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Post Disaster Housing Reconstruction in Selected Urban Areas in Gorkha and Bhaktapur Districts, Nepal

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Abstract: ***Natural disasters are social and political phenomena. Social structures create vulnerability to natural hazards and governments are often seen as responsible for the effects of disasters. This research tried to highlight the effects of disasters on housing and livelihood management on rural areas of Nepal after the earthquake. It is because urban areas are always hard hit by the disasters like earthquake and these areas are still unable to generate strong insight for disaster prevention. Thus this paper tried to investigate the disaster prevention strategies being followed in urban areas and the analysis of roles played by different stakeholders in promoting the implementation of disaster prevention strategies in major cities of Nepal. Mixed method research is implemented to understand the knowledge of disaster management at present, the emerging issues in reconstruction and the roles played by different stakeholders to solve the issues and promote the disaster prevention in rural community of Nepal. The quantitative method is used to explain the magnitude of earthquake disaster and its effects upon affected communities. Qualitative research is to analyze the overall progress of reconstruction, accountability of government, roles played by political parties, banks and donor agencies to build back better. The data collected were tested through four different hypothesis set on effects of earthquake on built environment, roles played by stakeholders on reconstruction and rehabilitation and the knowledge about the disaster prevention to build back better through correlation, chi-square and basic statistical test using PSPP tool. The quantitative data proves that there is perfect correlation between the disaster regulation and reconstruction, highly significant relationship between the disaster prevention knowledge and factors influencing it. The qualitative researched highlighted the policy gap and weak governance as a major factor for incurring loss and need of integrated disaster management policy at present. The research has selected the sites based on the Post disaster need assessment published by the government of Nepal with clear demarcation of the districts as severely hit and crisis hit.***
Keywords: Disaster, Disaster management, roles of different stakeholders

I. INTRODUCTION

A. Background of the Study

Natural hazards on their own do not result in disaster but it is evident that the damage from disasters is increasing every year with tragic consequences for people and their livelihoods. Natural disaster not only destroys the cities or nations but the human beings as a whole and had a long term effects on social, cultural and economic life of the society. Disasters disproportionally affect the poor: vulnerable and marginalized groups, including women, children, the elderly, and people with disabilities, are at particular risk [1] From 1980 to 2010, Asia added over one billion people to its cities—more than all other regions combined—and another billion inhabitants are expected to live in urban areas by 2040 [2]. Much of this growth will take the form of informal settlements located in areas at risk given the limited availability and affordability of land in these cities, placing a significant number of particularly vulnerable households at risk [3]. Thus, there is need for actions to mitigate disaster risk linked to climate change, and urges countries to invest in resilience plans. Resilience should be further facilitated and enhanced through international and regional cooperation.

B. Statement of the Problem

There is no doubt that disasters in the recent past have become a major global concern and challenge. Increasing disasters are attributed to a number of factors, mainly of human origin, such as environmental degradation; rapid population increase with subsequent exponential expansion of urban centers and other related factors; all these leading to increased population vulnerabilities [4]. The trends of disasters are worrying in their nature, frequency and severity. The shortcomings in DRR are increasing since some governments have successfully adopted and implemented disaster risk reduction while others lagged behind. The major reason is being regarded as a consequence of weak governance and lack of political will [5].

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Despite this, in the academic literature, little attention has been given to the processes of governance of DRR, such as the formulation of policy and the roles of different stakeholders. In addition there is a lack of evidence on the effectiveness of different governance systems [6]. It is upon this premise that plans such as Hyogo Framework of Action (2005) and the Sendai Framework for Disaster Risk Reduction (2015) were developed as a way of having collective and coordinated efforts to deal with the aforementioned challenges. On the April 25th, 2015, Nepal was struck with 7.8 Richter scale destructive Earthquake at mid-day with epicenter at Gorkha killing 8786 people while 22303 were severely injured. Over 604,930 families lost their homes and 288,856 houses were damaged. Despite the implementation of building regulations long time before till today huge loss of life is incurred in both the rural and urban areas of Nepal. Thus, this paper aims to study the effects of earthquake on housing, implementation and effectiveness of preventive measures in rural area after disaster and the roles played by government and other stakeholders on promotion and implementation of disaster prevention strategies aimed for disaster risk reduction.

