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Involvement in Emergency Supply Chain for Disaster Management: A Cognitive Dissonance Perspective

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Abstract

An integrated process, interlinked operation, and interoperable communication network amongst operating agencies are critical for developing an effective *disaster management supply chain*. The traditional managerial problems observed across disaster management operations are – non-cooperation among members, disrupted chain of commands, misuse of relief items, lack of information sharing, mistrust, and lack of coordination. This study aims to understand the issues affiliated with negative attitude towards disaster management operations using theory of cognitive dissonance. A qualitative investigation was undertaken across 64 districts in Bangladesh. Five constructs were examined for their influences on attitude and behavioral intention of members participating in government emergency supply chain for disaster management. The results indicate that administrative conflict, political biasness, and professional growth have significant effects on attitude. Impact of insecurity is non-significant on attitude. This research offers substantial

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theoretical contribution to the cognitive dissonance theory in the context of disaster management supply chain.

Keywords: Emergency Supply chain, Disaster management, Administrative conflict, Organizational behavior, Cognitive dissonance theory, Attitude

1. Introduction

Disaster is either a manmade or natural event, which causes sudden and uncontrollable widespread damage across a community (Stephenson, 2005; Whybark et al, 2010). Natural disasters including cyclones, tornadoes, earthquakes, regular and flash floods, snowstorms, stampedes, avalanches, fire etc. may occur anywhere, at any time. These cause serious losses to the community, society and economy (Xu & Beamon, 2006). Typically, during any disaster situation, residents need extraordinary support and relief, as the losses exceed the ability of the affected community to meet and fulfill its demands using regular resources (Xu & Beamon, 2006). Disaster management includes activities essential for forecasting demand, assessing needs, procuring, storing, and managing inventory and logistics, and distributing relief to minimize losses before, during and after any disaster (Balcik & Beamon, 2008).

This study is focused on understanding performance of participating members in an emergency supply chain or humanitarian supply chain management. Such identification has potential merit, as the supply chain management for disaster under humanitarian grounds differs significantly from regular or commercial supply chain management (Beamon, 2004; Charles et al., 2009). Therefore, all aspects of organizational conflicts, administrative issues, employee attitude and performance, and interoperability explained within this study are related to the operation of supply chain for disaster management under humanitarian grounds.

Several studies (e.g. Alessandra, 2012; Balcik & Beamon, 2008; Xu & Beamon, 2006) analyzing supply chain network for emergency disaster management acknowledge that in any disaster, government traditionally deploys many organizations. However, inter-organizational integration is a serious challenge in disaster management. In developing countries, various socio-economic and political issues, particularly, corruption, non-accountability, lack of transparency, and political biasness substantially hinder the success of disaster management efforts. Some of the problems observed across disaster management operations through established supply chain network include: non-cooperation among employees or volunteers, disrupted chain of commands among versatile groups, misuse of relief items for corruption, lack of information sharing, mistrust, lack of coordination among members, and inappropriate proportion of responsibility and assigned authority (Diallo et al., 2017). The definition of distressed people in natural disasters is generally not well structured and predefined in developing countries (Balcik et al., 2010; Charles et al., 2009). It should be clearly distinguished from regular poverty management under humanitarian grounds. An effective emergency supply chain should focus on the actual need assessment, which essentially includes dynamic, swift, and coordinated field assessment. However, it is evident from

some investigations that in developing countries, at different authority levels, this assessed demand derived from the source is randomly reduced anticipating exaggeration of demand (bullwhip). This reduction is not based on any scientific scale. Defining roles and responsibilities and coordination is a serious problem across emergency supply chain management for developing countries (Beamon, 2004). Considering the aforementioned organizational problems, this study is focused on investigating emergency supply chain management in developing countries.

Assisting distressed people with food and other lifesaving items requires positive commitment, alongside professional responsibility from volunteers and employees of different participating organizations (Collins & Hoyt, 1972). They generally have high integrity for such work, as they closely relate to the emotional aspect of such assistance (Alessandra, 2012). However, with issues of mismanagement, corruption, professional dissatisfaction, lack of transparency, administrative conflicts etc., members of these supply networks tend to develop negative attitude towards their assigned tasks (Alessandra, 2012). Organizational behavior researchers (Reich, 2006; Rodriguez et al., 2006; Shareef et al., 2016) have conducted many qualitative and quantitative studies on the attitude and behavior of employees towards pursuing organizational goal. They have acknowledged that the alignment of attitude and behavior is crucial for utilizing the full potential and achieving plausible targets. Misalignment and conflicts between attitude and behavior of people participating in disaster operations can result in employees not pursuing organizational goals wholeheartedly, and experiencing dissatisfaction and demotivation (Collins & Hoyt, 1972; Rusbult & Van Lange, 2003). Consistency in attitude and behavior is a vulnerable issue in organizational life for promoting continuous workflow.

Attitude is a predisposition of beliefs, ideas, and feelings about anything, either positive or negative (Deci, 1975; Shareef et al., 2016). People gain and form attitudes from learning, experience, and social factors (Deci & Ryan, 1985). It is also formed from psychological emotion and affective feelings (Chen & Risen, 2010; Deci & Ryan, 1985). Behavioral intention is our subjective willingness to pursue or conduct any effort or incident (Ajzen, 1991). Theory of reasoned action (TRA) (Fishbein & Ajzen, 1975) and theory of planned behavior (TPB) (Ajzen, 1991) have analyzed human behavior and attitude to conclude that attitude has considerable impact on behavioral intention. Negative feelings, beliefs, or impressions, which form attitude can streamline non-occurrence of any behavior.

Since natural disasters happen suddenly, the pre, during, and post disaster management essentially needs well-organized and structured coordination. Communication among different groups and organizational members to control losses, minimize sudden disruptions, and achieve targeted goals is also important (Bui et al., 2000; McLachlin & Larson, 2011). Scholarly studies on disaster management (McLachlin & Larson, 2011; Oloruntoba & Gray, 2006) clearly articulate that intrinsic willingness and disciplined behavior of all members involved in disaster management are the key success factors of any emergency operation. On the other hand, if there is any inconsistency between attitude and behavior amongst members of disaster operations, even a well-structured emergency supply chain might not achieve its final goal. In line with the preceding discussion,

this study proposes to investigate the following research questions: (1) What are antecedents of negative attitude formation amongst employees participating in an emergency supply chain? and (2) What is the influence of negative attitude on employees' intention to participate in emergency supply chain management?

