evaluation report published by disaster management related ministry, relevant report published by academia, international research organizations and NGOs. In hypothetical or perceptional point of view this study will try to prove the effectiveness of DM systems and disaster hazards mitigation in Bangladesh by integrating VM processes in different disaster management projects. Through intensive literature review of different existing peer international journals relevant publications and it evaluation this research study will try to show effectiveness of disaster management projects by using VM techniques.

5. Research Questions:

- How various DM systems and projects are contributing to manage disaster prone Bangladesh disaster risks and hazards?
- What is Value Management and how VM processes can help more effectively to reduce in disaster prone-Bangladesh disaster hazards than traditional DM system?
- What new ideas and thinking of VM can be included in best practice framework to reduce disaster hazards?

6. Research Objectives:

- To explain different disaster management (DM) projects in Bangladesh.

- To find out the precincts of existing disaster management projects and systems in Bangladesh by examining a practical disaster management (DM) case.
- To explain Value Management (VM) and its practice.
- To examine current Value Management (VM) practice in Bangladesh.
- To examine the potential benefits of using Value Management (VM) process in Bangladesh DM projects.
- To develop a competent and sustainable disaster management(DM)

Best practice framework by using Value Management (VM) processes.

7. Literature Review

The aim of this research is to know running DM projects and management systems in Bangladesh find out its lacking and overcome existing problems by integrating VM techniques. Last of all an attempt to make an effective DM Best Practice framework to meet the possible challenges of DM projects in Bangladesh. To prove the potentiality of VM in Bangladesh DM projects we need to know about value, Value Management, its functions, Disaster, Disaster Management, different DM projects through intensive literature review.

7.1 Value:

"Value is something complex, large, abstract potential energy between us and objects which is a goal of our life to satisfy needs and motivates to work".(Shillito et al., 1992, p.4). Value can be achieved by using systematic processes analysis or creative evaluation of functions which main objectives is to satisfy real needs and proper utilization of resources. Since 1990s value for stakeholders in all respect has become management anthem, paradigm and slogan which is applying different organizations worldwide. To increase real performance of organization and create net worth VM can encourage, measure and support as an "integrated management control system"(Beck and Britzelmaier, 2012).Norton and McElligot (1995) explained value by using a simple example–"function of a clock". They argued a clock value depend on its functionality not on its price or manufacturing cost. At the same way a project value depends on the effective force of behavior or functionality or meeting the real needs of its clients or stakeholders.

7.2 Value management (VM):

The term "Value Management"was developed in 1940s by an American purchase engineer named Lawrence Miles. He explained that, "if I cannot obtain the product I must obtain an alternative which performs the same function" (Male and Kelly, 2007). From another research Kelly and Male (2005) argued that VM is a design method which is applicable for building design in construction projects in this competitive world. Other researcher's like- cross (1989), Jones (1981), Broadbent (1973) and Markus (1967) expressed same opinion about VM is that it is design method for construction projects.

In the beginning VM was only job plan and it was not well accepted in all types of projects management and in service sector. During 1990s VM as an effective tool of project management became more popular in manufacturing industry and risk management in service sectors (Ellis et al., 2005).

Hamilton (2002) gave more emphasis on low cost and high functionality to compete any project or service sector in this global competitive market by integrating VM and involving its stakeholders from the beginning stage. He argued that to determine the real needs of buyer's it is very much important to engage them in early brainstorming face to face sessions to avoid wrong outcome. Hamilton (2002) also explained that VM work as problem solving in different areas. He mentioned VM can be seen in five categories- Price Value, Utility Value, Cost Value, Exchange Value and Esteem Value. Male et al. (2007) explained that value-based complexity or problem solving in any project or any organization is high costly but VM process in early stage is robust, powerful and well structured for better outcome of projects or service sectors. Scholes &Clutterbuck (1992, p. 227) argued that "for complex relationship between projects and its beneficiary many challenges have to face which can be overcome by deeper communication with the stakeholders". Cariaga et al. (2007, P. 769) focused his opinion on the integration of value analysis. He argued that by the technique of quality function deployment (QFD) and systematic functional analysis VM can be integrated in projects.

Bowen et al (2010, p. 295) conducted a research about VM in South Africa and opposed Kelly et al. (2005)'s statement "VM technique is a widely accepted tool in the management projects" and claimed that VM practice can be seen in developed countries like USA, UK but its practice is reasonably absent in 3rd world or developing countries. They stressed that deeper interaction and develop awareness of clients about VM process can bring better result of projects or service. About the research of VM Gongbo and Qiping (2007, p. 9) claimed that no satisfactory research can be seen for measuring the value of projects or service sectors and the current framework of VM studies are not sufficient to improve communication within the stakeholders .

According to Crawford and Helm (2009) if we see the developed countries VM systems are part and parcel of a project which is used in value analysis, planning and engineering. They explained in their research that practical use of VM has been transferring from 1st world developed countries to developing countries problem solving in different projects and sectors like- Risk management, strategic planning and development, Re-engineering of business field etc.

Japanese modern management institute stated that "In this modern world Value-based Management and its wonderful techniques is a Rising Sun which can be implemented in any project to minimize risk and maximize project success."

Luo et al.(2011, p.1017) through their research findings developed a group decision support system (GDSS) and claimed that this system can increase participation with interaction and also contribute in shortening the time and enhancing satisfaction. But early researchers focused on enhancing benefits in the form of increasing productivity and reducing costs (Green, 1992).

From recent research findings of Australia suggested that involving of local participation in disaster management is very much crucial and it is shifting from response to mitigation. Moreover, regarding this issues New Zealand and Australian Standards Associations (1995, p. 360) states that "risk management is a framework for the systematic application of management policies, procedures and practices to the tasks of identifying, analyzing, evaluating, treating and monitoring risk." They explained and argued that bottom-up policy of local –level provides the real impetus of mitigation strategies and successful implementation process of disaster management for a top-down policy.

According to "Disaster Preparedness Resources Centre" report (1998, p. 179) Salter cited and summarized the trend of public participation and disaster management study areas shifting trend like-

From To
" • Hazards → • Vulnerability
• Reactive → • Proactive
• Single Agency → • Partnerships
• Science Driven → • Multidisciplinary Approach
• Response Management → • Risk Management
• Planning for Communities → • Planning with Communities
• Communicating to Communities → • Communicating with Communities".

7.3 Functions of VM:

From the LR we see that though VM is well recognized and innovative for its effective tools and techniques in construction and manufacturing industry, its use in other service sectors and projects is not unknown now. Its functions are expanding by using VM innovative tools and techniques in workshop and training environment by the team of project to meet client's requirements.

Regarding versatile use of VM 'Bone and Robertson' (2003) explained VM as; "A multi-faceted discipline that can be applied to any aspect of public service where improved performance is needed or desired." By using "life cycle costing techniques", "sustainability analysis", and "appropriate procurement selection" can assume it's real versatility. Moreover, VM also used to specific following aspects of a project– "scoping business development, briefing, operations and communications, partnering relationships and the development of bid proposals." VM can use for a broad project spectrum because of its generic techniques and widely accepted methodology (Hunter and Kelly, 2003a).

To ensure highest performance and best quality VM process tools and its creative techniques work for appropriate job, not for cheap solutions (Shen and Liu, 2003). VM techniques or processes are used in three steps. Such as-

1. Pre-study phase
2. Study-phase or Workshop phage
3. Post-study phase

After the pre-study stage orientation meeting team members of project, stakeholders and specialists of Value engineering will have to be well informed what they need and have to do for project success. After the workshop of second study step all members of project team and participants or stakeholders will make job plan of project which will have five steps process. Like-

1. Development phase

2. Creative phase
3. Information phase
4. Evaluation phase and
5. Presentation phase.

Last phase is Post-study. In this stage project team members review primary report to ensure VM, quality and total expenditure for next action plans.(Norton and McElligot 1995, p. 11-29; LCIS, 2007).

A practical example of using VM techniques in UK public sector quality and overall productivity improvement 'route map' is given here which is opposite to the construction design project. This 'route map' is based on the practical experience of UK people those who are working in central government, local government, National Health Service (NHS), police and fire service. Though this example is focusing on service sector of UK it is applicable to all types of service organizations. In the mid-1990s UK's NHS trusts and local council service first showed the effectiveness of VM use in service quality improvement and developed productivity in bids work of construction building maintenance, cleaning building and catering service. It was also used in pharmacy quality and production improvement and proved by result of 15% improvement. After mentioned sectors to ensure best value they grew their interest in housing sector and worked by reviewing service and using techniques. The best value and VM techniques are nearly same in methods, skills and tools. VM techniques and training procedures are well defined in BS EN 12973: 2000 and European Commission.To apply VM process they used two strategic levels. In level 1 they engaged all employees from top management to make commitment, arranged awareness training and recruit an operation manager so that he can oversee the initiatives. In level 2 they review strategic, organizational, operational and technical side of VM in public sectors or projects. In this level they ensure support of top management, good team building, develop skill by providing training for all members of project team. They also pointed out that to establish value of any project 4Cs –Challenge, Comparison, Consult and Compete – are the best issues for long-standing.