1) Objectives of the Study

a) To study effects of earthquake on selected rural communities, housing conditions and their coping mechanism.

b) To study the roles played by government and other stakeholders in promoting the preventive measures in selected areas.

c) To explore guidelines about recovery and reconstruction with particular emphasis on disaster prevention.

2) Research Questions

a) What are the effects of earthquake on housing and livelihood management?

b) What kind of preventive measures are being implemented at present?

c) How have governments of Nepal promoted the disaster prevention management in selected rural and urban areas?

C. Research Methodology

A Mixed method research with both quantitative and qualitative data is adopted and analyzed have been conducted. Quantitative research is applied to highlight how destructive the earthquake had been and to generate insight in the process of recovery in the selected areas. Qualitative research is implemented to analyze the implementation and effectiveness of preventive measures during housing reconstruction, overall progress of reconstruction, accountability of government, roles played by political parties, banks and donor agencies to promote disaster prevention strategies as well as analyze the effects of disaster on livelihoods and coping mechanism at present and their effectiveness. Purposive and snowball sampling techniques are adopted. For quantitative data, two hundreds respondents were selected and fifteen members including communities, government officials, politicians, donor agencies and experts were chosen for qualitative data. Structured questionnaires were used to collect the quantitative data whereas a check list of open ended questions was used to conduct the in-depth interview to collect the qualitative data. The analysis of quantitative data was made by hypothesis test and correlation analysis. Hypothesis test was made by Chi-square test with help of SPSS.

D. Conceptual Framework

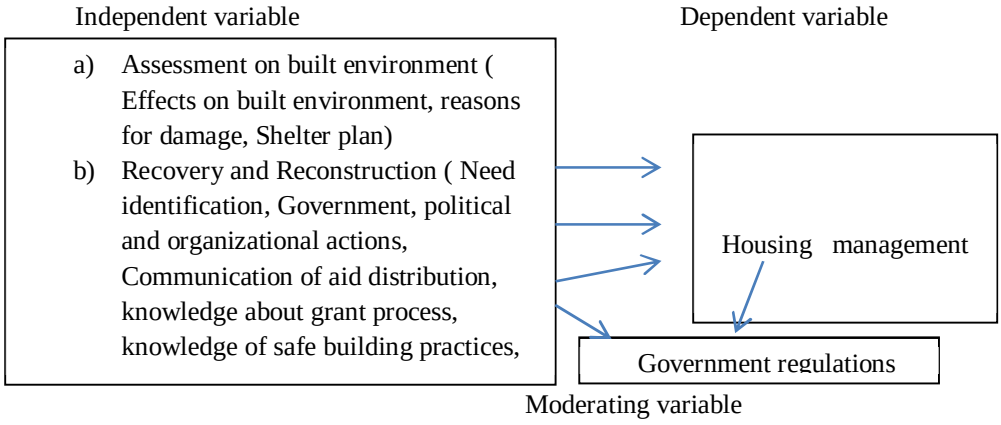

Figure 1, Conceptual framework

The conceptual framework composed of dependent, independent variables and moderating variables. Housing and livelihood management is the dependent variable and the factors influencing the housing and livelihood management are independent variables which are analyzed after earthquake on perspectives like types of effects on built environment and provision for housing and shelter and reasons for damages.

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Likewise the recovery and reconstruction explains the needs at present, political, organizational and government actions in reconstruction and recovery, communication of the aid and aid delivery mechanism with that of public satisfaction. The variables in livelihood management focus on effects on livelihood recovery, coping mechanism, organizational and government actions for livelihood recovery.

E. Hypothesis Test

H_0 = Government aid do not support reconstruction
H_1 = Government aid supports reconstruction
H_0 = Government regulation is not important in disaster management
H_2 = Government regulation is important in disaster management
H_0 = there is no relation between respondents knowledge on safe building practices and factors influencing their knowledge
H_3= There is relationship between respondents knowledge and factors influencing their knowledge on safe building practices

F. Limitation of the Study

The study is limited by time and space constraints.