Researchers studying disaster management (Beamon & Balcik, 2008; Stephenson, 2005) and supply chain (Wang & Zhang, 2016; Zheng et al., 2017) have suggested many potential problems in emergency supply chain for humanitarian assistance. Some of these problems are - mapping the existing emergency supply chain, demand forecasting and need assessment, procurement, inventory management and stocking, logistics management, relief distribution, information management and interoperability. Researchers (Alessandra, 2012; Balcik et al., 2010) in this context also postulate that due to unavailability of an established organizational structure, often members with prior experience of disaster management operations form negative attitude towards the success of the next operation. They also acknowledge that negative attitude towards the accomplishment of objectives reflects intrinsic demotivation in their performance (Stock, 1997; Surana et al., 2005). However, no study so far has examined human behavior in emergency supply chain of disaster management from an organizational behavior perspective. This is a potential gap in the existing literature on disaster management supply chain for humanitarian assistance. Nevertheless, identifying epistemological and ontological paradigms of misalignment between attitude and behavior has enormous importance in developing an effective structure of emergency supply chain for disaster management (Bui et al., 2000). This study is attempting to address and reveal issues of inter-organizational members, which typically are causing and forming negative attitudes towards their disaster operations. This generally causes conflict between their attitude and behavioral intention, leading to undermined performance. Therefore, the main objective of this study is to identify and empirically examine factors influencing negative attitude formation of employees, and their intention to be involved in emergency disaster management operations. The factors included in this study are derived from the theory of cognitive dissonance. From this study, organizational theorists and emergency supply chain management practitioners can acquire insights on organizational conflicts arising from absence of interoperability in humanitarian supply chain management; this can negatively influence the performance of such operations.

Section 2 presents a discussion on relevant literature and current results from exploratory interviews as a basis for formulating appropriate hypotheses. It outlines a set of hypotheses along with supporting arguments and discussion. Section 3 then discusses various aspects of methodology, including data collection and survey scale. This is followed by section 4, which presents relevant statistics related to reliability and validity of the survey, alongside results from hypotheses testing. The discussion of results is presented in section 5, which also briefly discusses contributions to theory and implications to practice. Finally, key conclusions along with limitations and future research directions are presented in section 6.

2. Theoretical Background and Hypotheses Development

To explore the two aforementioned research questions, this section presents the theoretical basis for the undertaken research. The following subsection will briefly discuss exploratory qualitative interviews that were conducted to identify antecedents of negative attitude towards emergency supply chains. These together form the basis for hypotheses development.

2.1 Theoretical basis

Inter/intra-organizational relations during emergencies often create attitudinal conflict amongst members of different participating organizations (Stock, 1997; Surana et al., 2005). Since different organizational members work together during disasters to alleviate emergency risks, integration or homogeneity amongst organizational members is a potential issue. Success of any disaster management is highly congruent with the effectiveness of inter/intra-organizational integration. The technical, organizational, cultural, social, and behavioral differences, combined with sudden managerial and administrative application of authority and responsibility, results in organizational members facing acute conflicts during disaster management (Stephenson, 2005). On the other hand, communication gap, lack of transparency, absence of rules and regulations and broken chain of command cause conflicts in the government supply chain (Balcik et al., 2010).

Several studies have revealed that inter/intra-organizational members' cohesiveness is a potential organizational issue, and should be resolved in the light of organizational relations (Cordova & Lepper, 1996; de Charms, 1968; Emerson, 1962; Stock, 1997). Intra-organizational homogeneity and inter-organizational heterogeneity can lead to attitudinal conflict amongst members (Stephenson, 2005). Also, due to the presence of a common steering body deployed by the national government, behavioral synchronization is warranted (Shareef et al., 2011). Consequently, members of different organizations participating in disaster management experience inconsistency between their behavior and attitude, which has substantial impact on their performance.

This phenomenon is well articulated and explained in cognitive dissonance theory by Leon Festinger (1962). This psychological theory postulates that if people perceive attitude not being consistent with their behavior, they feel uncomfortable. This theory reflects necessity of congruence between attitude and behavior. The lack of comfort may increase dissatisfaction and undermine performance. Therefore, this theory has potential implication in organizational life. In an organizational life, members should develop congruent attitude aligned with the organizational objective, which should shape their intended and expected behavior. According to this theory, humans try to remove any inconsistency and thus incompatible beliefs according to their importance. Based on our cognition or thinking process, if we have two or more conflicting motives, our behavioral contribution is seriously affected and hampered (Cordova & Lepper, 1996; de Charms, 1968; Romano Jr. et al., 2010). Therefore, streamlining motives or beliefs influencing attitude and behavior is utmost important to achieve full potential of human resources in organizational life. This is a challenging context, as without removing the inconsistency in

antecedent beliefs, alignment between attitude and behavior is difficult to achieve. Therefore, we utilize the implications from this theory to guide the investigation of the reasons for inconsistent beliefs and attitudes, which contradict with our expected or forced behavior. Many studies (e.g. Cooper & Fazio, 1984; Gagne et al., 1993; Nelson, 2006) using cognitive dissonance theory suggest that it is important to address the malfunctioned beliefs forming dissatisfied attitude in organizational life, to streamline employees towards expected behavior.

Cognitive dissonance theory has two major components, attitude and behavior. Attitude is dependent on several beliefs surrounding organizational life. Next subsection describes the exploratory (qualitative) aspect of this study that forms the basis for identifying antecedents of attitude, particularly for disaster management in Bangladesh.

2.2 Exploratory interviews to identify antecedents of attitude

In order to explore antecedents that may be relevant for negative attitude formation, this study undertook a qualitative investigation. The district relief and rehabilitation officers (DRRO) in 64 districts of Bangladesh were interviewed. The DRROs in Bangladesh were selected as the sample due to the following reasons:

1. Due to global warming, Bangladesh is experiencing the most severe environmental changes, which cause frequent disasters.
2. Bangladesh is a disaster prone country and faces the challenges of managing natural disasters every year, particularly, floods and cyclones. These disasters cause severe damage to property and shelter, cause loss of human and animal lives, bringing enormous sufferings to the poor people in the country.
3. The Bangladesh government has set up an excellent supply chain network for emergency disaster management on humanitarian grounds. From the cultural perspective, this country largely represents collectivist and high power distance attributes (Hofstede, 1980). These issues offer significant potential in investigating intra and inter organizational performances (de Charms, 1968; Emerson, 1962; Stephenson, 2005; Stock, 1997). Therefore, investigating emergency supply chain management of Bangladesh government can offer important insights for researchers and policy makers.
4. Different organizations with 50,000 volunteers are working under the cyclone preparedness program (CPP) to assist disaster-affected people through emergency humanitarian supply chain.
5. DRROs are the central and bridging authority to coordinate, communicate, and manage all kinds of humanitarian assistance during, before, and after disaster.