According to Bhattacharya and Galpin (2011) "although value weighting is less popular in emerging markets than in developed markets, its popularity is increasing almost everywhere". They conducted a research about value based management in 46 countries from the period of 1995 to 2007 and showed findings that "value weighting" is comparatively more popular in developed countries like- U.S, UK, Ireland than emerging countries like- India, Pakistan, Brazil. But its popularity is increasing significantly worldwide. They showed that 35 countries value management activities have increased out of 46 countries within mentioned period.

Srivoravilai *et al*. (2011) conducted a research based on the case study of private hospital service in Thailand's. The hospital authority tried to increase their corporate reputation to compete with the standard of international health care service as value marketing. To ensure hospital service in international standard they examine the role and responsibility of social, psychological and institutional. After analyzing everything their decision was to integrate VM techniques to build strong organizational reputation for the customers. To do this they gave more efforts and concentration for improving product, service credibility and offering value which are emotional attachment of customers to increase the institutional reputation and quality services.

Another successful story of integrating VM in construction industry was discussed by SAVE International (2009). Lin *et al*. (2011) cited this study and explained that US Department of 'Highway and transportation' spent $6 million to establish VM programs and they saved U.S. taxpayers $1 billion in 2000 which they realized that real return from the investment $121 from spending per dollar.

Holbrook (1994); Sheth&Uslay (2007) and Vargo&Lusch, (2004) considered integration of Value in all commercial or marketing field of action is an essential and fundamental focused point. Furthermore, Holbrook (2006) argued that "all products are services, since products perform services that will provide the relevant value-creating experiences". So, it is clear that we make product to fulfill the actual needs of customers. Lusch, Vargo, & O'Brien, (2007) argued value as "actual service of product which results is intangible outcomes".

Different researchers showed in their research that though various approaches are working in the field of project management like- "lean production", "VRIO (the
question of Value, Rarity, Imitability (Ease/Difficulty to Imitate), and Organization) framework", "Balanced Scorecard (BSC) framework", "flat Organization", "delegation of power" and "TQM (Total quality management)" but the real success of all are still not up to the mark or sometimes failed. According to Brigham, and Houston (2009), Value based management is working as comparatively more effective management technique.

7.4 VM Practice in Bangladesh:

DM is a common phenomenon in Bangladesh. Lots of programs and projects have been taken for DM and also remarkable achievement has been earned from it. But Bangladesh is still far away from the global standard in DM. A scientific and standard disaster risk and hazard mitigation process in Bangladesh, here is an attempt to integrate VM tools and techniques in DM projects and programs. In Bangladesh VM is not practiced as it is seen in the construction industry and other sectors in developed countries including UK. However, the spirit and theme of VM might be found in the projects which are being implemented in Bangladesh. In fact, unlike traditional styles of holding workshops VM is practiced in different forms and shapes in DM projects along with other development projects in Bangladesh. From the study we found that VM is a multi-faceted discipline and it has versatile use which stated by 'Bone and Robertson' (2003). Moreover, Hunter and Kelly (2003a) explained that VM has generic techniques that can be used in any broad project spectrum for sustainability. Pervin *at el.*(2008) revealed that for effective resource utilization stakeholders participation in planning and management is now widely practiced in Bangladesh. at the same time, In case of risk management if we observe the management strategy of different types of disaster and its risk mitigation we found that the trend of DM idea is shifting from "reactive attitude to proactive", "project planning for communities to planning with communities" and "science driven activities to multidisciplinary approach". But we cannot say VM practice is commonly seen is Bangladesh. Actually spirit and purpose of VM are seen in the forms of workshops where participants individually or in group are asked to give their ideas through brainstorming. VM is being widely used worldwide and it has been tailored to suit the need, context and situation. In these circumstances, the probable impact of best practices of VM can be examined in DM projects in Bangladesh. It is emphasized that the users or the stakeholders will determine the project need; take part in project planning and designing and implementation as

well as project review. Moreover, one of the most important matters in VM is quality assurance of project. Before initiating DM project, it also set plan or actions, workshops for feedback from all level stakeholders, assess needs, follow up meeting, training etc to improve merit and adequate confidence about optimally fulfilling the customer's expectation which also carry out the spirit of VM.

7.5 Disaster:

Norris *et al*. (2008) cited "Disaster" definition according to United Nations (1992, p. 21) as "a serious disruption of the functioning of society, causing widespread human, material or environmental losses which exceed the ability of the affected people to cope using only its own resources". The authors discussed disaster that it is a major challenge for government or related organizations to manage the ambiguous situation. UNISDR (2002) explained that though we can see different types of disaster but actually 'two basic origins' of it. Such as:

Table: 01

Table Name: Classification of disaster based on origin

Natural disasters	Technological disasters
▪ Hydro-meteorological disasters - floods, storms, wave surges, droughts, landslides, avalanches and related disasters (forest/scrub fires and extreme temperatures). ▪ Geophysical disasters - earthquakes, volcanic eruptions and tsunamis. ▪ Biological disasters -Insect infestations and epidemics.	▪ Industrial accidents - chemical spills, explosions, industrial Infrastructure collapse, fires, gas leaks, radiation, poisoning. ▪ Transport accidents – road, rail, air, or water transport accidents. ▪ Miscellaneous accidents - Collapses of non-industrial or domestic structures, fires, explosions.

From the Oxford dictionary "disaster means a sudden natural catastrophe or accident which causes huge damage and sometimes loss of innocent lives". Geo-climate change is a great concern in worldwide which is the main cause of different types of natural disaster like- storms, floods, earthquakes, cyclones etc. In south Asia Bangladesh is not only a disaster-prone country but also its people are the worst victim of casualties, damages, impacts and disruption of it (Islam, 2011).As a disaster prone country many types of natural disasters can be seen in Bangladesh. Countries most important natural disasters are tropical cyclones, floods, tornadoes, droughts and erosions of river-bank. Moreover, disastrous unpredictable weather and significant impact of earthquakes at times make drastic topographic change and huge damages of social life. According to "Disaster Management

Country Paper of Bangladesh" (2012) a brief description of different types of disaster in Bangladesh are as follows-

7.5.1 Cyclones:

In the world Bangladesh has the highest record of Depressions and Cyclones form in Pre and post time of monsoon in the Bay of Bengal. Cyclones damage crops; homes, infrastructure and it cause severe health hazards which create problems for temporary and long-term of poverty and self-reliance effort. Sometimes, tropical cyclones are the cause of a large number of casualties in this country.

7.5.2 Floods:

According to landscape of Bangladesh it is a flat country except a small number of hills in its south east and north part. Though it is a small country its level with comparison to sea is almost 20 meters above. So, 22 million acres land which is one third of Bangladesh is flooded every year in normal monsoon. The unprecedented worst living memory of flood for water level and duration was in 1988 which was cause of widespread economical damage and took 918 lives.

7.5.3 Droughts:

After some intervals drought conditions can be seen in Bangladesh which is the severe natural cause of crop failure. In 1979 was a major year for drought in Bangladesh.

7.5.4 Earthquakes:

According to the recorded data analysis whole Bangladesh lies in risky zone of potential hazards of earthquake. Two-third of this country is under great risky position. For example- in the year 1997, 21 of November Richter scale 6.1 intensity earthquake struck the whole south region of Bangladesh and 23 innocent people died with huge destruction of property.

7.5.5 Erosions of river bank:

Every year mighty river erosions are the common phenomenon in Bangladesh which is the main cause of losses house and property of people. For that reason a large number of people are forced to go to urban areas for their survival which is a cause of slum growth and create different types of social complexity.

7.5.6 Tornadoes:

Bangladesh is facing various natural disasters tornadoes is also one of them which is the cause of great devastation of localized and need immediate help or response. Such as- May 13th in 1996 a severe tornado distracted homes, 540 people died and 34000 people injured.

7.6 Disaster Management in Bangladesh:

During and after a disaster its devastating harmful effects on environment, human life and national economy are impossible to neutralize, only its impact can be reduced (Moe and Pathranarakul, 2006). To abate disaster effects and advance the continuity of human life and their activities "Business dictionary" (2013) stated that by early warning strategies development, preparing strategic plan for resilience development, by resources mobilization with the practical assistance service of telemedicine and communication, rehabilitation and reconstruction potential disaster risk might be possible to lessen.