G. Significance of the Study

Almost 70% of the losses estimated are shared by rural areas. It is because rural areas are always hard hit by the disasters like earthquake and rural areas are still unable to generate strong insight for disaster prevention The observation of the effects of earthquake shows that urban poor, particularly vulnerable population are hard hit by this disaster and there is a need to come up with policy tools and programmes to support them. On the other hand the failure of rural economy also brings migration and load to the urban economy. In this context this study is expected to provide momentum of civil society driven activities and private sector initiatives thus inspiring public- private partnerships, to build local capacity and capability against the natural disaster risk management; and to encourage sustainable development and the creation of a live able environment. However adequate evidences and area of work that is needed for future planning of recovery and reconstruction works in both rural and urban Nepal.

II. LITERATURE REVIEW

A disaster is a term describing a whole range of distress situations, both individual and communal. These include fires and drowning, earthquake and tornado, epidemics and starvation, heat and cold, rats and locusts [7]. Disaster management includes generic five phases, namely: (1) prediction (2) warning (3) emergency relief (4) rehabilitation and (5) reconstruction. Essential activities include: mitigation and preparedness, response and recovery are conducted in those phases [8]. There are five different approaches in housing reconstruction namely Cash approach, Owner driven approach, Community driven approach, Agency driven reconstruction in-situ and Agency driven reconstruction in relocated sites. The author has presented several instances as a case study among those five approaches and urged that owner-driven approaches is the best approach in post disaster housing reconstruction. It is because people can adopt and mobilize their resources according to the local context and can be creative in designing according to their preference with cash grants and technical assistance provided by the governments [9]. Roles played by Political Parties, Experts, Governments and Donor agencies in disaster risk management are always highly considered in any parts of the world. In the context of natural disasters, it is experienced that poorly perceived disaster management could lead to decreasing political trust and disasters that are managed successfully, however, could lead to stable or increasing levels of political trust. Scholars have identified an effect of political trust on disaster preparedness and management, arguing that people who have trust in political institutions will also assess the government's risk estimates as credible and accept their hazard policies. A low level of trust in public institutions therefore means that citizens may ignore the recommendations and disregard the information provided by these institutions [10]. However, a high level of trust in authorities can also imply that citizens believe in these institutions' capacity to control a natural hazard while low levels of trust are seen in combination with active citizens [11]. If individuals are confident they will receive sufficient aid from the government when a natural disaster occurs, they might not be motivated to take measures on their own [12]. A citizen's perception of the government's capacity to respond to and cope with a disaster can affect her assessment of the government, because the effects of disasters are considered part of the political responsibility of the government [13]. Human factor is more responsible factor for the incurred loss than the natural phenomenon in the urban areas of Kathmandu city. Thus an integrated and holistic approach with livelihood enhancement is needed to build back better by combining buildings with infrastructure provision and physical redevelopment [14].

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APPEL (Awareness and Preparedness for emergencies at local levels) is a theoretical approach developed by UNEP in the late 1980s to prepare communities against disasters by creating a responsive and well-resourced framework for action through the integration of the principles of good governance, transparency and genuine partnership between the disaster management agency and all stakeholders, especially the vulnerable community in order to increase their capability in managing the hazards affecting their community [15]. Behavioral theorist explains disasters as "the manifestation of ineffective social adjustment to the physical environment. To avoid the harmful effects of disasters, these theorists advocate technological responses to natural hazards or so called "technological fix" to the environment. Marginalization theories of disaster emphasize the differential degree of vulnerability among social classes, explaining disasters as the "interface between an extreme physical environment and a vulnerable human population". These theories were in part a response to the Guatemala earthquake in 1976, which hit slums more severely than other areas and was characterized as a "class quake." These theories have been criticized because they make poverty a necessary condition for natural disasters and presuppose that a high-income population has perfect scientific knowledge about risk and mitigation strategies, which has not always been confirmed empirically [16].