One of the authors of this study contacted a top official in Food ministry of Bangladesh and requested for an informal interview. The official then instructed all the DRROs to provide time for this study. The authors and three research assistants then went to designated locations specified by the respective DRROs, and conducted face-to-face interviews. Most of these locations were the

district headquarters. The DRROs were primarily asked to describe and evaluate different member perceptions, motives, beliefs, and impressions towards emergency supply chain of humanitarian assistance, focusing on management issues. They were particularly asked to identify the intra and inter-organizational member attitudes towards disaster management works. Each interview lasted two hours. They described the complete supply chain of Bangladesh government for disaster management and the generalized aspects of emergency related management:

- Enhancing accuracy in assessment and estimation of damage or losses
- Ensuring appropriate amount of relief availability among distressed people and communities at proper time and closest location
- Fulfilling demands and requirements of distressed people and communities at the earliest possible time
- Minimizing inventory storage quantity and enhancing inventory speed with minimum lead time
- Maintaining proper interoperable communication and coordination among stakeholders
- Reducing cost of overall disaster management
- Establishing permanent structure and policy to manage forward and reverse emergency supply chain network.

The respondents addressed and introduced several issues related to malfunctioning of management with multidimensional parameters and reasoning. They were also in agreement about the fact that members participating in humanitarian supply chain during disasters perform weakly, but are active externally. Given that their work experience, social factors and learning were very similar, the DRROs showcased many similarities in their answers. Their perceptions, identifications, and appropriate evaluations had sufficient consistency in analyzing existing emergency supply chain for humanitarian assistance. Keywords were identified in responses gathered for detecting problems of inefficiency and ineffectiveness of disaster management. This helped the researchers to categorize responses into different groups and identify the constructs as independent reasons for developing attitudes.

To present the qualitative data obtained from 64 respondents, the information gathered was rearranged according to principles of matrix thinking. Researchers working on analyzing interviews to reveal commonalities in responses have used this technique (Patton, 1981). Several long answers were broken down into small pieces to identify common attributes. Literature on administrative and managerial conflicts amongst intra and inter-organizational members in disaster management supply chain (Quarantelli, 1988; Stephenson, 2005; Wu et al., 2011; Zheng et al., 2017) offered additional knowledge on development of reasonable constructs for shaping attitudes. The respondents' verbal inputs, once converted by matrix thinking into generalized independent constructs, had many similarities. Following this, the research identified five most common factors, namely - professional growth, administrative conflict, corruption, insecurity and political biasness, as issues leading to attitude formation by participating members. These factors are termed

hereafter as the attitude formation constructs, and are explained in detail along with their associated hypotheses in remaining parts of this section.

2.3 Hypotheses Development

Professional growth (PG)

All the DRROs pointed out that a significant factor of demotivation in members, including themselves and volunteers working in the emergency supply chain of humanitarian assistance, is the lack of professional growth (PG). Under the ministry of disaster management and relief, all district level employees like DRROs and below (for instance, Upazila project implementation officers (PIO) and volunteers) have limited scope for promotion in comparison to other government departments. Volunteers are sufficiently trained and play a key role before, during, and after disasters in warning, assessing damage, and distributing relief. However, they receive no direct honorarium. Although, they are recruited as volunteers, there is no motivational reward for them. Consequently, these members develop negative attitude towards the government emergency humanitarian supply chain. This hinders the development of satisfactory attitude (Rodriquez et al., 2006; Rusbult & Van Lange, 2003). Studies related to organizational motivation (Collins & Hoyt, 1972; Cordova & Lepper, 1996) substantially acknowledge that employees are always eager about their scope for gradual professional advancement. If they recognize that they have limited opportunity for career advancement in their current organizational structure, employees intrinsically develop negative beliefs about the organization. This predominantly contributes towards negative attitude formation about their current position in that organization (Collins & Hoyt, 1972; Cooper & Fazio, 1984). Thus, this study proposes the following hypothesis:

H₁: Perceived lack of professional growth (PG) in the supply chain has a significant influence on forming negative attitude towards disaster management for humanitarian assistance.

Administrative conflict (AC)

Majority of respondents interviewed during the exploratory phase outlined some important issues relevant to this aspect. These are:

1. The DRRO office is not directly connected with Bangladesh meteorological department to get updates on forecasts for unexpected cyclones or tornadoes.
2. Transportation facility under the DRRO office or PIU office is restricted, old, and potentially unusable. Frequently, while distributing assistance, they seek assistance from district commissioner's office for transportation. It is a tragic scenario.
3. Administrative conflict between district commissioner and the DRRO creates red tape delay. DRROs have expertise in estimation and distribution, and hold responsibility of overall relief management. On the other hand, local district commissioner has the authority to approve any demand, requirement, and distribution.

4. District commissioner also has the authority to govern employees under the office of DRRO. Authority and responsibility are not distributed proportionately.

DRRO, PIO, and volunteers have competence in distribution management, and thus hold full responsibility. Authority is assigned to district commissioner and Upazila Nirbahi officer (UNO). Absence of appropriate organizational structure, authority and responsibility creates significant problems in emergency supply chain management of Bangladesh government during disasters. While designing administrative structure, the special nature of this job for assessing, estimating, procuring, and distributing relief before, during, and after the disaster are not appropriately considered. Responsibility and authority have not been adequately balanced due to bureaucracy. These issues create administrative conflict among intra and inter-organizational members. Studies on organizational employee satisfaction and issues related to conflict and attitudinal behavior (Reich, 2006) acknowledge that if authority and responsibility are not proportionately distributed, administrative conflicts can have detrimental effect on employees' attitude. Administrative conflict results in severe dissatisfaction among employees leading to negative attitude towards organizational goals (Risen & Chen, 2010). Based on the aforementioned discussion and organizational behavior studies, this study proposes the following hypothesis:

H₂: Administrative conflict (AC) in supply chain has a significant influence on negative attitude formation towards disaster management for humanitarian assistance.

