

Role of Social Capital in Disaster Risk Management: Theoretical Perspectives

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ABSTRACT

The history of disasters is a reminder to human society that people have to live in the midst of nature's fury in the 21st century. As the natural disasters increase, so too does the vulnerability of human society, more so due to the exponential population growth and the instabilities of global warming and climate change. Communities across the world face disasters often and they have to respond to it as and when they occur. There is differential experience of the impact of disasters by communities and this response to disasters, despite people's limited knowledge and skill on risk and crisis management. The reasons for some communities better prepared, having better coping capacities and effective response measures than others in the face of disasters has often been the focus of a number of debates. The underlying fact based on empirical evidence is 'Social Capital', which can play stupendous role enabling individuals, families, groups and communities to work together to prepare for, respond to and recover from adverse impacts of disasters. Social Capital is seen as a resource and mediating factor in communities being better prepared in pre, during and post disaster situation. Many authors have emphasized that social capital plays a critical role in saving lives of most vulnerable people like women, children, elderly, sick and ailing, from the most deadly impact of disasters [1]. The major focus of this literature review is the role of social capital (i.e. individuals, families, groups, associations, organizations and community in particular) in disaster risk management in pre, during and post disaster situation. A major part of the literature stresses the importance of using pre-existing or established social networks (i.e. families, workplaces, associations, organizations, congregations, etc.) for successfully managing risk and crisis situation. This paper reviews the contribution of social capital with different empirical evidences from cases across the world. Case studies have been drawn as examples from different parts of the world and from author's research to illustrate what it means in practice for communities to harness social capital in the face of disaster.

Keywords: Disaster risk management; Social capital; Natural disasters; Social networks

INTRODUCTION

Many natural calamities across the world occur every year affecting millions of people today. (Montz et al. 2017). In the year 2016, 342 natural disasters hit globally where 564 million people worldwide were affected severely. Therefore people in post disaster situation suffer immensely due to damage of resources, infrastructure and livelihood (Guha-Sapir et al. 2016, p.2).

Disasters, once upon a time were considered as 'natural' and thus acts of God. People's capacity and ability was insufficient

neither to control nor to reduce the occurrence of disasters. When the world continued to face disasters in 1960s, world leaders and development planners headed by United Nations started reflecting the importance of pre-disaster planning, preparedness and implementing the plan of activities to minimize the deadly impact of disasters (O'Keefe et al. 1976). The world leaders started perceiving since the 1970s, that the negative impact of disaster was largely due to people's vulnerability to hazard and as such it can be minimized. Hence the paradigm has shifted from disaster response to Disaster Risk management (DRM) [2].

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United Nations World Conference on Disaster Risk Reduction, Hyogo Framework for Action was adopted from 2005 to 2015 and the aim of this conference was to develop and strengthen capacities of people at all levels to reduce the impact of hazard (UN-ISDR, 2005). The Sendai Framework for Disaster Risk Reduction (SFDRR) 2015–2030 was adopted in an International Conference held in Sendai Japan on March 18, 2015. The aim of SFDRR is to achieve substantial reduction of disaster risk and losses in lives, livelihood, and economic, physical, social and environmental assets of individuals, families and communities. The focus turned to reducing vulnerability instead of strengthening infrastructure (UNSFDRR, 2015).

Literature suggests that multiple capitals like human, financial, physical, natural and social capital address disaster risk management. This review explores the role of social capital as vital among all, in and through which the impact of disaster can be minimized to a great extent (Koh, Cadigan, 2008). As observed and witnessed in the aftermath of the earthquake 1995 in Kobe that the government had limited capacity to deal with this enormous crisis. People, volunteers, relatives and friends from the localities spontaneously responded saving lives, clearing debris and feeding the people mostly in need (Nakagawa and Shaw, 2004). This is when the paradigm shifted from investing resources in relief and response to enhancing capacity and building resilience of people, families, communities and infrastructures (James, 2012) [3].

According to Dynes (2006), disaster affects all five capitals such as financial, physical, natural, human and social capital. However among all these capitals, social capital is comparably least damaged by disaster, rather it is enhanced during disasters. Nevertheless, social capital stands as one of the vital resources for and individual and community to prepare for, respond to and recover from disasters (Aldrich 2012; Dynes 2002; Granovetter 1973; Norris et al. 2002).