III. GORKHA

Gorkha Municipality was initially composed of only 15 wards including most of the rural areas but after the notifications by the government of Nepal in the year 2073, the total coverage of municipal area is extended to Taple and Deurali as a result now there are 14 wards in this municipality. However this study is focused on urban area in Gorkha district i.e Gorkha bazar is only the urban area in this municipality

A. Housing Damage in City core, Gorkha

Table 1. Severity of housing damage

Types of Damage	No.of respondents
Heavily damaged	50
Partially damaged	46
Minor effects	4

Source- Respondents interview

A series of damage assessment in Gorkha bazar area was conducted to understand the perception of the respondents against the effects of earthquake on their houses which they classified as fully damaged partially damaged or have normal effects or no effects. There were 50 respondents claiming themselves that their houses were fully damaged, 46 of them saying have a partially damaged house and 4 of them with no effects in their buildings. In total 96 of them were eligible for government financial support.

B. Provision for housing and Shelter

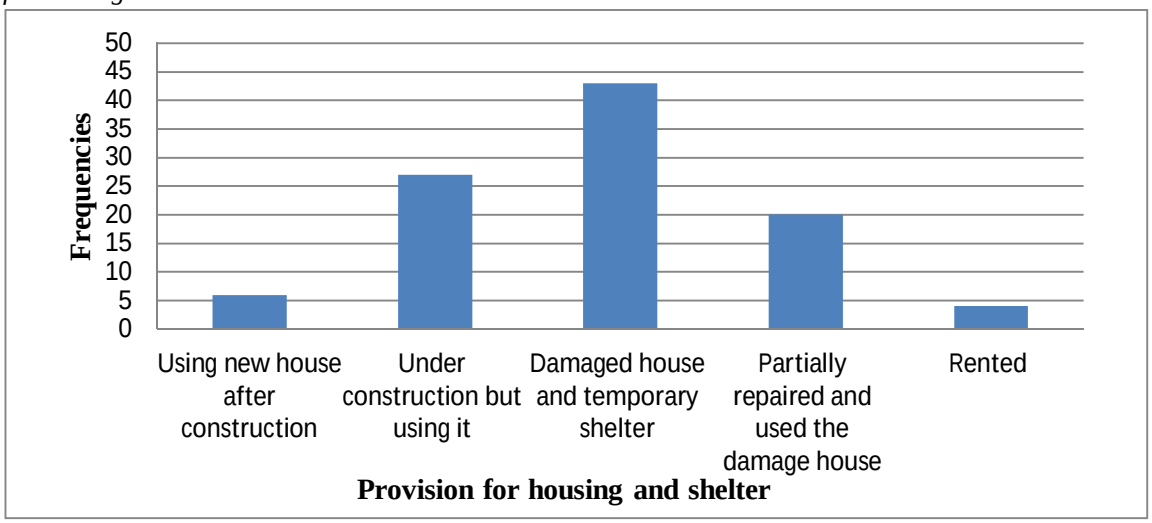

Figure 2, Provision for housing and shelter; Source - Respondents interview

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The post disaster housing management is explained with the help of diagram below. . There were 6 respondents who already have constructed their house and are using it completely, there were 27 respondents saying their house is under construction but they can use it for living purposes, 43 of them responded they are still using damaged house and the temporary shelter, 20 of them have partially repaired the originally damaged houses whereas 4 of them are under rented house.