According to CDMP Annual report of Bangladesh (2010) GoB has taken many important initiatives to manage disaster situation. Moreover, a complete emergency situation handling "code-book" has been formulated to outline the duties and responsibilities of all concerned departments and agencies for effective disaster situation management. For the counter of disaster measures significant institutional steps have been taken in Bangladesh. Furthermore, standing orders have been given by the government to all concerned ministries and departments. The "Ministry of Disaster Management and Relief" have formulated an "Emergency Operations Centre" and circulated "Standing Orders on Disasters". To build up awareness about disaster managements among children and young generation a relevant chapter has been included from year five to college levels. Moreover, to give general idea in training to participants, it is compulsory standing order from the government that all training institute will have to design in syllabus at least 02 hours sessions regarding disaster management techniques. Furthermore, GoB has constituted different "Disaster Management Committee" at grass root or field levels and central or national level assigned their duties and responsibilities for emergency risk management. Such as-

National level disaster management committee:

- "National Disaster Management Council" (NDMC): This committee is headed by the Prime Minister of Bangladesh to review and formulate the policies and issue giving directions to every concern.
- "Inter-Ministerial Disaster Management Co-ordination Committee" (IMDMCC): This committee is headed by the "Minister in charge" of the "Ministry of Disaster Management & Relief" (MDMR). The main duties and responsibilities of this Committee are to implement decisions of Government or NDMC.
- "Cyclone Preparedness Programme Implementation Board" (CPPIB): This committee is headed by the Secretary, "Ministry of Disaster Management & Relief" to review cyclone preparedness activities.
- "Disaster Management Training & Public Awareness Building Task Force" (DMTTF): "Director General" of "Disaster Management Bureau (DMB)" is the head of this committee. Disaster awareness build up activities and related training co ordination with the Government non- Government and other organizations are main task of this committee.
- "Focal Point Co-ordination Group on Disaster Management" (FPCG): "Director-General of DMB" is also head of this committee. Main duties and responsibilities of this committee is review and discuss with various departments preparation and action plan and provide guidance if necessary.
- "NGO Co-ordination Committee on Disaster Management" (NGOCC): "Director General of DMB" is again chair of this committee. Different NGOs are working with lots of funds to reduce disaster

hazards and through their work they want to help to the country. This committee is responsible for reviewing NGOs activities and co-ordination with them.

- "Committee for Speedy Dissemination of Disaster Related Warning/Signals": "Director General of DMB" is chairperson of this committee. This committee is responsible to ensure the warming or signals examine and dissemination to local people at the risky situation.

"Disaster Management Committees" at field level –

- Local govt. bodies, NGOs representatives, different social service department representatives are included in all field level committees.
- "District Disaster Management Committee" (DDMC), Deputy Commissioner (DC) is head of this committee. This committee is responsible for review and co-ordinate within the district area situation of disaster and to management its.
- "Thana Disaster Management Committee" (TDMC): "Thana Nirbahi Officer" (TNO) is the head of this committee. Within the Thana area disaster management, co-ordinate and review relevant activities are main duties and responsibilities of this committee.
- "Union Disaster Management Committee" (UDMC): As public representative Union Parishad is head of this local committee. This grass root level committee is responsible to review, co-ordinate and implement the decision about disaster management.

With different Ministries, organizations and committee- at disaster time we can see active participant of "The Armed Forces", "The Bangladesh Red Crescent Society", and many specialized NGOs, agencies in rescue, recovery and rehabilitation operation.

Moreover, to grow expertise and integration up dated technical and theoretical matters about disaster management the GoB has assigned the "Ministry of Disaster Management and Relief" (MDMR) and under this ministry there are two support organizations "Disaster Management Bureau" (DMB) and "Directorate of Relief and Rehabilitation" (DRR) are focal point and intensively responsible to implementation.

7.7 Disaster Management Projects in Bangladesh:

Bangladesh Government, concern Ministry and different NGOs are working to give support, reduces total damage and casualties from natural disaster in Bangladesh. According to "the Annual Disaster Management Report of Bangladesh" (2010) over the past decades global leaders and community's attention has increased to the management of natural and human induced disaster because of significant intensity and frequency of disasters all over the world. World movement for disaster management got different dimension after "Hyogo Framework of Action 2005-2015" at the "World Conference on Disaster Reduction" which was held in Kobe, Japan. After this conference UNISDR took initiatives to make framework about "Global Platform for Disaster Risk Reduction". Following these SAARC countries also has come forward and set up "SAARC Comprehensive Framework on Disaster Management 2006-2015"(CDMP, 2010).Considering all things Bangladesh involved itself and launched a milestones project for making planning and reform policy named "Comprehensive Disaster Management Program" (CDMP). Under this program lots of projects and initiatives are running. For example-

"MoFDM Corporate Plan", "Strategic Plans" of DMB ,DRR and DGoF, "National Plan for Disaster Management", "Disaster Management Act", "Learning and Development Strategy", revision of "MoFDM Allocation of Business", "Standing orders on Disasters", "Community Risk Assessment Guideline" etc(CDMP Main Report 2010).

Local Disaster Risk Reduction Fund (LDRRF) is also a micro grants project for empowering local high-risk zones people with innovative ideas, research, awareness build-up, advocacy and developing capacity. CDMP has 3c components "coping capacities of communities" which means cope with disaster threat and hazards, institutional and technical capacity building of local vulnerable areas poor people to ensure sustainable livelihoods. To achieve LDRRF project success it works with NGOs as strategic donor partner. After completion of its pilot project within disaster prone 7districts, 355 Unions and 23 municipalities an evaluation survey has been conducted to know the practical achievement. From survey report it can be said that we need to go far way for effective disaster management (LDRRF 2012).

Moreover, with the help of international support, assistance and cooperation Bangladesh faced different years devastating cyclone and flood by providing relief for victims, reconstruction and rehabilitation during and after disaster. UN agencies, other rich countries, donors, National and international development banks have spread their hands to the people of these poor disaster-prone countries (Annual DM Report 2010)

Furthermore, recent years different development partners and NGOs are also working significantly in this field. For example- Japan is giving technical support for "Storm Warning Centre" of BMD, "International Federation of Red Cross and Red Crescent Societies" helping to enhance "Cyclone Preparedness Program" (CPP) and with the help of ADB, IFRC, EC, bilateral donors and NGOs different cyclone shelter centers have been constructed. In addition to reduce affects of disaster different courses for high officials and policy makers in Asian countries is conducted by Bangkok. GoB is sending relevant officials and decision makers to take part in this training program.

For reducing the practical loss or damages from disaster structural construction program to make embankments, cyclone shelters, dykes etc are very much essential but desired result cannot be produced without adopting the non formal education or awareness building training which is called non-structural measures about disaster risks, preparation and mitigation of disaster-prone areas people's . Moreover, it is crying need to arrange training for all "disaster management committees" members in relevant matters. It is mentionable that committee members are not only government or semi-government officials but also public representatives, NGO officials, teachers, local leaders and different cross-section people.

8. Case Scenario:

8.1 Case Scenerio: Cyclone Aila in Bangladesh

At the year of 2009, 25th May a devastating natural disaster "Cyclone Aila" hit the southern side of Bangladesh. More than 3.9 million people were affected, 190 people died and injured around 7,000 people. Within 11 southern coastal districts around 600,000 thatched (mud and bamboo made houses), more than 5,000 educational and local different types of institutions were damaged, almost 350,000 acres land, inter districts and local 8,800km roads, around 157 culverts and bridges were damaged (IRIN, 2013c). According to the "Department of Disaster Management" (DDM) of Bangladesh 11 Aila affected districts death and affects report is as follows:

Table :02

Table Name: Number of Death and Affected people in Cyclone Aila

Affected districts	Number of deaths	Number of affected people
Satkhira	59	563,783
Khulna	57	546,630
Noakhali	24	1,163,071
Bhola	18	584,970
Barishal	11	292,105
Patuakhali	8	615,785
Laxmipur	7	17,071
Bagerhat	4	497,036
Pirojpur	1	248,470
Chittagong	1	13,630
Barguna	-	284,079
Total (11 districts):	**190**	**4,826,630**

Source: DDM (2012)

According to Kumar *et al.* (2010) category– 1 type cyclone 65-75 mph speedy wind with tidal surge 10-13m which was formed 23rd May in the "Bay of Bengal" from a deep depression and moving to north with striking possibility of the south-western coast May, 25th afternoon.