The disaster risk management of individuals and communities depends on effective risk and crisis management i.e. preparedness, early warning, response and recovery measures. Social capital as resources helps people and community in pre, during and post disaster situation and can help access to various resources for better disaster risk management. Prior to a disaster, social capital facilitates prevention, mitigation and preparedness activities such as vulnerability assessment, capacity assessment, stockpiling, shelter preparation, repairing of partially damaged houses, early warning, preposition of rescue equipment, first aid and other lifesaving exercises (Dynes 2006; FEMA 2010) [4].

Aldrich and Meyer (2015), Norris et al. (2002), Sanyal and Routray (2016) affirm that social capital plays pivotal role during and after disasters especially facilitating rescue, evacuation, provision of health services to sick and injured, initiate debris removal, cleaning and clearing waste from the village surrounding, provide relief both food and non food support to the people and families mostly in need. In addition to these, social capital provides emotional and psychological care and support to the victims of disasters. Moreover, linkages between social capital and disaster risk management can bind community together and that ultimately enhances disaster resilience of the people (Berkes and Ross, 2013).

The value of social capital sometime declines with the impact of disasters as the networks of individuals, families and communities get disconnected and the ties break. Moreover, disasters can become a cause of increasing social vulnerabilities by damaging social ties and networks as a result of which the capacity for absorbing shocks may decline (Dominguez and Watkins 2003; Tobin-Gurley et al. 2010; Aldrich 2012). The objective of this review paper is to illustrate the pertinent role of social capital in the context of disaster risk management looking at the cases published in the articles and reports across the world. The paper presents the empirical evidence on the role of social capital in disaster risk management and the limitations of social capital [5].

THEORETICAL FRAMEWORK

Social capital

Hanifan (1916) was the first social scientist who identified social capital as goodwill, fellowship, mutual sympathy, and social intercourse among a group of individuals and families who make up a social unit. Social Capital as a theoretical concept was further explored by Bourdieu (1986) Coleman (1988, 1994), Woolcock (1998) and Putnam (1994, 1995). Social Capital is defined as exchange of information, trust, norms and values between and among the individuals, groups, families, and communities and with an existing network. Coleman (1988) explained that while physical capital is fully tangible, social capital merely exists invisibly in the form of relationship between and among individuals.

A series of definitions on the concept of social capital are available in the literature. Broadly speaking, social capital is the ability of people to work together for common purposes in groups and organizations with the set of informal values or norms shared among groups or associations that motivates cooperation among themselves (Fukuyama, 1995). The social scientists Bourdieu (1986), Coleman (1988), Putnam (1993, 1995) and Lin (2008), have defined social capital as networks which connect individuals to families, groups and with each other either through weak or strong ties. These networks and connections provide reliable data and information, on the trustworthiness of other group members, and enable access to various resources.

Woolcock and Szreter (2004) showed how social capital can be categorized into horizontal and vertical networks such as Bonding, Bridging and linking social capital. Bonding social capital is explained as the close horizontal relations between and among immediate families, friends, business associates or individual members of the community sharing the same demographic characteristics. Bridging social capital goes further than bonding and explained as connecting individuals, groups and families more heterogeneous to each other although with the similar socio - economic and political status. Third is known as linking social capital which is the vertical connection between people of different strata of power and influence between community and formal organization (Szreter and Woolcock, 2004) [6].

Hence, bonding Social Capital is essential for strengthening social unity among individuals, families, groups and communities, bridging social capital speaks for solidarity, respect, and understanding in wider society, and linking social capital is a resource or capacity of the people and communities to mobilize political resources and power (Poortinga, 2012). Therefore, bonding, bridging and linking Social Capital offer a sense of belongingness, unity, cooperation and mutual support among people, families and groups to get access to needful resources and services as and when required (UN/ISDR & UN/OCHA, 2008).

As Coleman (1990 p.304) suggests that physical capital is created to form or make tools and materials to facilitate producing something, human capital is created to get upgraded with skills and capabilities, but social capital is created as a resource which comprises of relationships among individuals, groups, families and communities that facilitate some action. Physical capital is something tangible, human capital is less tangible embedded in skills and knowledge. But social capital is even less tangible since it is embedded in relations among persons.