C. Roles played by Political parties in Disaster Management

The roles played by the political parties during the time of aftermath to rescue and support them in setting the temporary shelter are highly appreciated by the public. Political parties have mobilized their youth teams to support the reconstruction work immediately after the aftermath. They were also the major source of information about the distribution of cash grants. The NRA's technical and bureaucratic approach to reconstruction did not allow for a formal role for political parties in the damage assessment, cash grant agreement and distribution processes, and various mechanisms established to collect complaints about the assessment and beneficiary lists as well as evaluate whether the construction of houses has followed the disaster prevention rules and regulations. This was found to have significantly reduced overall political party engagement in earthquake-related activities however the informal assistance provided by the local leaders of various political parties was highly appreciated by the affected communities. People expected them to be more engaged in solving the bureaucratic hassle especially in grant process. The recently elected local levels representatives have demanded to grant them the authority to oversee the post-earthquake reconstruction work. They have expressed their commitment to expedite the reconstruction work as the quake ravaged homes and rehabilitation of the displaced families were part of their campaign promises. They also claimed that they are capable enough to handle the managerial aspects in reconstruction, identify the genuine earthquake victims who were deprived from the list of beneficiaries and they are interested to take the full ownership of every aspect of reconstruction works. The elected representative also blamed that before the local level elections there was an active participation of Bureaucracy and thus people were forced to undergo through bureaucratic hassles which not only generated the public dissatisfaction but also minimized the roles of political parties.

D. Roles played by Banks and Insurance in disaster prevention

The respondents in Gorkha bazar has evaluated the roles played by the banks in five different categories. Majority of them.i.e.53 of them have pointed out through banks the government finance is mobilized as a result bank is facilitating to disburse the funds to the public once they fulfill the criterias set by the government regarding the new building construction. Only 3 of them have approached and received the subsidized loan for the reconstruction of houses as per the new building regulations in order to prevent the disaster. 5 of them have also issued the insurance coverage against the disaster however 20 of them have not approached the banks for either of the purpose and 19 of them claimed they were not eligible for bank loan since they do not have legal land documents and other necessary credentials for loan processing.

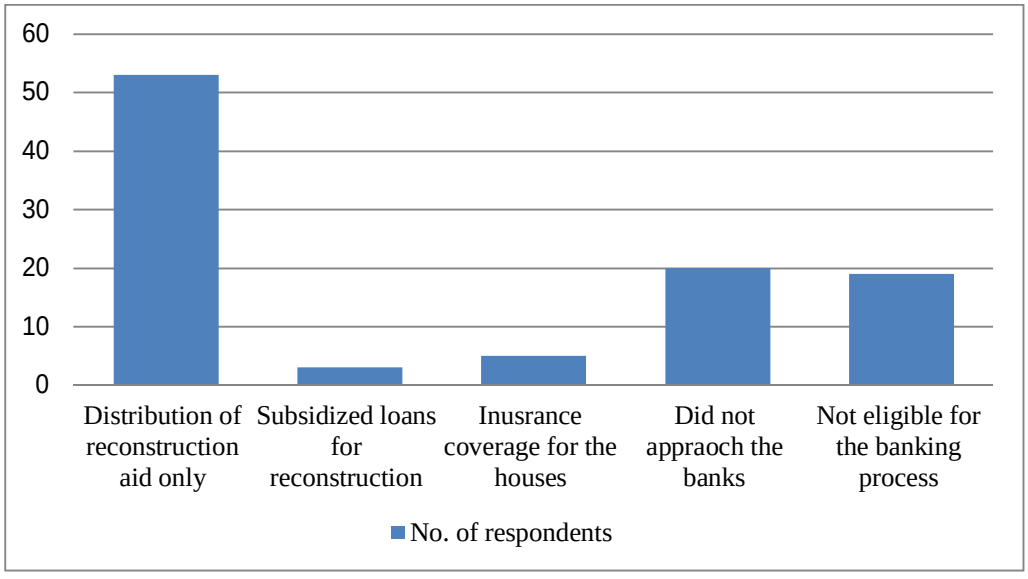

Figure 4.4.3.2 roles played by banks in disaster prevention.