All seaports were asked to hoist cautionary signal four and all fishing trawlers and boats in the North Bay were advised to return to safely and be at anchor till further notice (BBC, 2013; TRF, 2013). From the govt. clear instruction to local level govt. representatives such as "Deputy Commissioners" (DC) and "Upazilla Nirbahi Officers" (UNO) to take necessary steps in all risky areas to save people and damages property from cyclone. All 11 coastal district's 32 upazilas volunteers were called to get ready to play role in that emergency situation and almost half million affected people were forced to move temporary shelters (BBC, 2013; TRF 2013).

Mallick *et al.* (2011) revealed that though local people understood the signal but they were not alert to take shelter immediately. Yee (2013) stated that at the last moment people left their house and some of them moved to neighbor's brick built house to take shelter for safety. They thought that all cyclone shelters were far away from their house, poorly maintained and overcrowded. Mallick *et al.* (2011) presented argument for this and said that people are not interested to go to the shelter centre because of their lack of faith in the early warning system from radio.

As cause of lack interest Mallick *et al.* (2011) showed in their research that most of the people discussed the signal message within family members and took decision to stay at house. Only 16% people were decided to go near relative's concrete house and shelter houses made for cyclone victims. Immediate people's response after warning was as follows:

Table:03

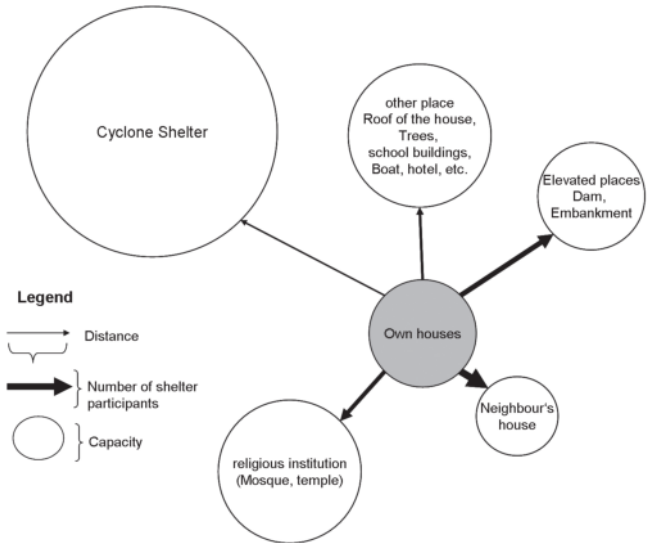
Table Name: Immediate responses of the respondents after receiving warming Aila

Immediate response	News received (% of respondent)	
	Yes (87)	N0 (13)
Discuss with family members and decide to stay in your home	57.1	2.3
Discuss with neighbours	2.8	0
Take decision by self	15.4	2.4
Do not pay any attention about the news	11.7	8.3

Source: Mallick *et al.* (2011)

Figure:01

Figure Name: Mobility chart of respondents during Cyclone Aila:



According to LCG (2012a) report almost 375,000 people were homeless by Aila for insufficient shelters centre; most of them were stayed on elevated roads and on the embankments like refuge while others took shelter in local public and school buildings. Only total 4,000 local level government offices and shelters were in that cyclone prone districts.

From the field study of Aila affected area Mallick *et al.* (2011) found that 76% evacuation process was hampered for water intrusion in cyclone area and inundation of immediate roads.

Though the GoB denied relief shortage but it is true that affected people got insufficient assistance and from government level there were no any appeal for international assistance (LCG, 2012b). Even Mr. Razzak, "Disaster and Relief Management minister of Bangladesh" cited that "we have enough resources to ensure food, relief and rehabilitation".

For overcrowded uncontrolled situation after two days Army and BGB (Boarder guard Bangladesh) joined to control relief activities but failed to reach devastating areas(BBC, 2013). On the other hand, because of high salinity it was not possible to drink ground water. So, Aila affected people were also suffering from the scarcity of safe drinking water (BBC, 2013; TRF, 2013). Islam and Chik, (2011) showed that in this situation almost 7,000 people suffered from diarrhea only for unsafe drinking water. To tackle the situation "Department of Public Health Engineering" (DPHE) 'trucking' drinking water in many locations once in a week. Some people collected water from unsafe "submerged tube-well"

Emergency health management system was also a great concern for Aila affected people. Trained doctors and paramedics were not found in affected areas to ensure health facility. In addition to that though oral saline, antibiotics, IV fluids scarcity was not found but oxygen cylinders and masks, nebulizer, pulse oximeter and ambo bags etc emergency equipment for medical purpose were unavailable. Moreover, X-ray machines, ambulances were out of order (LCG, 2012b).

LCG (2012a) showed in survey report that during Aila sanitary latrines were damaged 100% in which 20% partially & 80% fully. DPHE and some NGOs constructed some temporary latrines at emergency stage beside embankments and shelter centers but it covered 12% of total needs. Without any alternative 1 latrine was shared by 10 families with girls and women. So, minimum hygiene standards maintenance was also another challenge ("British Red Cross", 2013).

"Humanitarian Aid and Crisis Response" international cooperation commissioner 'Kristalina Georgieva' said that "after two years of cyclone still the Aila victims are struggling to mend their lives and many displaced people are living on the road or camped on the remaining sections of embankments" (M2 Press wire, 2011).

Ahmed (2010) argued that emergency Govt. response were not well-coordinated and adequate. From govt. level monthly 20 kg rice was given for one family through "Vulnerable Group Feeding" (VGF) cards that were totally in adequate to survive for a family (IOM, 2010).

IRIN (2013c) stated that many embankments were damaged from cyclone Aila and GoB took initiatives to repair it with local people's help. But their initiatives were not finished timely for fund scarcity, well coordination and repeated damage from water pressure for new moon tides (IRIN, 2013c). For full recovery Bangladesh government requested to international community for $1 million but received just more than 1% of total demand (Oxfam, 2013).

Moreover, if we look into the houses of Aila affected area, 85% affected areas houses were made of mud, hatches, bamboo and golpata plant for roof. So, after inundation these houses washed away and collapsed immediately.

After cyclone Aila Bangladesh govt. has taken many schemes to rehabilitate affected people. Such as – by establishing "Cyclone Resilient Housing", "Saline Water Treatment Plants", and constructing "Coastal Embankments". But these steps could not lessen the real sufferings of local people. They complained against the faulty design of "Cyclone Resilient Housing" and said that these were not good to live. On the other hand, though DPHE established two "Saline Water Treatment Plants" but one is out of use from the beginning for expertise lacking.

Corruption of responsible govt. officials and lack of quality planning most of the DM projects activities, response and mitigation steps were not fruitful. For example, within March, 2012 govt. repaired coastal areas 710 km embankments but without any tidal surge or strong cyclone at several points it has been damaged. Moreover, some high officials are going to foreign trips to gather efficient knowledge in rehabilitation process mentioning as training. But these tours are nothing but pleasure trips (Daily Sun, 2010b).

8.2 Case Results:

From the case study of cyclone Aila following different steps have been undertaken to mitigate its impacts -

8.2.1 Prediction:

Before cyclone Aila it was predicted accurately that when and where it will hit in Bangladesh. But for critical disaster management no accurate prediction was about intensity of rainfall, tidal surge and wind speed.

8.2.2 Warning:

After predicting about cyclone Aila "Cyclone Preparedness Board" meeting was held to pass warning message to all trawlers and fishing boats to come back safely until next information. Local level govt. responsible officials' like- DCs, UNOs were ordered to take necessary emergency steps to protect people's lives and their properties from disaster cyclone. Volunteers from different places were prepared to help in emergency situation of coastal

areas. Volunteers play important roles in grass root level to alert cyclone message to villagers by using megaphones urging to take shelter in safe places or shelter centres. But some villagers did not listen and they had not confidence on this early message of warning. People thought that cyclone shelters are overcrowded, poorly maintained and most of them are far away. Considering these things they took shelter schools, govt. buildings, elevated roads and embankments. For road inundation and water intrusion evacuation process were hampered and no transportation can drive for evacuation. People evacuated by their on foot with necessary belongings which also hampered and delayed whole process.

8.2.3 Relief:

With inadequate stock of relief materials govt. did not try to appeal in advance for outside assistance. To tackle overcrowded situation after two days of cyclone Army and BGB were engaged to rescue and relief distribution. There was no attempt to use modern technology for relief distribution .DPHE water truckling plant was not sufficient. In addition, most of the surface drinking water plants were polluted. So, without any alternative people drank polluted and unsafe drinking water. In the area of shelter centres latrines were not sufficient and its maintain system was also very poor. Cyclone Aila affected areas health service and facilities were not enough to tackle the situation. Such as oxygen masks and cylinders, ambo bags, nebulizers were not adequate. Moreover, emergency hospital service ambulances and x-ray machines were out of order.