Social capital is a relationship built between and among individuals, families and community as resource to work together for common purposes and get benefit (Huvila and Widén, 2014). Sharing of information, trust and cooperation between and among the individuals, families, groups and social networks is also considered as social capital. (Bourdieu, 1986; Woolcock, 1998). Similarly for Putnam (1995, 2000) social capital lays emphasis on the networks, connection and groups with shared values and understanding in the society that enable individuals and groups to trust each other and work together (Keeley, 2007). Social Capital is created with filial relationships, shared norms, values and understanding that promote support and cooperation between and among individuals, families, groups and other networks (OECD, 2001; Pretty, 2003). Further, Siegler (2014) argues that social capital brings about networks, connections and human values that promote benefits due to tolerance, solidarity and or trust [7].

Emergency situation are when social capital gets strengthened through access to support, cooperation and participation in response and recovery work (Dynes, 2002). A community, family, individual and group having a high level of social capital can work together more effectively and recover quickly. Aldrich (2012) notes that individuals who are connected to different organisations are seen to be more resilient. Therefore social capital is the unending resource that can be used to respond to disaster and recover from effectively.

SOCIAL CAPITAL AND DISASTER RISK MANAGEMENT

Through the prevailing evidence across the world, research scholars come to are aware that social capital is a trajectory of individuals to know what are the types of resources that the individuals, groups, families and communities get access to during and after disasters. This is been evident that during and after disasters, communities, individuals and families affected by disasters, receive food water and clothes, loans, gifts, properties,

and non-material support like search, rescue, evacuation, information dissemination, removal of debris, cleaning and clearing dirt and waste from the environment, child care, medical services to sick and injured and medical care to sick and injured people. This is also evident well documented that isolated individuals with few social ties are less likely to be rescued, evacuated, seek medical help and other necessary services (Dynes, 2005, 2006) [8].

Disaster risk management primarily means the activities and initiatives that are carried out by individuals, families and communities in a systematic manner to prepare for, respond to and recover from in pre, during and post disaster situation (Guha-Sapir, D., Vos, Below, and Ponserre, 2011). There are four main phases in disaster risk management: 1. Response, 2. Recovery, 3. Prevention and Mitigation and 4. Preparedness. In each phase of disaster risk management, the role of bonding, bridging and linking social capital is pivotal to combat, control or minimize the adverse impact of disasters.

Empirical Evidence of Social Capital in Disaster Response

Normally relief and response work takes place in the aftermath of a disaster and the activities are like search, evacuation, providing food, water, clothes, shelters, medical care and services to community members affected by disaster (Nakagawa, and Shaw, 2004). Individuals, groups, family members and communities extend their support and cooperation relieving the victims stranded in risky areas (Poteyeva, Denver, Barsky, and Aguirre (2007).

Some significant disasters and the responses have been outlined below. Thailand the capital city of Bangkok faced the worst flood in the year 2011 in its recorded history. \$45 billion cost of properties, assets and infrastructures got damaged as 90% of some areas were submerged with flood water. The severity and magnitude of disaster was so big that 9 million family members were unable to move to the safer places. Therefore food, water and other necessities were stockpiled well in advance (BBC 27 October 2011). The district of Sai Noi in the northwest suburbs of Bangkok was different from other affected cities as the people of Sai Noi worked together to fight the raging flood water and mobilized to rebuild quickly after the water receded. "People with no training and few resources built barriers and filled sand bags in the risky river embankment and monitored flood levels, delivered food and drinking water to all the families in need, evacuated residents trapped in their homes, provided medical services to the sick and injured, and volunteers were on constant watch on looters" . Most of the Sai Nai community members were able to respond to the raging flood successfully as because of shared norms, values and networking [9].

In 1995, during the Kobe earthquake in Japan, hundreds of people who were stranded under the debris and inside the damaged houses were rescued, evacuated and provided necessary support services by their fellow community members and relatives. Similarly, in 2011 immediately after tsunami in , it was observed that people in need were saved by the assistance of neighbors, friends, and family (Aldrich, 2012).