Corruption (CR)

Out of 64 district representatives of disaster management, 53 DRROs firmly delineated that corruption is a major issue for participating members not to have positive motives towards disaster management emergency supply chain. They find that different sources of non-transparency and lack of accountability cause corruption in this humanitarian assistance program, leading to severe contradiction with its implied mission. Excluding many evidences of direct stealing and misuse, they also indicated several incidents of forceful non-transparency leading to corruption, such as

1. Scope of assistance and estimation process is not clearly identified. It is ambiguous in several areas, overlapping, and non-transparent in guidelines for humanitarian assistance program, 2012-13.
2. Speedboats or regular manual boats are important carriers in flood affected areas, coastal belts, and riversides. DRROs, TNOs, and PIOs are required to visit these places frequently through waterborne carriers. However, there is no provision for maintenance cost of such waterborne carriers.
3. The government does not supply or set aside budget for fuel in hired external boats to travel to flood affected areas. It is managed from out of pocket expenses (hidden).

Like the above-mentioned issues, there is much expenditure that the authorities need to manage from hidden areas that leads to forceful corruption. This has become a common practice in emergency management in Bangladesh, which eventually leads to negative attitude among participating members. Studies in human psychology (Rusbult & Van Lange, 2003; Stock, 1997) affirm that corruption in organizational relations is a significant reason for human beings to form negative attitude towards the organizational goal. Organizational studies also reveal that implied non-transparency in organizational relations creates negative attitude towards any explicit mission. Thus, this study postulates:

H₃: Corruption (CR) in supply chain has significant influence on negative attitude formation towards disaster management for humanitarian assistance.

Insecurity (IS)

Disaster management related works have some significant and unique characteristics related to safety. People who participate in emergency supply chain for assisting distressed people undertake severe risk. Unlike other organizational functions in any supply chain, disaster management is emergency work that can be needed at anytime, even midnight; during natural calamities, members of the supply chain may be required to move to remote places to distribute relief. In some instances, relief team is required to carry food and other essentials through boats to remote places for affected people. These affected people can sometimes exhibit unruly behavior and become violent, for example, snatch relief items. This creates insecurity amongst the members of disaster management. Around 41 DRROs explained this kind of damaging experience, which they believe is a leading factor for generating negative attitude towards humanitarian supply chain. Studies on psychological behavior (Deci & Ryan, 1985; Reich, 2006) and organizational relations (Emerson, 1962; Rusbult & Van Lange, 2003) postulated that security is key for developing positive impressions that favors attitude. Based on the arguments presented above, this study proposes that:

H₄: Insecurity (IS) in supply chain has a significant influence on negative attitude formation towards disaster management for humanitarian assistance.

Political biasness

As government officials, DRROs are very careful in acknowledging unexpected political influence on humanitarian assistance during disasters. However, they affirm that on the basis of anonymity, members of ruling political party often attempt to influence selection of disaster affected people and relief distribution in their localities. Around 38 DRROs admitted to this problem and revealed that this unexpected, but unavoidable influence forces them to deviate from the actual strategy of emergency supply chain. Such failure due to external influences causes change in attitude towards entire humanitarian assistance (supported by theory of planned behavior).

Through an amendment, top executives who control this humanitarian supply chain (Dubey and Gunasekaran, 2016; Dubey et al., 2015) advice that the selection of distressed people should be

done under the recommendation of honorable members of parliament. Although, government's central strategy is to assist distressed people affected by natural disasters, segmentation, targeting, and selection for reliefs are substantially dependent on local political recommendations. Scholarly articles on organizational behavior (Deci & Ryan, 1985; Rusbult & Van Lange, 2003) investigating unfair practice in employee relations suggest that any biased behavior can be a strong reason for forming negative attitude towards organizational goal. Disaster management and organizational behavior studies (Beamon & Balcik, 2008) investigating employee motivation identify that influence of political parties in selection and distribution of relief severely undermines the objective of humanitarian assistance. Hence, the proposed hypothesis is:

H₅: Political biasness (PB) in supply chain has a significant influence on forming negative attitude towards disaster management for humanitarian assistance.

Behavioral intention (BI)

The DRROs admit in consensus that field level members of government emergency supply chain, either direct employees from different organizations or volunteers, have positive inclination towards this humanitarian job. From their intended behavior, these intra or inter-organizational members are externally enthusiastic and participate in their assigned jobs. In terms of behavioral intention, the interviewees could not find any tangible issues, although they indicated that the intention could be stronger if they had intrinsic devotion. This lack of intrinsic motivation is presumably the reason behind negative attitude towards this humanitarian program. Respondents of these consecutive interviews explicitly remembered that all intra and inter-organizational members, both direct employees and volunteers are dissatisfied and uncomfortable in working for this emergency supply chain despite their participation. Interviewees rhetorically assume that this lack of comfortableness could be the outcome of negative attitudinal behavior.

Theory of reasoned action and theory of planned behavior argue that attitude has direct cause-effect relationship with behavioral intention, which is also demonstrated by several recently published studies (see Dwivedi *et al.* 2017ab; Rana *et al.* 2016;2017) on technology adoption. On the other hand, cognitive dissonance theory recommends that conflicting relationship between attitude and behavior can reflect in lesser satisfaction and weaker performance. Here the proposed hypothesis is,

H₆: Attitude (AT) of the members participating in emergency supply chain for disaster management has negative influence on behavioral intention (BI).

The Beliefs-Attitude-Behavioral Intention Model is shown in Figure 1.