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The field survey and qualitative interviews in the ministry offices and the interviews with the secretary of ministry highlighted an overlapping jurisdictions and confusion over which government office was responsible for what. This controversy has reflected the negative impacts in the banks. Also some of the participants in FGD suggested banks to be flexible with senior citizens and the female headed household since the real owners are working as a labor in foreign markets. During the FGD, some of them said that banks are processing easily and quickly the business loans whereas for the earthquake victims the roles of banks are limited only in aid delivery. But still it is problematic to those who are unable to visit the banks in person, those who are out of the country and those whose entry details has some differences in name and spelling. There is no any provision for loans to those people who are listed as a beneficiary to receive the government fund in practical. It is because the residents of Gorkha city mostly in the upper bajar areas compromise the dalit community who were fully dependent on daily wage basis work. Since their wage is not liable to pay the debts they are deprived from the bank loan for housing reconstruction. Also there were few respondents saying that they did 0 10 20 30 40 50 60 Distribution of reconstruction aid only Subsidized loans for reconstruction Inusrance coverage for the houses Did not appraoch the banks Not eligible for the banking process No. of respondents 70 not approach the banks for the loans. However to their knowledge they expressed that since we are the permanent residents of the municipality, I think banks are interested to provide a loan with collateral after the property valuation and it take some time. Publics were highly dissatisfied regarding the loan facility with banks. The interviews with the branch manager clearly highlighted that unless otherwise stated banks are not providing any kind of reconstruction loans to the public. Since BFIs are reluctant to support the earthquake victims without assurances from the government for the repayment, an internal borrowing is increased.

E. Roles played by Government/ Government Agencies

MoFALD along with the Ministry of Urban Development developed a policy after the damage and destruction by the earthquake named “Settlement Development Guideline (SDG)” to control haphazard construction of buildings and instructed municipalities for its strict implementation. Since the major effect of earthquake was loss of physical asset i.e. houses, Government of Nepal has enforced new building regulations and a directive was circulated to all the federal and local level to implement the new building regulations strictly. Furthermore, Government has collaborated with other organizations such as UNDP, USAID, and NSET to provide mason trainings so that both urban and rural parts of Nepal will build back better. There is a local self-governance act 1999 in Nepal which has granted an extensive and wider power to local government of Nepal to manage all kinds of issues locally hence we can say disaster preventions strategy is effectively implemented in Nepal. Besides, Government of Nepal had introduced the provision of subsidized loans about 3000 US dollar without collateral. There is also provision for subsidized loans of up to US dollar 15,000 outside the Kathmandu Valley, and up to 25000, inside the Valley with collateral.

F. Roles Played by donor Agencies

Some donor agencies have distributed the CGI sheet, water purifying kits, food, temporary toilets during that time as well as they are now supporting the public in construction of water tank for safe drinking water and few of them have also built temporary houses near durbar area. Most importantly based on the availability of space and materials they have organized a safe building construction training in cooperation and collaboration with local governments. In this training 65 masons and carpenters were completely trained and deployed in Gorkha city as well as neighboring places for safe building construction.

G. Bhaktapur

Bhaktapur Municipality is a smallest municipality in Nepal with an area of 6.89 Sq. Km. There are altogether 10 wards in the municipalities. The neighboring municipalities are Changunarayan Municipalities in east and North side, Madhyapur municipality in the west and Suryavinayak Municipality in the South. Almost all of the communities in the core city of Bhaktapur are Newar following Hinduism.

IV. HOUSING DAMAGE IN CORE CITY, BHAKTAPUR

Table 2. Damage of houses

Levels of damages	No. of respondents
Fully damaged	82
Partially damaged	3
Normal effects/ No effects	15
Total	100

Source- Respondent’s interview

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A series of damage assessment in Bhaktapur core city area was conducted to understand the perception of the respondents against the effects of earthquake on their houses which they classified as fully damaged, partially damaged or have normal effects or no effects. There were 82 respondents claiming themselves that their houses were fully damaged, 3 of them saying have a partially damaged house and 15 of them with no effects in their buildings. In total 100 of them were eligible for government financial support.

V. PROVISION FOR HOUSING AND SHELTER AT PRESENT

The bar diagram explains the provision of housing and shelter in Bhaktapur during the interview time. 60 of them have constructed a new house and currently are using it. 3 of them have partially repaired the house and are using it. 25 of them are using temporary shelter and are planning to reconstruct the house. 12 of them are under the originally damaged house which is not suitable to live in but mentioned that they are mostly the senior citizens only and cannot build the house soon.