According to Allen (2013), in the past, disasters like bushfires, cyclones, storms and floods impacted people in Australia very badly. At this critical juncture the benevolent Australians spontaneously helped those who were affected by the past disasters. Neighbours, relatives and the people of the locality came together and extended basic support and services before the government administration did anything (Allen, 2013). Evidence also suggests that bonding social capital extended all necessary food and nonfood support to the flood affected people in Myanmar and Taiwan before government functionaries could reach them on time (James, 2012). This has also been observed after the Wenchuan earthquake in China in 1998, where most of the community members were rescued by relatives, neighbors and other people from the community (Zhao, 2013).

The Yasi post cyclone period (2011) in Australia gave opportunity of activating social capital of bonding and bridging of which local community, volunteers, groups and relatives helped those in need with labor and machinery (Allen, 2013). Early warning and dissemination of pertinent information regarding relief received by the affected people was generally from relatives and friends. In many cases community members, relatives and friends came forward and provided relief to the affected people. Although Government was the prime support providing institution, yet social capital played a pivotal role in providing support to the people affected by the disaster (Zhao, 2013).

During and after the Oakland California firestorm in 1991, people both young and old fleeing to rescue themselves were picked up by passing cars and motorbikes. As part of bonding social capital, relatives and neighbour went house-to-house making sure that everyone, including neighbours, children, elderly, pets, and renters were out and safe (Oliver-Smith, 1999). Residents who were entering the burning houses to save their most valuable assets and properties were also joined by other unaffected members of the community [10].

The above examples and incidents clearly indicate that social capital in form of bonding and bridging can play lifesaving role during and after disasters. The relatives, friends neighbours and local residents extended all kinds of essential support services for sustaining life even when government machineries and logistics failed to rescue and evacuate the affected population (Smith, and Boruff, 2011).

Empirical Evidence of Social Capital in Disaster Recovery

According to Smith and Wenger (2007) disaster recovery is “the differential process of restoring, rebuilding, and reshaping, the physical, social, economic, and natural environment through pre-event planning and post event actions” (p 237). The prime purpose of initiating activities during recovery phase is to restore the victims and affected families back to the normal condition or better than what was before (Cardona, 2004; Kates and Pijawka, 1977). Like response phase, several authors have highlighted strong role that social capital rendered during recovery phase (Nakagawa and Shaw, 2004; Edgington, 2010;

Patterson, Weil, and Patel, 2010). Bonding, bridging and linking social capital also have played very important role in contributing positively to the overall recovery of a disaster affected community (Sobel, 2002). For example, although in Philippines the disaster network called Disaster Response Network (CDRN) is active in all phases of risk and crisis management, yet during recovery phase the network engaged in repairing and rebuilding homes, and implemented the distribution of seed, livestock and tools (Delica-Willson, and Wilson, 2004).

Schellong notes that the networks and groups that form the social fabric of a community can influence the speed of recovery phase in a successful manner. For example, aftermath of the 1995 Kobe Earthquake, for the members who were not part of the networks, the recovery activities and initiatives were slowed down (Shaw, and Goda, 2004). On the other hand, in the aftermath of Hurricane Katrina, the individuals and families who carried out the recovery phase best were the ones who belonged to strong networks of families and friends (Olsen, 2011).

Normally community organizations have no core capacity for disaster risk management and yet instances indicate that many of the community organizations play a major role and function in pre, during and post disaster situation providing necessary support to the group members and individuals in the community. For example, aftermath of the Indian Ocean tsunami in 2004, non-government organisations (NGOs) played lifesaving role in distributing relief both food and non-food items to the individuals, families and groups mostly in need when government relief materials and resources were unable to reach these communities. (Kumaran and Torris, 2011). The community leaders and members having strong and positive link with the local non - government organization could reach those most in need.

Empirical evidence of Social Capital in Prevention and mitigation

Disaster prevention and mitigation are on-going processes; they are also known as risk reduction measures, and are normally carried out in pre disaster situation so as to lessen or prevent exposure to loss of life and properties (Mitchell, Glavovic, Hutchinson, Mac Donald, Roberts, and Goodland, 2010). On the one hand, preventive measures are concerned with avoiding exposure to hazard that may adversely impact people and on the other hand mitigation measures are to minimize the impact of an event that may occur in the future (Smith, and Petley, 2009). Prevention and mitigation activities can be taken up looking at the future risk (for example, initiatives in coastal communities to protect against rising sea levels and land erosion), or it can follow after disaster, with the aim of preventing lives, livelihood, properties and infrastructure from the adverse impact of such disaster in future (for example, the construction of dams after a town or village has been flooded). As Wisner et al. (2004) highlight, communities that are successful in preventing and mitigating disasters are the ones which have close link with political parties at the state level and the network underlying social capital may be used to facilitate this process.