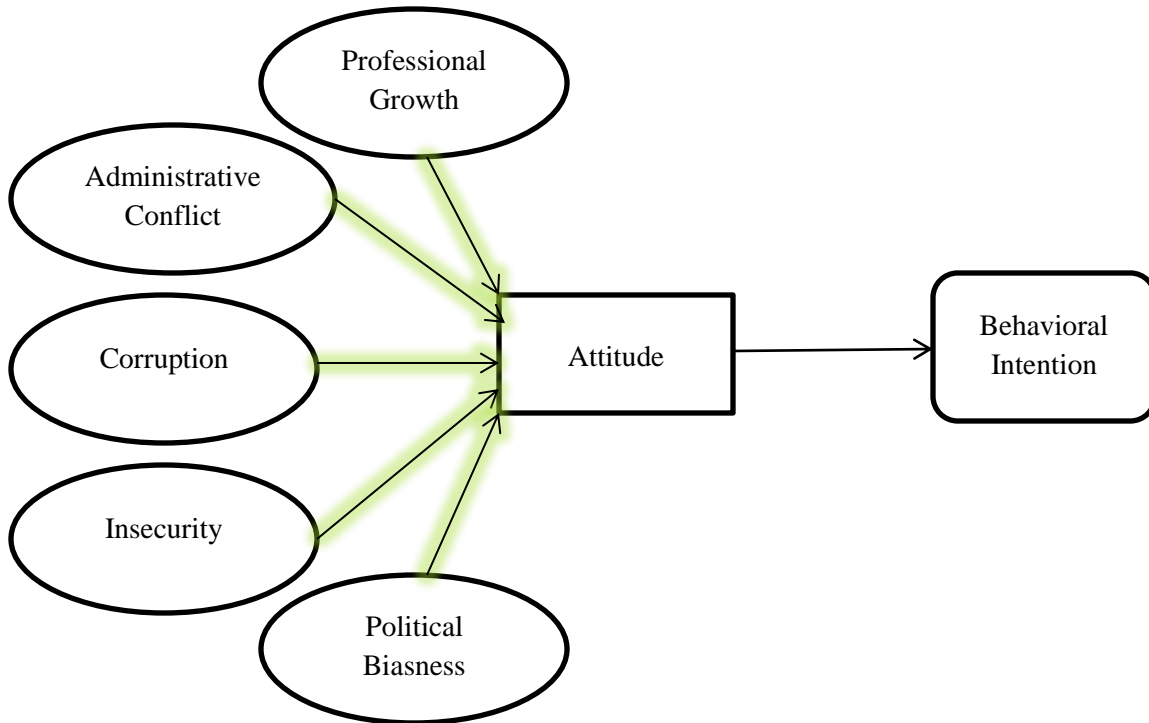


Figure 1: Beliefs-Attitude-Behavioral Intention Model

3.0 Research method

Quantitative survey approach was utilized to test the causal effect of aforementioned beliefs on attitude and its probable conflicting relationship with behavioral intention of members participating in supply chain for humanitarian assistance. To accomplish the objectives, this study developed a questionnaire to address and investigate the development of unfavorable attitude and its impact on behavioral intention. It had five independent constructs (see Section 2.3) as beliefs, which can lead to negative attitude formation. The five independent constructs were measured by employing a scale consisting of 19 items. Attitude and behavioral intention were identified as the dependent constructs, which were measured using a scale with three items each.

As an exploratory study, the questionnaire was primarily prepared based on the remarks from the 64 DRROs. However, literature review in the respective areas, particularly organizational growth and commitment, provided sources of measurements utilized in this research (Appendix A). Three university professors in Bangladesh, who have appropriate expertise on survey based quantitative work in organizational behavior, emergency supply chain management, and employee conflict, reviewed the questionnaire. A pilot study of 20 employees from five non-government organizations (NGOs) working in Bangladesh for disaster management was undertaken for usage of words and their potential meaning to measure the related constructs. Finally, a questionnaire of 25 items was developed to collect data necessary for testing the hypotheses and conceptual model presented in the previous section (Appendix A). The participants were asked to respond to the statements on a five-point Likert scale ranging from ‘5’ (strongly agree) to ‘1’ (strongly disagree).

The respondents for the empirical study were government employees and volunteers participating in disaster operations. They were selected from the 15 most disaster prone districts (name of the districts were selected on the basis of data provided by department of disaster management, Bangladesh). In each district, 20 questionnaires were randomly distributed among 5 members in district level, 5 in Upazila level, 5 in Union Parishad, and 5 in Ward (root level). Union parishad and Ward level members were volunteers. This led to the distribution of a total of 300 questionnaires in November 2016. The respondents returned the completed questionnaires directly to the researchers on the same day. However, 19 respondents did not reply. Therefore, a total of 281 completed survey responses were received, which provided empirical basis for this research.

4.0 Data Analysis and Results

4.1 Statistical Validity

Since measuring items were mostly adopted from the DRROs' responses, for testing the convergence, confirmatory factor analysis (CFA) was conducted on the five independent and two dependent constructs. Items loading at less than 0.50 were removed (Kline, 2005). We reviewed the correlation matrix, and verified the model fit indices with the recommended values for CFA and found that 7 constructs with 25 measurement items could be retained. From the CFA results, it is assumed that the scale items are reflective indicators of their corresponding constructs, which verifies construct validity (Chau, 1997). In CFA, the average variances extracted (AVE) for each factor exceeded 0.50; thus, convergent validity was confirmed (Fornell & Larcker, 1981). Discriminant validity was also tested for the constructs for the largest shared variance between factors to be lower than the least AVE value for each factor (Chau, 1997). It was evaluated using the variance-extracted test (Fornell & Larcker, 1981). For any pair of constructs, discriminant validity is achieved if both of their variances are greater than the squared correlations between the two constructs. The lowest AVE value was 0.89 (for CR and PB constructs), which exceeded the largest squared correlation between any pair of constructs (0.7236 - between PG and AT) (Table 1). This finding acknowledges that the shared variance between factors is lower than the AVEs of individual constructs, which confirms discriminant validity.

Table 1: Correlation Matrix and AVE

	<i>IS</i>	<i>AC</i>	<i>PG</i>	<i>CR</i>	<i>PB</i>	<i>AT</i>	<i>BI</i>
IS	0.93						
AC	0.010	0.91					
PG	0.026	0.405	0.94				
CR	0.004	0.0043	0.0056	0.89			
PB	0.0007	0.21	0.322	0.0003	0.89		
AT	0.015	0.432	0.723	0.002	0.397	0.96	
BI	0.0014	0.391	0.604	0.00007	0.392	0.692	0.97

Legend: Values across the diagonal are square root of AVE and other values are the squared correlations

Reliability of all constructs measured by the scale items is evaluated by Cronbach's alpha. The reliability scores for all independent and dependent constructs are acceptable as per the cut-off value suggested by Nunnally & Bernstein (1994) (shown in Table 1A).

