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Effecting Factors of Disaster Loss Recovery Plan (DLRP) for Small Scale Business (SCB) in the Coastal Area of Bangladesh

Shantanu Deb BARMAN[1] Shapan Chandra MAJUMDER[2] Subrata SARKER[3]

ABSTRACT: Hatia is a coastal area of Bangladesh and exposed to multiple natural disaster. To identify the determinants of Disaster Loss Recovery Plan (DLRP) for the small scale business, a questionnaire survey was conducted. Data were explored by utilizing 53 random samples from the study area and analyzed by using computer based software SPSS (Statistical Package for Social Science). This paper determines the factors those are related to DLRP. Findings show that age of business, disaster experience, Single or branch and Grocery/Hotel/Medicine/ Mobile call center/Rickshaw repairing are all related to DLRP in the study area. Own or lease and Wholesale/retail are not significantly related with DLRP.

Keywords: Small scale, disaster, coast

Bangladeş Sahil Bölgesindeki Küçük Ölçekli İşletmeler için Felaket Kaybı İyileştirme Planına Etkili Faktörler

ÖZET: Bangladeş'in sahil bölgesi olan Hatia, birçok doğal felakete maruz kalmıştır. Bu araştırmada küçük ölçekli şirketler için Felaket Kaybı İyileştirme Planı (DLRP) etkenlerini belirlemek için bir anket çalışması yapılmıştır. Veriler, inceleme alanından 53 rastgele örnek alınarak elde edilmiş ve bilgisayar tabanlı bir yazılım olan SPSS (Sosyal Bilimler Paketi) kullanılarak analiz edilmiştir. Bu çalışma, DLRP'ye dair faktörleri belirlemektedir. Bulgular; inceleme yapılan bölgede şirket yaşı, kriz tecrübesi, market, otel, sağlık hizmeti, mobil arama merkezi ve taşıt onarımının DLRP ile ilgili olduğunu ortaya konmuştur. Kendine ait veya kiralık, toptan veya perakende faktörleri DLRP'yi etkilememiştir.

Anahtar kelimeler: Küçük ölçekli, felaket, sahil bölgesi

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[1] Lecturer, Department of Economics, University of Chittagong, Bangladesh
[2] Lecturer, Department of Economics, Comilla University, Comilla, Bangladesh
[3] Institute of Marine Sciences and Fisheries, University of Chittagong, Bangladesh
Sorumlu yazar/Corresponding author: Shapan Chandra MAJUMDER, scmajumder-71@yahoo.com

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INTRODUCTION

Natural disasters are ongoing part of life for the coastal community. Disaster frequency has doubled every ten years since 1960 with 96 % of all deaths from natural disasters occurring in the global South (International Federation of the Red Cross and Red Crescent (IFRC/RC, 1999). Coastal disasters are increasing in frequency and magnitude—measured in terms of human lives lost, destroyed infrastructure, ecological damage and disrupted social networks. The damages from natural disasters have been increasing exponentially over the last several decades (Millennium Ecosystem Assessment, 2005). Coastal disaster (e.g. tropical cyclones, storm surges, coastal erosion and flood) has created significant Impact on coastal rural people. These extreme events make the life of coastal community more complicated, keep in risk, destroy property and limit the livelihood options. Disasters serve as hinders of linear progress economical activities in the coastal area. Small Scale Business (SSB) in coastal area is facing the problem of economic loss due to lack of disaster loss recovery plan (DLRP). Developing countries average more than 1000 deaths per disaster but less than US$100 million loss, compared with high developed countries that average less than ten deaths but over US$600 million in losses per disaster (IFRC/RC, 2001). Economic losses by natural disaster are very difficult to overcome by developing countries (Day, 2000). Sudden-onset disasters affect small scale business (SSB) in coastal area by damaging capital, infrastructure, means of production and stocks. Bangladesh is a coastal country bounded by Bay of Bengal on its southern part. Unfortunately these areas are highly vulnerable to both natural and man-made hazards and disasters like coastal flooding, cyclones, storm surges, erosion, salinity, arsenic contamination, and pollution, etc. (MoWR, 2005). Most of the people in the coastal area of Bangladesh are poor and their businesses are in small scale. Every year natural disaster causes huge losses in business sector. So, disaster loss recovery plan (DLRP) is necessary for this area as DLRP helps a business to overcome the disruption to normal operations and reduces potential financial losses (Dahlhamer et al., 1998). The post-disaster period can offer opportunities to compensate for all losses (Brown, 1994). Disaster Loss Recovery refers to the development and application of policies, strategies, and practices that minimize vulnerabilities. It includes measures taken to protect livelihoods and assets of communities and individuals from the adverse impact of hazards (ISDR, 2008). Efforts taken to reduce loss of disasters include: information and strengthening early warning systems; giving loan to vulnerable people from government and micro credit organizations, relief, improvement of transport and storage facilities of stocks and, finally, identification of vulnerable sectors of society including groups and infrastructure and produce plans that address their special needs.