8.2.4 Rehabilitation:

Short-term-

To remove logging water no immediate necessary actions were taken. Peoples stayed long time in shelter houses. As food monthly only 20kg rice under VGF programme per family was totally inadequate. Lack of coordination and initiatives for fund repairing damaged embankments works was not finished after long time. Most of the disaster prone districts peoples main source of income is agriculture. After cyclone Aila, farmer's crops like rice, shrimp were also destroyed and people became unemployed. To survive many people were migrated from village to town

Reconstruction:

Long-term-

Initiatives from proper authority for construction and polders, embankments repairing works were not satisfactory. Moreover, embankments were not made in standard way. So, some were damaged before finishing the work without tidal surge or strong cyclone. Maximum houses in Aila affected districts were made of mud, bamboo, wood and roofs from goalpost or leaf which was not capable to survive against cyclone. There was a declaration from government that every cyclone victim family will receive 20,000 taka house grant but for legal complexity it was too delay. Shelter houses design was not suitable to stay for its faulty design."Saline Water Treatment Plant" was not working properly for lack of operational expert hands. Proper rehabilitation initiatives became delayed for corruption of government officials. In addition, this money sometimes they used for foreign tour in the name of training of high officials.

9. Analysis

Literature shows that for effective DM many research studies have been conducted by different scholars but nobody used VM with it.Though VM tools and techniques are not only using as its theoretical approaches but also using as the projects, stakeholders or project team members needs. In this study my honest and sincere hope that if we can integrate VM processes and techniques with DM projects or systems, no more management gaps will be seen in this field. As an "innovative project focused service" VM works for continuous improvement through a series of live workshops from the beginning with its stakeholders. But it is important that value adding initiatives will have to take willingly at the initial stage of a project. Bone and Robertson (2003) believed that value management is the best new and creative tools to manage any type of public sector project effectively. According to VM standard its attributes and important general benefits are "better business decisions", "increased effectiveness", "enhanced competitiveness", "a common value culture", "improved internal communication", "perform multidisciplinary and multitask teamwork", "take decision supported by all stakeholders (BS EN 12973: 2000)".With the above mentioned general functions of VM it can support and relate in Bangladesh public sector DM projects with many extensive areas to achieve Best Value.

Critical learning from over decades "Comprehensive Disaster Management Program" (CDMP) in Bangladesh is a holistic collaborative effort of GoB., UNDP, DFID and a host of stakeholders. After devastating flood and destructive cyclone, GoB took decision for setting institutional and elaborate program for disaster management. Before this initiatives DM functions was giving emphasis on short-term initiatives for preparedness, response, recovery and awareness build-up which failed to reduce disaster vulnerability and fulfill expectations. With comprehensive multiple planning and strategy CDMP addressed all aspects of disaster risk management in Bangladesh. Nonetheless, enhancing overall capacity development in DM is still a crucial point for Bangladesh. Every year it is facing concrete challenges during and after each and every disaster Sabur (2012).

From the case study Aila we found so many shortcomings of Bangladesh DM systems. Through intensive critical analysis and discussion of literature and case study we are going to show the real disaster situation and integration of VM tools and techniques in Bangladesh. From the cyclone Aila case study we can see many necessary steps from the govt. level through different projects to manage and mitigate disaster impact. But at the same time we can identify some lacking in disaster management process. Such as – "prediction, warning, information communication, evacuation, transportation, insufficient shelter house, health facility, drinking water scarcity, destroyed road communication network, wrecked embankment and sub-merged agricultural land as well as less income opportunities etc".

From existing system of disaster management cyclone Aila location and hitting time was identified exactly. But this message did not include the prediction of wind speed, tidal surge and intensity of rainfall which is important to define it. McEntire (1999) showed in his study that proper information gap is a major barrier which should overcome by providing detail information as clear as possible. If storm surges with heavy rainfall, its affects will be more dangerous in coastal areas. In example case we observed that evacuation process was hampered for road inundation. For information gaps of wind speed, rainfall intensity and tidal surge risk assessment was not accurate. For that reason evacuation management planning was also incomplete. Moore (2007) suggested that accurate risk assessment and risk management planning is half of disaster management which minimizes disaster impacts. By using VM process in DM project a systematic and a complete disaster management framework can be prepared which always suggests using modern technology so that all related information can be forecasted to minimal impact. Moreover, VM always give emphasis on more groundwork for well-preparation in any project or task. They gave more effort, concentration and credible service by intensive preparation, feedback and lesson learned (Srivoravilai*et al*. 2011).

In Bangladesh existing system of disaster management works in step by step. First of all "Cyclone Preparedness Board" conducts a meeting after receiving the message from meteorological department about disaster. Then this committee gives instruction to concern districts and upazilas head of administration DCs and UNOs for further emergency necessary actions to save people and their property. On the other hand, meteorological department

announce this alert message via radio to all concern district offices. With the message they urged volunteers to help in relief operation and evacuation. Though many initiatives from government, we found from case study that cyclone Aila affected areas people were not alert timely, and most of them were not agree to go to shelters. But at last they had to go to cyclone shelters, embankments, road sides, high land and local public buildings. Mallick *et al.* (2011) revealed that though local people understood the signal but they were not alert to take shelter immediately. Yee (2013) stated that at the last moment people left their house and some of them moved to neighbor's brick built house to take shelter for safety. In this situation VM practice might be more effective to motivate people. Because VM always work with its stakeholders and they will be well informed about any consequences.

Sometimes volunteers those who work have no formal training to motivate people. But VM main target is that all concern people will be well motivated through workshop and training.

Shelter houses were not available and most of the shelters locations were far away. About the location of shelter house Mallick *and* Vogt (2011) pointed out that 70% people believe that locations were decided by "social supreme" not on the opinion of local people so that during disaster time elites can come and go easily. But if there were VM practice to identify suitable location stakeholder's opinion would be the most priority. Haque *et al.* (2012) suggested that density of population, connectivity of roads and easy access facilities, remote sensing and GIS technology can be the most effective. But here VM tools and techniques can play pivotal role for emergency management. In the field of VM Harrison & Wicks (2013) developed a theory named 'shareholder theory' which highlighted the communication or proper interaction between project and its stakeholders for the optimum quality return or function of total investment. Because without peoples voice or taking their suggestion no forceful work is done by project team

In disaster period relief can mitigate immediate impacts but in cyclone Aila its supply was not adequate and there was no advance stock. Moreover, for salinity shortage of safe drinking water most of the people affected by diseases of water born. Water trucking was not enough to solve the problem. By using VM process in best practice framework as suggestion it can be include that to solve safe drinking water problem awareness building for harvesting rain water, purification techniques by using medicine, tablets and boiling. There was no strong coordination among different organizations, agencies and NGOs in relief distribution. Some areas people got more some got less. No pre-planning or data base can be found about exact requirements. "The same problems were also identified during tsunami in Thailand and hurricane Katrina in USA (Moe and Pathranakul, 2006; Moore, 2007)." VM always measure its needs, performance by using KPI and make framework for measuring VM application Lin *et al*. (2011). To overcome relief distribution problem all family data base should be authentic, relief materials supply need to increase, relief distribution supervisor should appoint to monitor. To ensure minimum health facilities emergency needs like oxygen masks, cylinders, nebulizer, and ambo bags supply should ensure and increase before disaster. Ambulance service and its way should inform to all. Through well-arranged training, workshop all relevant aspects could be identified to manage disaster.

In addition, after devastating cyclone Aila different relief and rehabilitation programs have been taken. Instantly, VGF program was introduced to meet immediate needs by providing 20kg rice monthly per family. But to sustain as a human being this rice per family is not adequate at all (IOM, 2010). In best practice framework suggestions will be include that to face the disaster situation collections of relief materials from government and donors should be ensured enough and earlier through intensive field work and strong data base which practice is available in VM.

After cyclone Aila more than ten thousand people became homeless and lived in temporary shelters for a long time. Most of them remain unemployed and dependent on "cash-for-work and relief" program which were not the proper solution ("British Red Cross", 2013). So, permanent income generating activities and training program should introduce by the government and donors funds. Moreover, fund distribution, relief work and other all related works will be possible to do easily if strong and detail data base can be made practically. Actually VM practice in this might be a practical solution for it excellent management system.