Table 1A: Reliability Measures of Independent Constructs and their respective Scale Measures

Constructs	Cronbach Alpha based on Standardized Items
AC	0.844
IS	0.712
PG	0.912
CR	0.722
PB	0.817
AT	0.951
BI	0.934

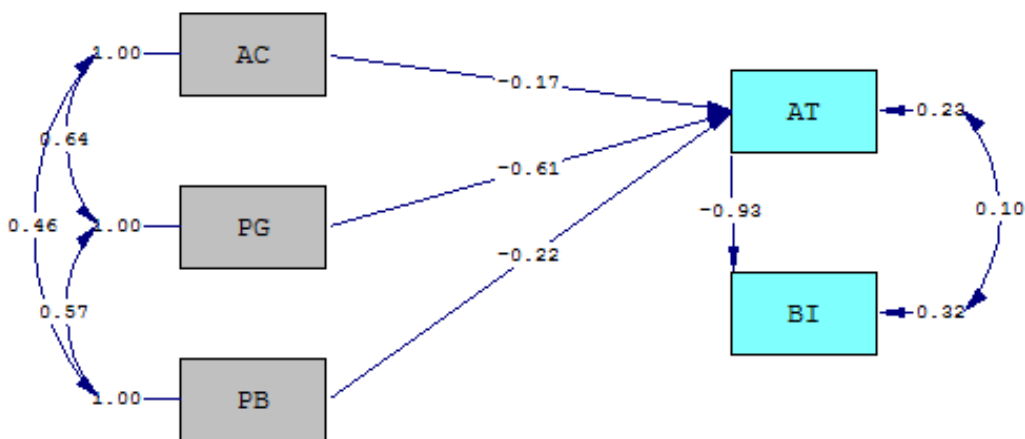
4.2 Model Testing: Causal Relationship by Path Analysis

LISREL was used as the statistical tool for Path analysis; it belongs to the family of structural equation modeling (SEM). Correlation coefficients among the independent and dependent constructs (shown in the Table 1) were used as inputs. This analysis was conducted under the assumption of covariance-based SEM (CBSEM), since the study is exploratory and the outcome is not predictive enough. In comparison to variance based SEM, more specifically, the partial least squares (PLS) analysis, this analysis is more appropriate for accuracy of parameters in an exploratory study (Reinartz et al., 2009). After the first phase of analysis for the cause and effect relationship, we found that the primary model fit indices did not fit well with the data. The path diagram displays both the unstandardized and standardized regression weights (factor loadings) for independent variables. The Chi-Square statistic was 42.14, df was 5, p-value was at 0.000, and the root mean square error of approximation (RMSEA) was at 0.163. Therefore, the model did not fit well.

Based on the modification indices to improve the model fitness, we added an error covariance between behavioral intention (BI) and attitude (AT). This inclusion improved the model fit. The administrative conflict (AC), professional growth (PG), and political biasness (PB) were significant causes of attitude (AT) at 0.05 levels. Attitude also had significant effect on behavioral intention at 0.05. However, corruption (CR) and insecurity (IS) did not have significant effect on

attitude at the 0.05 levels. Their contribution in forming attitude is so insignificant that these factors can be removed from the model. Therefore, the non-significant causal relationships of insecurity (IS) and corruption (CR) constructs were removed, and according to recommendations, the model was tested again. This time, the three independent constructs had a significant effect on attitude.

The final accepted model is shown in Figure 2. The χ^2 statistic of 3.56 (df=2, p-value=0.16871) indicates that the model is of a good fit. RMSEA (0.053) and 90 per cent confidence interval for RMSEA (0.00; 0.140) also displays a good fit. Other fit measures indicate acceptable model fitness in alignment with the literature (shown in Table 2) (Chau, 1997; Kline, 2005). The values obtained for squared multiple correlation coefficients (R^2) suggest that 77.1% variance on attitude is explained by three beliefs, namely professional growth, administrative conflict, and political biasness. All three beliefs have negative impact on attitude formation. Also, 87% variance on behavioral intention is contributed by attitude. Attitude has significant negative impact on behavioral intention. The relationship between significant beliefs & attitude, and attitude & behavioral intention are numerically shown in Appendix B. Error covariance for the cause-effect relationships of independent variables with attitude, and attitude with behavioral intention are shown in the numerical relationships (See Appendix B). Error variances are the amount of variances in each measurement that do not change with the latent factor due to error in predicting actual phenomena. Smaller factor loadings result in larger error variances. Standard errors mentioned in the numerical relations are representing deviation of sampling distribution from the actual population. According to social science study, the identified error is quite justified (Kline, 2005).



Chi-Square=3.56, df=2, P-value=0.16871, RMSEA=0.053

Figure 2: Validated Beliefs-Attitude-Behavioral Intention Model for Disaster Management Supply Chain

Table 2: Path Results

Fit Measures	Recommended Values	Validated Model
Chi-square (χ^2)	$P \geq 0.05$	3.560 (0.13612)
Degrees of Freedom		2.000
χ^2 /Degree of freedom (df)	≤ 3.00	1.780
Comparative Fit Index (CFI)	≥ 0.90	0.990
Goodness of Fit Index (GFI)	≥ 0.90	0.995
RMSEA	< 0.06	0.053
Adjusted Goodness of Fit Index (AGFI)	≥ 0.80	0.962
Normed Fit Index (NFI)	≥ 0.90	0.997
Incremental Fit Index (IFI)	≥ 0.90	0.999
Relative Fit Index (RFI)	≥ 0.80	0.983

5.0 Discussion

Cause-effect analysis through SEM acknowledges that out of the six proposed hypotheses, H1, H2, H5, and H6 are valid. It indicates that administrative conflict (AC), professional growth (PG), and political biasness (PB) are significant causes of attitude (AT). Attitude also causes behavioral intention. The analysis also suggests that H3 and H4 are not acceptable. This identification asserts that corruption (CR) and insecurity (IS) are not significant in shaping attitude. The model fitness indices (Table 1) justify this finding. About 77.1 per cent variance on attitude is explained by these three significant constructs.

Values of unstandardized factor loadings reflect the change in dependent variable for a unit change in the respective independent variables, given the effects of other variables are constant. The three significant beliefs of members participating in government emergency supply chain for disaster management contribute negatively towards attitude formation. Of the three beliefs, professional growth (PG) has the highest negative contribution (0.614). Thus, a unit change in professional growth (PG) will cause a 0.614 unit of negative change in attitude (AT), when administrative conflict (AC) and political biasness (PB) remain constant. Contributions of political biasness (PG) and administrative conflict are -0.215 and -0.172, respectively, in shaping unfavorable attitude. Therefore, the major beliefs contributing towards attitude formation are negative. Heuristically, overall attitude of members involved in disaster management operations is substantially unfavorable towards government emergency supply chain operations. On the other hand, as part of their professional responsibility and accountability, and on humanitarian grounds, they feel compelled to perform effectively. However, due to conflicting and reverse attitude, impressions on disaster operations contradict with behavioral intention. Consequently, their performance is undermined and inefficient. As per the DRROs' confessions, the member performances are below expectations, and they are not active.