MATERIALS AND METHODS

Study Area

The study was conducted in Hatia *Upazilla* (Sub district) (Figure 1) situated in the Noakhali district, a coastal area of Bangladesh. Noakhali district is a fa-

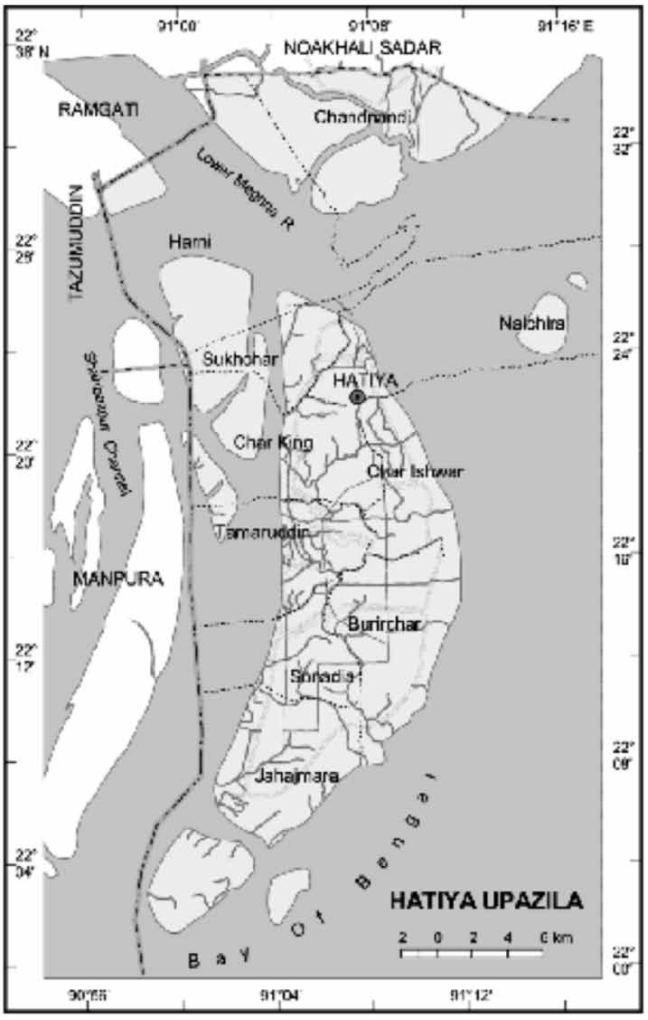

Figure 1. Hatia Upazilla.

mous pathway of cyclones and the ground level in Noakhali is lower than 10 m above the mean sea level (Islam, 2004). Hatia *Upazilla* (Sub district) covers an area of about 1508 km^2 sq Kilometers having 346853 people where 87 % is Muslim and 12 % is Hindu (Anonymus, 2006). The geographical location is between latitude 20°30¢ and 22° N and longitude 91°45¢ and 92°15¢ E. Household incomes within TK 5 000 per month, which is below the poverty line (Parvin et al., 2009).

Data Collection

Data are collected through questionnaire interviews, focus group discussion (FGD) and participatory observation. Questionnaire interviews were conducted with coastal small scale business holder to collect quantitative data. A total of 53 small scale business holders were interviewed. Focus group discussion (FGD) and participatory observation were conducted to collect qualitative data. The real purposes of the qualitative research are not to count the opinions or people, rather to explore the range of opinions, the different representations of the issue, and the objective is to maximize the opportunity to understand the different position taken by members of the social setting (Gaskell, 2000). Participatory observation offer a good opportunity to get a comprehensive and authentic insight in actual situations of the evaluation topic including "actions, conversations, and physical descriptions" (Gittleson and Mookherji, 1997). The focused group interview consists of a guided in-depth interview of a relatively homogeneous small group of individuals purposefully selected by the researcher to address a specific topic' (Saint-Germain et al., 1993).