Furthermore, from the study it can be suggested that more scientific embankments, disaster- cyclone, flood resilient houses, and seeds for agriculture, afforestation can play vital role to long term mitigation process. Regarding long-term initiatives for Disaster Management "UN Secretary General for Disaster Risk Reduction", Wahlstrom (2012) pointed out that donor's general trend to give donation as relief not for permanent or long term projects or development. So, this is GoB responsibility to take initiatives in raising embankments, better quality housing with other long-term DM activities. This activity would be more practical if VM techniques integrated in this area.

The outcomes of this study will have great significance for research and disaster management practices and offering implications for policy makers and other stakeholders of in future. Moreover, for sustainable development supportive policies, appropriate technologies, different ethics, and individual behavioral changes are the obvious factors which only can be integrate by using VM tools and techniques.

In Bangladesh CDMP II which is called 'people-oriented risk reduction channel support program' was launched through a series of Inception Workshops arranged jointly by the ministry and UNDP, GoB, different development partners, NGOs, civil society and organizations promote cooperation, coordination, climate change and different risk reduction activities allocate resources to DM and its different priority projects or program. CDMP II actually depending on the real previous experiences and achievements of CDMP I and knowledge oriented resources after devastating cyclone Aila. This program is depending on GoB "Standing Orders on Disasters 2010", "National Plan for Disaster Management" and "Disaster Management and the Bangladesh Climate Change Strategy and Action Plan 2009". The main aims and objectives of CDMP inception workshops were to share ideas and information to receive feedback from whole DM community about proposed plan, check inconsistencies and find out gaps before finally approved project design in inception report. The project initiation system is somehow similar to VM techniques which follow the voice of all concern people before taking any initiatives. To achieve the real performance of project by using VM techniques in Bangladesh can do groundwork regarding maintain discipline, schedule, cost baselines survey to keep the scope of trends on track. They argued that after successful implementation of VM principles, tools and techniques from the beginning stage it is possible to earn the best value and benefit from it. Value Management tools and techniques work proactively to manage risks and help to take effective management decisions.

DM institute try to assess training needs of core stakeholders from combined briefing training session. Training outcomes became qualified through group exercise, participative discussion, brainstorming session, open discussion and post it note method (CDMP-II project report). The main strategy of training program is updated capacity building to all stakeholders and extension works. In training activities, flexible training approach is used in exchange of step-by-step approach to find out participants needs. Through interactive lectures, group exercises, individual exercises, review sessions, presentations are the common strategy of all types of DM formal training events in Bangladesh. After training or workshop from field level major suggestions and recommendations are incorporated for technical implementation. These activities are carried out the spirit of VM.

Stakeholders are the most important part of any projects. In all types of projects success stakeholders engagement in different phases is very much important through training, workshops, orientation etc. Different information gathered from these workshops and meetings are considered and if need changes are brought in the projects according to suit the need and expectations. So, we can apply VM principles in Bangladesh DM projects or activities for achieving best results.

Though VM practice is widespread in developed countries different public and private sectors, in developing countries like Bangladesh its practice is not commonly seen. But VM theme and spirit might be seen in different forms and shapes in Bangladesh different projects. Keeping the total cost of project within estimated cost or budget is one of the main targets of VM. In this situation disaster-prone Bangladesh also can use VM.

Integration of VM can be a practical and effective solution from starting a project to finish (Field et al. and IPCC, 2012). Canos et al. (2013) argued in their research and stated that different practioners and researchers combined efforts are still working in identifying problems, analyzing and designing for adequate proper response in the field of Man-made and Natural DM. After the published research paper of Green and Altay (2006) about operation management in the field of DM no mentionable change can be seen up to 2012 (Galindo and Batta, 2013). During disaster so many casualties happen which need to take care and many activities need for recovery during and after of any disaster. If preparation is well structured and scientific about disaster risk management by using VM casualty will be less (Pearce, 2003).

From the research it is clear that strengthening national institutional capacity of all level and build-up proper awareness of people through training and workshops, effective disaster management activities and projects success is a must. International Societies of Red Cross and Red Crescent (1995, p.37) stated that, "The public's right to information is a fundamental feature of democracy and is essential to disaster preparedness: to plan for themselves, make informed choices and act to reduce their vulnerability."Furthermore, about ensuring the public participation in DM process citing the motto of American Environmental Protection Agency Lash (1995) stated that, "if we help to learn people about environmental risk and its technical aspects and help to learn government regarding subject values of public risks for critical success of DM hazards mitigation process will be much more effective".

According to Pearce (2002) if we would like to make a sustainable hazards mitigation framework we need to ensure local level public participation in the process of decision making.

Male *et. al*. (1998) explained that issues of a project come from a typical "facilitated workshop" by using "Brainstorming Methodology" and post-it notes of participants. Moreover, for data analyzing "Grounded Theory Methodology" is effective to find out similar issues which is important for facilitators to lead the project.

Maurer (1996) explained an outline of continuous improvement factors of VM in a project. Such as- support from sponsor and management to integrate VM key factors in project or program objectives. By engaging independent VM administrator in project document can ensure training or workshop facility in structured way. Moreover, a plan for implementation of VM in project also can help effective implication of VM.

Finally by improving and broadening VM application in other projects and programs Bangladesh government can introduce VM for sustainable development. For example- in U.S.A different public projects and programs integration of VM is a mandated which demand and interest is increasing day by day. Gwynne (2003) explained VM and said that in public sector still has little knowledge about VM. But those who are applying these techniques are successful in all aspects. In this competitive age we the Bangladeshi people cannot stay lagging behind. Because failures program and project deprive the citizens and sponsoring organization from possible benefits.

9. 1.Best Practices framework for DM in Bangladesh

9.1.1 Lesson learnt from different case studies and model framework:

Different times various studies have been carried out to identify the real cause after devastating damage from natural disaster and find out optimum mitigation system. Moore *et al.* (2007) did a primary research on the effect and response of USA's hurricane Katrina. The findings are as follows-

Table:04

Table Name: Problematic areas during orientation, preparedness and response to hurricane Katrina In USA

During Prevention and preparedness	During Response
▪ *Coordination/management:* Lack of coordination between local emergency plans and that of state.	▪ *Coordination/management:* Administrative and logistical problems, incomplete worker training.
▪ *Planning and exercises:* Despite annual exercises, no planning for massive storm and unprepared communities. ▪ *Early warning:* Despite early warnings no commensurate response by local population. ▪ *Evacuation:* Insufficient evacuation plans and scarcity of vehicles for evacuation. ▪ *Shelters:* Evacuation planning based on wrong shelter information and details of local shelters were not released to public in advance. ▪ *Health:* Resource shortage and flawed emergency protocols in medical response.	▪ *Communications:* Generator and batteries damage rendered the communication system dysfunctional. ▪ *Evacuation:* Despite warnings insufficient response by residents, lack of public or personal transportation, late involvement of volunteer and preparation of central evacuee data base. ▪ *Shelters:* Insufficient shelters for excessive population. ▪ *Health:* Inaccessible, damaged and Inoperable facilities. ▪ *Emergency supplies:* Not stocked in shelters in advance, delivery hampered by storms afterward. ▪ *Security and law enforcement:* National Guard and Local police were rapidly overwhelmed, external support was delayed; inadequate or unavailable detainment facilities. ▪ *Search and rescue:* No approval for military personnel for search and rescue operation

Actually, the real cause and problem of DM can vary from develop countries like America to developing countries like- Bangladesh. Different types of natural disaster creates different problem. To prove this Moore *el al.* (2007) carried out a research in 11 countries of different regions about 13 types of natural disasters which findings are-

Table: 05

Table Name: Summary exemplary practices identified by different countries

Location, disaster type and Year	Prevention/ Preparedness	Response	Recovery and Redevelopment
Cuba, Hurricane, 2001	Planning, early warning, community preparedness, exercising.	Coordination/ management; security; health evacuation; shelter.	Community involvement
Mozambique, Floods, 2000, 2001	Early warning; exercising; regional coordination; planning; community preparedness.	Evacuation; coordination, search and rescue;	Development orientation
Philippines, Volcanic Eruption, 1991	Early warning; regular public warnings and awareness building, early evacuation.	Health (surveillance and disease control)	
Iran, Earthquake, 2003		health (surveillance and needs assessment); International and local response coordination; search and rescue	Community involvement (local communications, liaisons)
Bangladesh, Flood, 1998	Orientation; economic and social development	Coordination/ management	Development orientation; private sector
Honduras, Hurricane, 1998	Local risk management capacity		Decentralization, community involvement; simplification, and quickening of project implementation; development orientation
India, Earthquake, 2001			Coordination/management ; disaster impact mapping; integrated information systems; community empowerment; housing; community training