Since attitude is negative, its effect on behavioral intention is negative. Unit change in attitude (AT) causes a 0.933 unit of negative change in behavioral intention (BI). This overarching effect

on behavioral intention (BI) is extremely high. Quite expectedly, all organizational members and volunteers working profoundly on disaster management bear negative perceptions about the value and integrity of supply chain operations. This is due to their belief that there are limited career advancement opportunities in such line of work. They also have strong impressions that such humanitarian assistance program is substantially influenced by political affiliation in selection and distribution process of relief. Administrative conflict is another severe issue for them. They find inconsistencies in administrative hierarchy, rules and regulations, and chain of command, due to the absence of interoperable and effective coordination. They also identify lack of authority as a cause of concern. Overall, they find that the overall planning, organogram, direction, and controlling system of management are not properly executed. These adverse impressions comprehensively pursue negative attitudes towards disaster management operations, which negatively and strongly influence behavioral intention.

Researchers on emergency supply chain management (Balcik et al., 2010; Balcik & Beamon, 2008) revealed similar type of organizational conflicts among members of participating organizations. They identified that due to conflicting issues and diversified agenda of different organizations, while working in a common supply chain, they often find problems in administration. The study conducted by Whybark et al (2010) acknowledged that emergency supply chain management is always chaotic and faces severe problems in demand forecasting and need assessment, procurement, inventory management and stocking, logistics management, information management and interoperability. This problem can lead to lack of motivation in employees participating in emergency networks. Consequently, absence of professional growth and interference of local authorities can create further reasons for lack of motivation (Harmon-Jones, 2002; Nelson, 2006; Reich, 2006; Rodriguez et al., 2006). Several researchers on conflicts in disaster management (Ballou, 2005; Balcik et al., 2010; Oloruntoba & Gray, 2006) confirm that administration conflicts, local political affiliation and absence of employee growth and satisfaction can create detrimental effects on the desired efficiency of emergency supply chain. This finding receives firm support from cognitive dissonance theory. Motivational theories, such as, expectancy theory (Vroom, 1964) and Herzberg's two-factor theory (1964) offer clear evidence that absence of professional growth, interference from external authorities, and administrative conflicts can result in negative attitude towards organizational operations. Consequently, contributions of this study for both organizational theorists and humanitarian supply chain practitioners are significant.

5.1 Theoretical Contributions

Literature on disaster management (Balcik et al., 2010; Balcik & Beamon, 2008; Beamon & Balcik, 2008), organizational behavior (Collins & Hoyt, 1972; Cooper & Fazio, 1984; Nelson, 2006), and supply chain management (Giard & Sali, 2013; Han & Dong, 2015; Rached et al., 2016) justify the findings of the study; that is, administrative conflict (AC), professional growth (PG), and political biasness (PB) are significant causes for developing negative attitude (AT) towards existing emergency disaster supply chain operations in Bangladesh. This identification is also supported by organizational theories. Herzberg's two-factor theory (1964) affirms that scope

of career advancement and fairness in any organization are important predictors for employee motivation. Job environment — presence of administrative conflict and biasness also significantly contribute towards forming unfavorable attitude (Rusbult & Van Lange, 2003). On the other hand, since corruption and insecurity have root causes in political and administrative problems for emergency supply chain management (Diallo et al., 2017; Stephenson, 2005; Whybark et al., 2010), presence of political biasness and administrative conflict has made corruption and insecurity non-significant.

The overall findings of this study can have deep underpinnings from organizational theories like cognitive dissonance theory and theory of planned behavior. Several researchers, working on cognitive dissonance theory in the organizational orientation (Cooper & Fazio, 1984; Ertmer & Newby, 1993; Gagne et al., 1993; Gächter et al., 2013; Harmon-Jones, 2002; Nelson, 2006) assert that employees, while perceiving conflict between attitude and behavior, perform below the set standards. Organizational studies (e.g. Deci & Ryan, 1985; Hwang, 2005) revealed this phenomenon and certified that in such situations, employees feel discomfort and instability, which ultimately leads to unsatisfactory performance. So, instead of many good sides of Bangladesh government emergency supply chain, less active performance in the emergency supply chain by many employees, and particularly volunteers, is quite reasonable. Theory of planned behavior and theory of reasoned action also acknowledge that unfavorable attitude is the source of negative behavioral intention for any organizational performance.

Therefore, this study makes significant contribution to organizational theory. It reflects that during emergency operations, motivational urge for career advancement is very strong. On the other hand, in shedding light on Herzberg's two-factor theory, job contextual parameters like unfairness and conflict can seriously hamper intrinsic motivation.

5.2 Implications for Practice

This study has enormous practical merit and implication for the higher authorities concerned with policy development of supply chain for disaster management. The results explicitly indicate that although the members participating in disaster management operation are quite competent, the administrative problems cause them to form negative attitudes, which has a subversive impact on their behavior. Therefore, to derive the full employee potential, some visible career advancement paths will have to be designed. Any kind of political influence and non-transparency issues will have to be eliminated. A well-designed and effective management strategy will have to be established, with the capability of being interoperable, cooperative, and coordinated.

Policymakers should understand the difference between operations, involvement, and performance measuring systems for commercial supply chain management and emergency supply chain management. For emergency supply chain management, employees' intrinsic motivation has significant importance. Policymakers should realize that for any humanitarian operation, this intrinsic motivation could be severely damaged if the employees find any biasness in the system,

or external influences with some hidden commercial motives. Government authorities of any country should prioritize this issue of intrinsic employee motivation for successfully accomplishing emergency operations.

From the interviews of DRROs, it was revealed that a major source of administrative conflict arises from overlapping job definitions of employees from participating organizations. The roles and responsibilities of all employees involved in emergency supply chain should be clearly defined, and accordingly motivated through different incentives for better performance. Coordination systems should be clearly defined in the organogram of disaster management for all levels. Empowerment of different officers should be clearly based on the involvement and responsibility defined in the emergency supply chain. Particularly, for better efficiency, delegation of proper authority to DRRO office against their assigned responsibility should be confirmed. Since DRROs receive special training on relief distribution, and the fact that they are playing a key role in district level disaster operations, their authority should be appropriately aligned with responsibility.