Data Analysis

Data those were collected from questionnaire interviews had entered into a statistical software SPSS (Statistical Package for Social Science) for analyzing. This analysis allows an assessment of the importance recovery plans needed for coastal small scale business (SSB) holder to uplift economic loss caused by natural coastal disasters.

Description of Variables

This paper presents a model of disaster loss recovery plan (DLRP) for coastal small scale business. Variables for Model consist of a number of Some characteristics including business type, owned or leased, single or branched, age of business, Wholesale or retail and whether the business property is. Age of business is another firm characteristic that is related to business disaster evacuation planning (Drabek, 1991). Ownership patterns, i.e., individual or leased, to be significantly related to disaster loss recovery planning (Drabek, 1991; 1994a; 1994b; 1995). Further, Drabek (1991; 1995) found type of business to be significantly related to disaster evacuation planning. Previous disaster experience also influences disaster loss recovery plan. Businesses with previous disaster experience had engaged in more evacuation planning than businesses with little or no disaster experience (Drabek, 1994a; 1994b). Definition of considered variables is shown in Table 1.

Table 1. Variable definitions

Variables	Coding Scheme
Independent Variables: Grocery/Hotel/Medicine/ Mobile call center/ Rickshaw repairing	0=Grocery/Hotel/Medicine/ Mobile call center/Rickshaw repairing 1=Others
Tea stall/Travel shop/ Landry/ Saloon	1= Tea stall/Travel shop/ Landry/ Saloon 0=Others
Own or lease	1= Own 0= lease
Age of Business	Continuous
Wholesale/retail	1= Wholesale 0= retail
Single/Branch	1=Single 0=Branch
Disaster Experience	1=Yes 0=No
Dependent Variable: Disaster loss recovery Plan	Index of 12 items in Hatia (Same weight for 10 items and relatively high weight for the Loan from government and store food and water).

RESULT AND DISCUSSION

Disasters occur when there is a hazard impacting on a vulnerable community or population (McBean, 2009). According to the workshop Report on 'Climate Change and Disaster Losses: Understanding and Attributing Trends and Projections' direct economic losses due to disasters had increased. Coastal hazards are the triggers for the most of the disasters. Coastal hazards influence human settlement in an area by affecting livelihood. Disasters have inflationary potential through their capacity to interrupt all components of a market economy: production, distribution, marketing and consumption. As Hatia is located at the south eastern coastal region of Bangladesh it is frequently affected by different coastal hazards and causes loss of life and property. Natural disasters offer here a challenge to sustain human life. This study investigated different coastal hazards in Hatia by interviewing Small Scale Business (SSB) holder. After finding out coastal hazards, their existing and needed disaster loss recovery plan (DLRP) have been identified. Interviews were asked about the coastal hazards. According to their view main coastal hazards are cyclones, flood, erosion, tidal surge, tornado and drought and intensity of these hazards are increasing day by day. Their multiple responses are shown in Table 2. Hatia is well experienced by the cyclones of 1970, 1985 and 1991. About 130 000 people have died due to cyclones and the storm surges (Upazilla Administration, 2005). The northern part of this island is continuously affected by river bank erosion. Approximately 108 km2 of land north and east of the Island has been eroded from 1960 to 1984; where, 30 km2 of land has been accreted south of Hatia (Huq et al., 1999).

Table 2. Coastal hazards at Hatia (multiple responses) (N=53)

Coastal hazards	Percentage
Cyclone	88% (47)
Tidal surge	78% (41)
Flood	70% (37)
Erosion	50% (27)
Tornado	30% (16)
Drought	15% (8)

Frequency and percentage of DLRP undertaken by businesses in the study area are represented at Table 3. During the survey, small scale business (SSB) holders were asked questions about the existence of a disaster loss recovery strategy for their business. Early warning system helps them to take shelter at cyclone center and transfer their business stock. The number of cyclone shelters on Hatia Island is 100 (Upazilla Administration, 2005).When tidal surges occur they mostly take shelter on elevated places. During flood they leave their land try best to save their assets. Erosion effected people transfer their business to upland. The survey included a question asking all businesses holder about the need of business insurance and all most respondents answered this question. Replies indicated that such a plan is essential for them but they cannot adopt it due to payment of premium. Clearly, disaster mitigation steps increased here after the cyclone and flood.