As observed by Dynes (2006), strong social networks and groups become source of inspiration and motivation for others to take part in preventive measures. Similarly, the US Committee on Disaster Research in Social Sciences (2006) identified that communities with high levels of social capital were more likely to engage in mitigation strategies as core business. For example, in Antique, Philippines, a country with high involvement in local associations, community members come together to construct dams for flood control (Bankoff, (2007). These types of communities show strong understanding of existing capacities, which results in realistic and achievable mitigation strategies that harness the community's specific strengths. In Santa Cruz, California, Neighbourhood Survival Networks (NSN) implemented after a series of disasters in the 1980s were instrumental in aiding minority and vulnerable populations in the aftermath of the 1989 Loma Prieta earthquake (Committee on Disaster Research in the Social Sciences and National Research Council. 2006).

Empirical Evidence of Social Capital in Preparedness

Disaster preparedness are the set of activities undertaken well in advance to ensure effective response to the upcoming impact of hazards and disaster such as timely and effective early warning, search and evacuation of the most vulnerable people from the disaster risk areas. (UNISDR, 2004). A well prepared community, family and individuals are the ones who provide easy access to early warning, knowledge and training on various pertinent subject regarding disasters and have better protection measures (Dynes 2006; FEMA 2010). Disaster preparedness is highly crucial for the individual, community, and even country to reduce the impacts of disasters.

Disaster preparedness is about a set of activities planned and implemented well in advance to check and combat the severity of upcoming disasters. Disaster preparedness also includes preserving essential food commodities, clothes, first aid box, medicines, keeping ready emergency shelters, assessing risk of people, places and things in advance, and capacity building training and information sharing on safety procedure (Sutton and Tierney, 2006). Above all, Muttarak and Pothisiri (2015) specified six major activities as part of disaster preparedness such as observation of the situation, preparation of survival kits, evacuation plan, emergency plan, inspection of house structure, and other preparations for disaster preparedness.

Disaster Preparedness is now exceedingly important to prepare for, respond to and recover from the deadly impact of disasters in future. It enhances the capacity of individuals, families, groups and communities to effectively respond to challenges without or with minimum loss of life, properties and livelihood in the short term and long term (Sutton and Tierney, 2006). Preparedness requires skills, techniques of know-how, stockpiling, leadership development, community mobilization and participation in disaster related programs. Preparedness also includes the knowledge, participation in disaster-related programs, and building capacity of local and national governments toward reducing the impact of disasters (FEMA, 2010).

A resilient community is envisaged with a high degree of social capital (Pelling, 2003) and is able to survive, respond to and recover from an extreme event. Before Hurricane Katrina, the Mary Queen of Vietnam Catholic Church in New Orleans East had developed its own evacuation plans knowing that a large portion of the population was senior citizens and other vulnerable groups (Olsen, 2011).

In Australia, the Exmouth community were accustomed to prepare for probable cyclone and whenever there was an early warning, people quickly without any delay got ready and did all things required. As a cyclone-prone community, each and every new comer to the community is introduced on the risks of their environment through their neighbours and the various community groups. Households, which are part of the local networks of Exmouth, are encouraged to keep all the assets and properties in safer places, the moment official warning on cyclone is disseminated.

The Orang Asli indigenous tribe in Malaysia faced the two worst large scale floods in 2013 and 2014. As part of preparedness measures, the government of Malaysia established a flood-relief centre or shelter, known as the Balairaya in their local language. During the flood time, flood victims were moved to the Balairaya. Most of the surveyed respondents knew about the existence of a flood-relief center or shelter (Balairaya) in their village. Most of the Orang Asli families were aware of the existence of JAKOA (Department of Orang Asli Development) under the Ministry of Rural and Regional Development; Malaysia is dealing with improving the standard of living through increasing their income, infrastructure facilities, social amenities and empowerment of the Orang Asli people as part of preparedness measures (JAKOA, 2016). It is also found that the majority of the Orang Asli people knew about the existence of JKK (Village Development and Security Committee) which was actively engaged in community development.