Location, disaster type and Year	Prevention/ Preparedness	Response	Recovery and Redevelopment
Vietnam, Floods, 1998, 1999			Housing
Mexico, Earthquake, 1985			Infrastructure; rent payment assistance; community involvement; rapid completion
Czech Republic, Floods, 1997, 2002	Early warning; emergency medical help	Coordination	
Indonesia, Landslides, 2002-2003	Early warning		
Vietnam, Typhoon, 2005	Prevention/ protection		

Source: Moore *el al.* (2007)

Though these ideas and different countries exemplary practices provides clear understanding about disaster management model practices but to be more clear we can analyze another regional study. Perry *et al.* (2007) did a research in Indonesia about devastating cyclone Tsunami and found out some lacking against emergency disaster response requirements-

Table:06

Table Name: Shortfalls in effective response to Tsunami

Response requirements	Identified shortfalls in response
Preparedness in vulnerable region	Lack of community knowledge about tsunamis, inadequate disaster planning, early warning systems, education programs and drills.
Participation of local people	Cultural differences, poverty, local bureaucracy and vulnerabilities, paternalism of aid agencies, unreliable relationship.
Coordinated needs assessment and relief activity	Delays in early effort by international aid agencies, competition instead of coordination, dearth of early knowledge of local wants.
Collaboration in sharing information between parties	Lack of collaborative information sharing in the early response days, degrees of suspicion and confusion.
Logistical expertise	Lack of skilled logisticians on the ground in the early days particularly at the airports.
Promoting trust and hope	lack of the fostering of hope and trust by the relief agencies in the affected communities
The bigger picture	Insufficient awareness or involvement of aid-agency in the longer-term planning of local government and initiatives for safe relocation, community survival and infrastructure requirements, lack of understanding of the socio-economic difficulty and long-term resilience requirements by the international donor cohort .

Source: Perry *et al*. (2007)

The above mentioned research will help for future remedial steps. Regarding solve these problems UNDP (2013c) provided a practical solution guide for disaster "preparedness, response, management and mitigation".

Table:07

Table Name: As per GOI-UNDP DRR program replicable good practices effective disaster management

Purpose	Activities
Awareness Generation:	▪ Involving local folk troupes, exhibition, fairs and, electronic and print media etc. on the theme. ▪ Inserting awareness messages with other documents such as fees receipts, toll-tax receipts.
Capacity Building:	▪ Training selected engineers, students of Engineering and Architecture Institutes and masons regarding earthquakes, floods and landslides resistant structures. ▪ Creating regional Early Warning Systems, and Risk and Vulnerability Assessments.
Institutionalization:	▪ Teachers' training programs and motivating them to transact the lessons in the classroom. ▪ Introducing Disaster Management as a parameter for performance appraisal in different government departments.
Involvement of community for sustainability:	▪ Committed volunteer's team in the community. ▪ Working with popular non-governmental organizations to enhance creditability in the community.
Gender mainstreaming:	▪ Involving women volunteers and society's perception regarding women's capacity.

The above mentioned practice showed some general ideas. It should be more specific in its different phase. Regarding this Moe and Pathranarakul (2006) did a research on "cyclone Tsunami in Thailand" and presented an excellent lifecycle of disaster management which as follows-

Table:09

Table Name: Gathered problems and Lesson from Tsunami

Prediction Phase	
Problems Identified	**Lessons learned**
No master plan, no risk assessment, no single authority responsible for overall management, no stand policy and procedure for disaster management.	There should have a master plan for disaster management, application of technology to assess risks, policy priorities for disaster management.
Warning Phase	
Problems Identified	**Lessons learned**
Lack of community knowledge about tsunami, its impacts and ways to escape, and no early warning	Different media such as radio, televisions should disseminate warning information on time and the lead time should be properly utilized.

Emergency Relief Phase	
Problems Identified	**Lessons learned**
Unnecessary commands given to the concerned authorities ;conflicts among provincial governors; indecisiveness and confusion; supervisor's delay pass orders; lack of coordination among concerned government officers at different levels, NGOs and volunteers; difficulties in logistics, database management, transportation and telecommunications; and late emergency fund approval and withdrawal.	There should have effective coordination among the parties involved; clear line of authority; more collective efforts; Logistics plan drawn before; database management system for effective distribution of supplies; and quick approval and withdrawal of emergency funds.

Rehabilitation (short-term) Phase	
Problems Identified	**Lessons learned**
Conflict between police department and experts; redundant investigation of dead bodies; overlapping of control in same kind of operations by many different ministries are taking control of the same kind of operations ;lack of coordination regarding rehabilitation efforts; and lack of integrated rehabilitation plan at local level	There should be a clear unit responsible for investigation associated with disaster death; single authority for handling rehabilitation activities; a master plan for rehabilitation at local; more cooperative efforts for rehabilitation and sustainable development.
Reconstruction (long –term) Phase	
Problems Identified	**Lessons learned**
Lack of specific goals and relevant information regarding design, operation, implementation, procurement, and maintenance in each phases of project life cycle.	There should have clear understanding of the critical success factors of reconstruction projects; competent project managers; coordination among different levels of institutions; and active client participation

Though preparation was well and organized but still some problems can be seen. Proper perpetual problems identification in DM can help to identify effective solutions.

9.2 Proposed Best Practice Framework for DM Projects in Bangladesh:

9.2.1 Important consideration for Best Practice:

Different management scholars discussed DM process in different ways. In the literature we can see various disaster management models which process somehow related with VM system. From the study we observed, before initiating a project of DM general practice is that, a series of preparation workshops held to consider valuable opinion of different stakeholders. My suggestion in best practice guide is that with the opinion we need to consider following matters-

- scientific investigations,
- resource management,
- asset management,

- disaster impact assessment
- development planning,
- Development cartography,
- route planning

Moreover, from the findings we see that different countries disaster and it management system is unique. But I think, this important research gives us excellent scope to enrich our disaster management framework by providing following 6 important lessons-

Inclusive and most effective coordination within different entities of DM is a must. In all phases of projects local community participation is a vital issue. Public awareness development and modern technology use is most important to ensure fruitful early warning. Effective system of disaster management should be evidence-based. During disaster we follow short-term planning for recovery. But after a disaster recovery planning should be long-term through its early orientation. Always we need to take lessons from real experience.

Above mentioned points might be applicable practically by using VM techniques for practical use.

9.2.2 Best practice Framework:

This model shows all key aspects and main questions of Disaster Management and to solve different tools and techniques related to VM theme or ideas in phase wise-

Prediction phase:

1. A master plan for DM will have to formulate by involving local people. Identifying their need through a series of meeting in local level and at last central level.
2. Disaster management organisations in different positions will have to strengthen by providing tangible and intangible resources.
3. Training for all related parties to introduce targets and achievement processes by introducing VM techniques.
4. To assess risk of project - stakeholder involvement by workshops, group study, Brainstorming process etc can be followed.
5. Inform local people about “Early Warning Systems”, “Risk and Vulnerability Assessments”; and “promoting technology” to identify risk and assess it.
6. For effective disaster management all educational institutes can play vital role. To achieve something from this institute, teachers training programme is important first. After that they will transmit the message to all students. Children are the key hands to motivate family members in any disaster situation.
7. In training curriculum all types of disaster and its source, reason and consequences will have to include.
8. To build awareness and motivate local people different interesting ways can be practiced for local people inserting the main message. Such as – Folk troupes, local fairs, exhibitions and digital media can

be used. Moreover, in different government offices documents and receipts can be used for carrying DM awareness build up message. For example- toll or tax collection receipts.

9. A local evacuation planning register should develop after discussing with local people and evacuation shelters should be identified by them to make it clear that which one will be used for whom.
10. Sufficient transport and ambulance should buy for this emergency situation. Alternative roads should be identified for emergency situation.
11. Emergency health planning will have to be clear to all local people. By arranging workshop fast aid and instant treatment system should inform to all. Sufficient medicine and emergency medical equipments should have in store.
12. Alternative lighting systems should be ensured as emergency planning. For example- generator, batteries etc.
13. All local roads should have a name written with a high stand so that in flood or tidal surge can dislocated people by giving road signal.