Table 3. Disaster loss recovery plan taken by Small scale businesses in Hatia

Action	Percentage
Utilize savings	51% (27)
Help from government Organization	34% (18)
Help from NGOs	68% (36)
Microcredit	72% (38)
Disaster warning	60% (32)
Store food and water	98% (52)
Store medicine	26% (14)
Made arrangement for alternative location	38% (20)
Need of insurance	15% (8)
Well warning	60% (32)
Need of relief	70% (37)
Loan from government	79% (42)

Means and standard deviations for all independent variables and dependent variables those included in model are shown in the Table 4. The mean number of preparedness activities undertaken by businesses in Hatia is 0.5792 (out of a possible 12).

Table 4. Descriptive statistics of model variables

Variables	Mean	SD
Independent Variables:		
Grocery/Hotel/Medicine/Mobile call center/Rickshaw repairing	0.3396	0.4781
Tea stall/Travel shop/Landry/ Saloon	1.0189	1.0094
Own or lease	0.5472	0 .5025
Age of Business	7.5283	3.3547
Wholesale/retail	0.0566	0.2333
Single/Branch	0.9245	0.2667
Disaster Experience	0.6604	0.4781
Dependent Variable:		
Preparedness	0.5792	0.1464

Table 5. Regression coefficients for models of SSB DLRP

Variables	Unstad. Coeff.	Std. Coeff.	t-ratio	Significant
Independent Variables:				
Grocery/Hotel/Medicine/Mobile call center/Rickshaw repairing	-0.116*	-0.378	-3.441	0.001
Tea stall/Travel shop/Landry/ Saloon	-0.044**	-0.304	-2.784	0 .008
Own or lease	-0.041***	-0.140	-1.594	0.118
Age of Business	0.031*	0.730	6.928	0.000
Wholesale/retail	-0.061***	-0.098	-1.416	0.164
Single/Branch	-0.144*	-0.262	-3.735	0.001
Disaster Experience	0.112*	0.366	4.207	0.000
R^2	0.811			
Adjusted R^2	0.782			
F	27.617*			
N	53			

p<0.0 1 *p<0.001 * Not highly significant

Some DLRP were undertaken by the business holders at highest frequency, for example, Store food and water (98%), and microcredit (79%). A comparatively sizeable percentage of businesses utilize savings (52%). A proportionately larger percentage (47 %) of businesses holder depend on NGOs. Very few business Made arrangement for (12 %) alternative location during disaster. About 22 % store medicine for their emergency condition.

To assess determinants of DLRP among the small scale businesses in the area, a regression analysis was employed. From Table 5, it is clear that the mentioned model was a significant predictor of DLRP in the study area (F=27.617, p<.001). Among the characteristics variable for DLRP, the age of the business and previous disaster experience was the strongest determinants for the study area (Beta=0.031, p<0.001 and Beta=0.112, p<0.001). As the age of business increase, they take more preparedness activities. Previously disaster experienced business holder also take strong DLRP. Single or branch and are also significant predictor of preparedness in the study area. Branch of large business take more DLRP than single business. Grocery/Hotel/Medicine/Mobile call center/Rickshaw repairing in the study area, also engaged with DLRP (Beta=-0.116, p<0.001). This type of business holder take DLRP where Tea stall/ Travel shop/Landry/ Saloon take less (Beta= -0.044, p<0.01). Own or lease and Wholesale/retail are negatively co-related but statistically not highly significant. The model explains about 78 per cent of the variation in DLRP for the sample in the study area (Adjusted R^2=0.782).