Limitations in Social Capital

Social capital can be valuable when social networks facilitate to strive for mutual benefit, norms, and values of reciprocity (Putnam, 2000: 21). Social networks expect both individuals and organizations to work together to mobilize joint resources to achieve common goal of trustworthiness and being tolerant to each other's needs and differences in diversity. For example, in women's self-help groups (SHG), every member saves some amount of money into a common pool every month and every woman expects finance in a timely manner and regularly to mitigate her needs. Apparently, this kind of practice will not work if there is no trust, freedom and understanding between and among the members (Portes, 1998: 13). The members in the SHG benefit as the group gives easy access to finance without imposing any kind of strict and long procedure and high rate of interest. Above all, social capital also creates healthy rules and norms in a community to live a life of discipline and preventing its members from any kind of antisocial practices (Portes 1998:10).

On the other hand, social capital can be harmful when it brings benefit to its group members but disallows outsiders to get access to resources (Portes 1998:16). If these kinds of practices

are not resolved, there may be conflict in a larger community. Another negative effect of social capital is when social networks squeeze individual freedom or importance. Berger, in his book 'Pyramids of Sacrifice' gives an example of how a woman from Mexican village felt confused between two choices of continuing her study and getting better job, or sending money to her relatives in her village. This problem occurred because the social capital restricted her freedom by strong local norms (Berger, 1974:217-224). Finally, another negative aspect of social capital occurs when a group of community prefers to live in exclusive areas and prefers not to be in contact with others. They retain their norms without knowing 'modernisation'. As a result, their norm will be downgraded and isolated. The members live in small communities and in isolation as a consequence of trying to escape from this norm (Portes 1998: 17).

The bond between and among the same ethnic groups is positive and beneficial but the bond between and among two different ethnic and cultural groups sometimes becomes negative. Social Capital instead of bridging the gap between the two worlds (rich and poor) it widens the gap among the two different communities. Social capital restricts individual freedom and gives importance to only groups (Portes, Landolt, 1996). Individuals undertaking any social enterprise needs to obey certain rules and norms, and is not allowed to develop his norms or practices. The group does not entertain personal development; neither allows exploration of any innovative thought and ideas. In such a scenario, it gives a sense as if it were creating unwanted results. (Portes, Landolt, 1996).

CONCLUSION

In and through the above evidence, the authors, researchers and scholars conclude that social capital is one of the critical and important living instruments to make disaster risk management effective and user friendly. Individuals, groups and communities gain solace from the resource of social capital in times of emergency. This review paper focuses on understanding that social capital plays pivotal role both in risk management (i.e. managing pre disaster situation) and in crisis management (i.e. managing crisis situation during and after disasters). In all these systematic phases of disaster risk management i.e. response, recovery, prevention, mitigation and preparedness, social capital is an invaluable resource in driving risk reduction of hazards and vulnerabilities and plays a contributory role in enhancing capacity of vulnerable people. It strives hard in normal and in crisis situation to prepare for, respond to and recover in a timely manner and successfully from a difficult situation especially when government becomes indifferent to providing psychological and emotional support to those who suffer the impacts of disasters.

The different types of social capital overlapped at times in action, but among the three types of social capital, bonding

social capital was especially relevant in day to day activities like search, rescue, and evacuation, supply of food, water and first aid services to the people affected by disasters. The beneficial of bonding social capital was found more effective for lower income groups. Through evidence the strength of bonding social capital was seen in facilitating mobilizing different resources to survive from the adverse impact of disasters and above all bonding social capital was clearly observed rendering psychological support which in long run help building resilience to hazard and disaster.

Effective disaster risk management demands proper planning and implementation in and through public private partnership wherein government being enormous resource institution must play a greater role engaging and capacitating communities and non-government organizations at large to be a real help of victims during and after disasters.

Although the focus of this paper has been on social capital in the context of disaster risk management, but the operational mechanism of social capital needs to be critically looked into in order to create healthy and harmonious groups and communities. Social capital need to appreciate rather than depreciate with use.

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