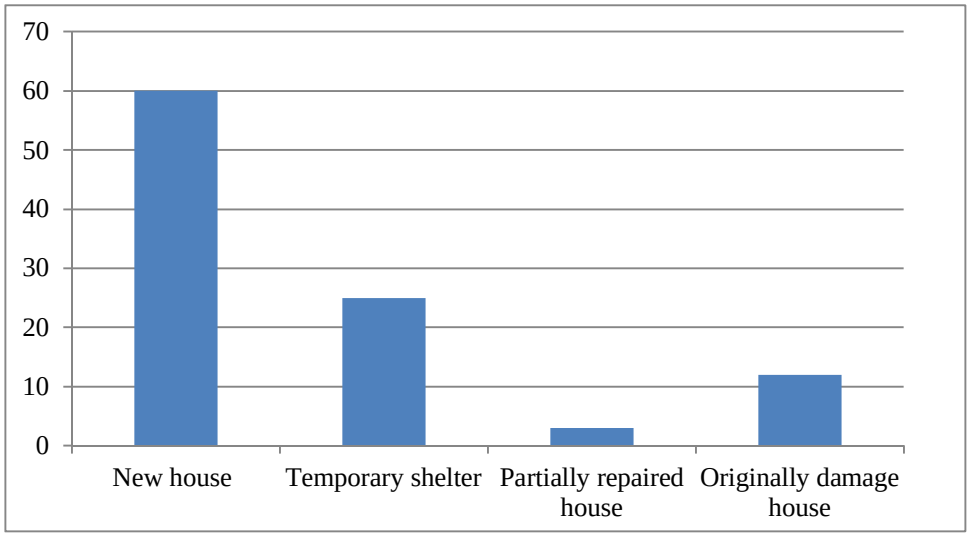

Figure 3 Provision for housing and shelter according to respondent's interview

VI. ROLES PLAYED BY THE POLITICAL PARTIES

The roles played by the political parties during the time of aftermath to rescue and support them in setting the temporary shelter are highly appreciated by the public. Political parties have mobilized their youth teams to support the reconstruction immediately after the aftermath. They were also the major source of information about the distribution of cash grants. The NRA's technical and bureaucratic approach to reconstruction did not allow for a formal role for political parties in the damage assessment, cash grant agreement and distribution processes, and various mechanisms established to collect complaints about the assessment and beneficiary lists as well as evaluate whether the construction of houses has followed the disaster prevention rules and regulations. This was found to have significantly reduced overall political party engagement in earthquake-related activities however the informal assistance provided by the local leaders of various political parties was highly appreciated by the affected communities. People expected them to be more engaged in solving the bureaucratic hassle especially in grant process. The recently elected local levels representatives have demanded to grant them the authority to oversee the post-earthquake reconstruction work. They have expressed their commitment to expedite the reconstruction work as the quake ravaged homes and rehabilitation of the displaced families were part of their campaign promises. They also claimed that they are capable enough to handle the managerial aspects in reconstruction, identify the genuine earthquake victims who were deprived from the list of beneficiaries and they are interested to take the full ownership of every aspect of reconstruction works. The elected representative also blamed that before the local level elections there was an active participation of Bureaucracy and thus people were forced to undergo through bureaucratic hassles which not only generated the public dissatisfaction but also minimized the roles of political parties. The core area of Bhaktapur city is rich in cultural heritage sites. Siddha pokharai, Bhaktapur Durbar Square, Dattatraya temples, old town in Bhaktapur are the important places in the core area of Bhaktapur. Bhaktapur Durbar Square is the one of the world heritage sites in Bhaktapur city. The earthquake created serious damages to the private housing as well as to these world heritage sites and other cultural heritage sites. In order to manage the world heritage sites and cultural heritage sites, municipality previously had implemented some policy regulations in housing construction but it was not much accepted by the publics. Once the earthquake aftermath has occurred now

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the policies are strictly implemented by the municipalities as a result there are few respondents who are not eligible to construct the house in their land due to new municipal regulations which has forced the people to live in the temporary shelter till the date. "However the rules are politically biased and those who can afford politically have started the construction" says Astaman kapali. On the other hand mayor of Bhaktapur municipality Mr. 118 Sunil Prajapati says "the case of Kapali will be solved very soon, as the municipal council is busy in amending some regulations".