Motivation and job satisfaction is highly congruent with career advancement (see expectancy theory, Vroom, 1964). Without ensuring proper career advancement, continual effort cannot be ensured in this repeated emergency work. Management strategy and organizational structure should be reviewed, and allocation of responsibility and authority should be well proportioned. Since disaster management is a sudden phenomenon and needs emergency measures, the administration and interoperability between participating organizations should be extremely dynamic and flexible. Any political unfairness in humanitarian assistance severely undermines the mission of helping distressed people. Government's primary strategy and the strategy for emergency supply chain should be aligned to remove any unexpected external influence.

6.0 Conclusion

Existing emergency supply chain of Bangladesh government for relief distribution is sufficiently well managed and is working effectively. It has excellent examples to demonstrate its efficiency and effectiveness. However, like any other supply chain system, this emergency supply chain also has rooms for improvement that can minimize existing weaknesses and problems. The major problem in this regard is inconsistency between attitude and behavioral intention among members who participate in emergency supply chains. They have a negative attitude towards this humanitarian assistance program for distressed people. They believe that the disaster management operations have several managerial problems. On the other hand, from the behavioral intention perspective, they should be willing and have positive intentions to participate in this emergency assistance program to support distressed people. However, without perceiving intrinsic willingness, professionally, they are forced to actively participate in this humanitarian program. Therefore, negative attitude and the consequent behavioral intention have alarming inconsistency or incompatibility, which causes instability in their performance.

According to the cognitive dissonance theory, employees do not find comfort from such a charitable yet tedious work, as they are psychologically disturbed. For such selfless work, behaviorally, the employees should be naturally inclined towards helping the needy. However, due to their many negative beliefs about the administrative arrangement of emergency supply network, their attitude is not favorable towards this operation. This conflicting and contradictory nature between behavioral intention and attitude is the cause of dissatisfaction and demotivation, which ultimately hampers their performance. This finding has a strong underpinning from organizational behavior and psychological perspectives — cognitive dissonance theory, theory of reasoned action, and theory of planned behavior.

In this context, a thorough investigation across 64 districts in Bangladesh was conducted. Information from 64 DRROs was gathered based on interviews. From these interviews, a set of beliefs, namely - administrative conflict (AC), corruption (CR), political biasness (PB), professional growth (PG), and insecurity (IS) was identified for the development of attitude of the members participating in the government emergency supply chain for disaster management. In the second phase, a questionnaire was prepared to examine the impact of those beliefs on attitude, and identify the plausible conflicts between attitude and behavioral intention. In this aspect, a thorough empirical study was conducted amongst the members of the humanitarian assistance program in Bangladesh. Based on the path analysis for the collected data, it was revealed that administrative conflict (AC), political biasness (PB), and professional growth (PG) are the three significant beliefs, which lead to negative effect on attitude. This negative attitude has a subversive effect on behavioral intention, which results in substandard performance.

6.1 Limitations and Directions for Future Research

Attitude in professional life is substantially controlled by income, age, gender, and educational background (Shareef et al., 2011; Venkatesh et al., 2003), but this study did not consider the moderating effects of these variables. Future researchers can verify if the inconsistency between attitude and behavioral intention can be moderated by some demographic variables. Although as a geographical context, supply chain of Bangladesh government for humanitarian assistance during disaster can be argued to be similar with other such contexts, any generalized remarks can be more justified if the same study is conducted across other countries having variations in governmental management system. Attitude has three components, namely - cognitive, affective, and behavioral. This study restricted focus on the cognitive function. Future researchers can consider other components of attitude and its inconsistency with behavior. This study employed structural equation modeling to test research hypotheses considering linear relationships among decision variables. In practice, we also observe non-linear relationships among decision variables. Future research can use predictive modeling to investigate any non-linear relationships.

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APPENDIX A

Questionnaire

Items for constructs used in the proposed research model	Source
CR1. Government emergency supply chain to assist distressed people during disaster is not transparent	DRROs opinion
CR2. I believe all people who are really affected in disaster are not getting relief equally	
CR3. Full relief is not distributed to disaster affected people	
AC1. Different agencies involved in government emergency supply chain to assist distressed people during disaster have different authorities	DRROs opinion; Mathieu & Zajac, 1990; Mowday et al., 1979
AC2. Government agencies working in supply chain to assist distressed people during disaster have separate chain of command	
AC3. Employees of one department do not like to follow protocol of other departments	
AC4. Different departments working in government emergency supply chain have different management system	
PB1. I find political parties have influence on government emergency supply chain to assist distressed people during disaster	DRROs opinion; Mathieu & Zajac, 1990; Mowday et al., 1979
PB2. . I find political parties are directly involve in government emergency supply chain to assist distressed people during disaster	
PB3. I find government emergency supply chain to assist distressed people during disaster is politically controlled	
PB4. . Political parties try to impose their own interest on government emergency supply chain to assist distressed people during disaster	
PG1. I have no scope to advance professionally through this disaster management task through government emergency supply chain	DRROs opinion; Grohmann & Kauffeld, 2005; Guskey & Sparks, 1991
PG2. Participating in assisting distressed people affected during disaster through government emergency supply chain cannot offer me any future career goal	
PG3. I do not find any scope of promotion by participating in government emergency supply chain to assist distressed people	
PG4. I am always working as the same volunteer in government emergency supply chain to assist distressed people	
IS1. While distributing relief, the place is not safe to interact with distressed people	DRROs opinion; Shareef et al., 2011
IS2. I find interaction with distressed people during any disaster is unsafe	
IS3. The surrounding does not have adequate security measure	
IS4. During relief distribution, the surrounding place does not protect my safety	
AT1. I like to be involved in government emergency supply chain to assist distressed people	Fishbein & Ajzen, 1975;
AT 2. I prefer to participate in volunteer job to assist distressed people during disaster	

Items for constructs used in the proposed research model	Source
AT3. I feel urge to assist distressed people affected during disaster through government emergency supply chain.	Shareef et al., 2013
BII. I intend to participate in helping distressed people affected during disaster in future through government emergency supply chain.	Dwivedi et al., 2016; Fishbein & Ajzen, 1975
BI2. I will always try to involve in distributing relief to distressed people affected during disaster through government emergency supply chain.	
BI3. I will always try my best to assist distressed people affected during disaster through government emergency supply chain.	

APPENDIX B

$AT = -0.172*AC - 0.614*PG - 0.215*PB$, Errorvariance=0.229, $R^2=0.771$

Standard error (0.0350) (0.0385) (0.0328)(0.0195)

$BI = -0.933*AT$, Errorvariance= 0.319, $R^2=0.870$