CONCLUSION

Present study provides good predictor of DLRP (Disaster Loss Recovery Plan) among Small Scale businesses (SSB) holders in Hatia. Age of business, previous disaster experience, Single or branch and Grocery/ Hotel/Medicine/Mobile call center/Rickshaw repairing type business are significant predictors of DLRP in the study area. Business sector should be related to preparedness activities to minimize their economic loss during disaster. Findings of the present study have importance in policy formulation. Awareness, education and direct role of government are necessary to raise the preparedness level among the business holders.

REFERENCES

Anonymus 2006. Hatiya Upazila. http://banglapedia.org/HT/H_0089.HTM. (Date of accessed: 12.07. 2010).

Brown, H.A., 1994. Economics of disasters with special reference to the Jamaican experience. Working paper 2. Jamaica: Centre for Environment and Development, University of the West Indies.

Dahlhamer, J.M., Tierney, K.J., 1998. Rebuilding from disruptive events: Business recovery following the Northridge earthquake. Sociological Spectrum, 18: 121–141.

Day, M., 2000. Nicaragua needs a break. In International Federation of the Red Cross and Red Crescent (IFRC/RC), World disasters report 2000. Switzerland: IFRC/RC.

Drabek, T., 1991. Anticipating organizational evacuations: disaster planning by managers of tourist-oriented private firms. International Journal of Mass Emeraencies and Disasters, 9(2): 219-245.

Drabek, T., 1994a. New study shows that growing tourist industry is inadequately prepared for emergencies. Hazard Technoioay, 14(1): 17-21.

Drabek, T., 1994b. Disaster evacuation and the tourist industry. Program on Environment and Behavior Monograph No. 57, Institute of Behavioral Science, University of Colorado.

Drabek, T., 1995. Disaster responses within the tourist industry. International Journal of Mass Emergencies and Disasters, 13(1): 7-23.

Gaskell, G., 2000. Individual and group interviewing. Qualitative Researching with Text Image and Sound: A Practical Handbook (Editors: M.W. Bauer, G. Gaskell), London: Sage, pp. 38-56.

Gittleson, J., Mookherji, S., 1997. The application of anthropological methods to stud the intrahousehold resource allocation. Intrahousehold Resource Allocation in Development Countries: Models, Methods, and Policy (Editors: L. Haddad, J. Hoddinott, H. Alderman), Baltimore and London: The John Hopkins University press, pp. 193-212.

Hoppe, P., Pielke, Jr.R., 2006. Report of the workshop on ‘‘Climate Change and Disaster Losses: Understanding and Attributing Trends and Projections’’ 25–26 May 2006 Hohenkammer, Germany, http://sciencepolicy.colorado.edu/sparc/research/projects/extreme_events/ munich workshop/index.html (Date of accessed: 01.06.2010).

Huq, S., Karim, Z., Asaduzzaman, M., Mahtab, F., 1999. Vulnerability and adaptation to climate change for Bangladesh. Kluwer, Dordrecht.

International Federation of the Red Cross and Red Crescent (IFRC/RC), 1999. World disasters report 1999. Switzerland: IFRC/RC.

International Federation of the Red Cross and Red Crescent (IFRC/RC), 2001. World disasters report 2000. Switzerland: IFRC/RC.

International Strategy for Disaster Reduction (ISDR), 2008. Climate change and disaster risk reduction. Briefing No 01, Geneva.

Islam, M.R., 2004. Where land meets the sea: a profile of the coastal zone of Bangladesh. University Press Limited, Dhaka.

Millennium Ecosystem Assessment, 2005. Ecosystems and human well-being: General synthesis. World Resources Institute, Washington, DC.

McBean, G., Ajibade, L., 2009. Climate change, related hazards and human settlements. Current Opinion in Environmental Sustainability, 1: 179-186.

MoWR, 2005. Coastal zone policy. Ministry of Water Resources, Government of People’s Republic of Bangladesh.

Parvin, G.A., Takahashi, F., Shaw, R., 2009. Coastal hazards and community coping methods in Bangladesh. Journal of Coastal Conservation, 12: 181-193.

Saint-German, M.A., Basford I.L., Montano, G., 1993. Surveys and focus groups in health research with older hispanic women. Qualitative Health Research, 3(3): 341-367.

Upazila Administration, 2005. Upazila Unnayan (development) Profile, Hatia, Noakhali, Published by Upazila Administration, Hatia, Noakhali, Bangladesh, pp. 1-4.