Warning phase:

1. Disseminate warning in its lead time through radio and different TV channels to inform disaster-prone areas local people about its consequence.
2. "Cyclone warning and flood forecasting" information and data might be acquired by using advanced modern technology like-'GIS techniques', 'database networking system' etc.
3. To build up disaster awareness, disseminate information, possible devastation and responsibility of individual and collective message can be disseminate by using internet to the whole world.
4. By using different media like- electronic media, TV, radio, mobile phone, e-mail, fax, also can play a key role about disaster warnings message and damage caused so that responsible authority can plan to help properly. Moreover, with disaster information different relevant websites, blogs can be developed.
5. Motivating people to go to shelter centres by informing the warning and its devastating consequence.
6. To ensure early warning and motivate people administrative service and logistic support can help more.
7. After the warning message volunteers should get ready for evacuation.
8. Based on local up dated data analysis evacuation process should start. Otherwise it may take more time.
9. Essential emergency materials should supply and stock earlier in shelters. Such as- food, medicine, emergency health service equipments etc.
10. To ensure law and order situation additional force can be deployed.

Emergency relief:

1. Sufficient emergency relief should be stocked and distribute properly according to justice.
2. In worst situation state should declare emergency and ensure international support and aids.
3. Involve defence forces for rescue operation with effective technology like- helicopters use to enter into remote areas rescue and relief distribution.
4. After getting foreign aid its withdrawal process should be faster and easy.
5. A strong earlier field survey and data base can help to know local actual demands and it can help in effective relief distribution.

6. A strong coordination among GOs and NGOs can build a network for disaster Management.
7. Logistics plan and supply should ensure from the beginning.
8. Well trained volunteers should engage for rescue and relief activities. Moreover, women volunteers should engage to help and motivate women.

Rehabilitation:

Short-term (Best Practice) –

Depending on the area and situation a short-term master plan should have after comprehensive survey. Local people and organisations should include implementing this plan. Central and local organisations should sit time to time to analyse update and implement decisions. To help local people integrated approach can be effective. After local level series of workshops, meetings and seminars reality of local people can be identified in practical emergency situation.

Long-term (Best practice)-

For the information of Donors local level participatory meetings, workshops and seminars can play active role finding out the reality. National and international aid plan and for its proper utilisation it is need to sit together, discuss about all aspects for long term effective development. To implement DM projects experienced project managers should include with it.

9.2.3 Organizational best practice framework:

To develop an organizational value based best practice and implementation in its deferent level a conceptual framework can play effective role. Cooper (1998) explained that in a project value based best practice is not a sudden matter. It is a strong organizational practice and culture which includes nature and value. To develop real value in project and implement by a best practice guide or frame we need some specific changes of concern organization.

Stage1: Depth knowledge, practical work or implementation skills and personal traits or characteristics are important for a manager to implement project successfully.
Stage 2: Personal traits or characteristics are essential part with skill and knowledge.
Stage 3: Benchmarking exercise can influence for best performance and efficiency. It can identify project manager's strong and weak sides so that one can rectify gaps and upgrade his activities.

From the study we find out a set of directions for future research about integration of VM in different public sectors projects or service area. To ensure professional benefit for the community or disaster victims best practices of DM processes by integrating VM will be always well accepted to all. So, my sincere hope that these study findings, proposed framework and recommendations will always contribute a lot to improve DM and its operation systems in Bangladesh and create inspiration to researchers to make more effective developed framework by filling up gaps.

10. Conclusion and Recommendation:

10.1 Conclusion

From the literature review it can be said that though many research had been conducted in the field of VM and its different aspects but in case of disaster risk management no satisfactory study had been conducted in the field of VM. To develop real practice of VM in the field of DM, we need to show its practical usability through more intensive research. Depending on the intensive literature review, resource-based idea, hypotheses and empirical findings of VM, its practice in different fields and projects, possible outcome by integrating VM in different service sectors are stated here. On the other hand, disaster, its management system and different projects in Bangladesh has been discussed in this study. Bangladesh is a developing country which is always somehow disaster prone and in world risk ranking its position is 5^{th}. As high densely populated country its people are vulnerable for various disaster and existing disaster management system has many lacking for which consequently economic damages, death toll is also common phenomenon. The disaster management practical situation in Bangladesh is still unsatisfactory. Many approach of GoB is still unreality or paper based. Depending on the situation this study is also an attempt to develop a framework of disaster management by integrating VM process or techniques. VM can help to achieve government's performance, plan development or KPI. In DM planning should incorporated advance technology of information, internet, GIS, satellite and radar communication, mobile phone etc. For effective DM in Bangladesh VM procedures might be a guide to planner's mitigation measures, emergency preparation, implementation and response. The most important matter is training for create awareness of decision makers and stakeholders about evacuation and relief distribution for disaster victims, human resources, preparedness, and proper management techniques. The present government of Bangladesh is fully committed to enhance overall capacity of DM and reduce human, environmental and economical disaster costs. For that reason different steps like –more public friendly warning system in exchange of traditional sea-port oriented signal, flood warning forecast, maps for seismic hazards of risky cities, emergency equipments procurement system, rescue and search operation for flood and earthquake response etc. If with all these initiatives VM techniques can be used comprehensive DM approach result will be more goals oriented. From intensive study it can be said that consistent VM practice, effective training, data analysis can help to earn value in DM projects in Bangladesh.

10.2 Recommendations

This study finds out current disaster management problems and prospects of Bangladesh and finally suggests a practical DM frame work by integrating VM process for scientific and effective value-oriented management before and after of any disaster. These research findings suggest that disaster-prone Bangladesh might be highly institutionalized to manage the risk of disaster and enhance commitment and capacity to value by integrating VM techniques. By achieving organizational tactics of legitimacy and impression-management can increase reputation and real commitment to value. Bangladesh has 710 km long coastal belt in its west and southeast part which is potential cause of cyclone, storm-surges and vast floods. To protect from flood many projects are playing different roles. For example - construction of embankments. On the other hand to cope and face with cyclones in coastal belt high risk zones more than 1500 cyclone shelters has been constructed. The

comprehensive sustainable development of Bangladesh is impossible without effective disaster counter measures. So, reduce to minimum human casualty, mitigation risk and sufferings, develop cyclone, drought, flood, earthquake warning system is still continuous issue. Learning from experience it can be said that for sustainable further improvement international technical and financial help, more and more research is needed in this field. With the advancement of information communications, computer, internet, remote sensing it is crucial to use in early response and warning system for disaster risk management.

With existing disaster management facilities following recommendations deserve to take into consideration:

To develop expertise and institutionalized sustainable disaster management system more research need to conduct in this field. For program and project management Bangladesh government also can invest significantly like U.S. government to achieve value. In UK a separate office has been established to "help Government deliver best value from its spending" and "delivery of projects to time, quality and cost, realizing benefits" (Office of Government Commerce, 2008a). To improve government organizations efficiency, earn commercial activities better value, projects and programme success the OGC provide continuous support by using widely excepted and well-known guide and methodologies. Bangladesh government also can take this type of initiatives for all types of project success. To achieve project success more project management background, guidance and relevant training should provide to the management. Partnership oriented DM approach can be introduced from the spirit of VM to internationalize this approach and practical development strategies with stakeholders To contribute in comprehensive disaster risk reduction interventions and programmes a strong, professional and well-managed institution can be established in Bangladesh. By developing management capacity and strengthening networking at all stages can improve disaster response and preparedness timeline and its effectiveness. In addition, to develop a search, rescue and relief operation a critical disaster hazard management system should be developed by providing appropriate local volunteers training and giving idea about information technology. A strong supply chain system should be developed for emergency situation so that all necessary logistics, inventory supply can be ensured during disaster. A control room should be opened to monitor and collect disaster related important information through different sources, write down in a register and send the message to proper authority for doing action if necessary. Moreover, different applications from victims can be collected to take actions. To build up communication, awareness and cope with disaster satellite based radio, television and internet facilities can introduce together all disaster prone member districts. Quick communication system within all districts needs to develop in priority basis. More training and non formal education should arrange continuously. Capacity development for local vulnerable people is a must. To avoid confusion about disaster message and get firsthand direct realistic reports mobile phone can bring widespread accurate result where broadcasts and TV channels cannot always do it. Technology itself is not a problem, sharing information still problem. To establish proper DM system, modern and advanced information technology needs to introduce in Bangladesh. Such as - "GIS technology, remote sensing systems, global positioning systems(GPSs), warning and forecasting systems, the internet, communication technologies, wireless networking, satellite and radar communication" etc. Moreover, courtyard meeting, picture drama, pot songs, volunteers group formation, training for capacity development also need to effective DM. Finally, we have to understand that DM is a 'nation-wide affair' which only government cannot manage. All organizations and citizens will have to involve with this wide scope DM

which are mainly – preparedness, prevention, response and recovery. In addition, "National Parliament and the Parliamentary Standing Committee on Disaster Management", "the NGOs, the private sector, the media, academia, donors and regional countries" have to integrate in a "functional partnership framework" and integrated network for effective value based DM system in Bangladesh even all over the world.

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