VII. ROLES PLAYED BY THE GOVERNMENT

The MoFALD along with the Ministry of Urban Development developed a policy after the damage and destruction by the earthquake named "Settlement Development Guideline (SDG)" to control haphazard construction of buildings and instructed municipalities for its strict implementation. Since the major effect of earthquake was loss of physical asset i.e. houses, Government of Nepal has enforced new building regulations and a directive was circulated to all the federal and local level to implement the new building regulations strictly. Furthermore, Government has collaborated with other organizations such as UNDP, USAID, and NSET to provide mason trainings so that both urban and rural parts of Nepal will build back better. There is a local self-governance act 1999 in Nepal which has granted an extensive and wider power to local government of Nepal to manage all kinds of issues locally hence we can say disaster preventions strategy is effectively implemented in Nepal. Besides, Government of Nepal had introduced the provision of subsidized loans about 3000 US dollar without collateral. There is also provision for subsidized loans of up to US dollar 15,000 outside the Kathmandu Valley, and up to 25000, inside the Valley with collateral.

VIII. ROLES PLAYED BY BANKS AND FINANCIAL INSTITUTIONS

Banks and financial institutions have set up their branches in Bhaktapur city. Government of Nepal had introduced the provision of subsidized loans about 3000 US dollar without collateral. There is also provision for subsidized loans of up to US dollar 15,000 outside the Kathmandu Valley, and up to 25000, inside the Valley with collateral. The field survey in the ministry offices and the qualitative interviews with the secretary of ministry clearly proves that there is an overlapping jurisdictions and confusion over which government office was responsible for what. This controversy has reflected the negative impacts in the banks. During the FGD, it was found that banks are processing easily and quickly the business loans whereas for the earthquake victims the roles of banks are limited only in aid delivery. But still it is problematic to those who are unable to visit the banks in person, those who are out of the country and those whose entry details has some differences in name and spelling. There is no any provision for loans to those people who are listed as a beneficiary to receive the government fund. Publics were highly dissatisfied regarding the loan facility with banks. The qualitative interviews with the branch manager clearly highlighted that unless otherwise stated banks are not providing any kind of reconstruction loans to the publics. But in case, if there are customers willing to undergo the property valuation and are interested for the loans with collateral, banks can provide the loan but in normal interest rate which is equivalent to the term loans provided as a housing loan. Due to this reasons we can see an extensive borrowings from the relatives. Thus BFIs are reluctant to support the earthquake victims without assurances from the government for repayment.

A. Statistical Test

Table 3. Chi-Square Test

Building assessment	P- values	Assymp. Sig. (2 tailed)
Government aid supports reconstruction	18.6	0.063
Government regulations supports disaster management	16.26	0.032
Knowledge about safe building practices	19.75	0.011

Note: *P Value ≤ 0.05; **P Value ≤ 0.01; N = 200
Source – Respondent's interview

Table 3 shows that the relationship between gender and disaster management strategies being implemented in rural areas of Nepal. There is a significant relationship between the respondent's understandings about the government financial aid support and the objectives of the support and the government regulations about the new building construction at present. Similarly, there is highly significant relationship between respondent knowledge about safe building practices and factors influencing the knowledge nature of enterprise as the significance level are at 0.011. According to the Chi-square test, all the H1, H2 H3 and H4 are accepted.

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IX. CONCLUSION

Housing damage is serious in both urban areas of Gorkha and Bhaktapur districts. Post disaster reconstruction showed that respondents are familiar about the reasons for the destruction of houses and they have implemented the building code guidelines, consulted the engineers in order to mitigate the disaster.. In addition, the government financial supports, technical consultant available at local levels and earthquake resistant trainings from donor agencies have supported the strong implementation of disaster prevention strategies in urban areas of Nepal.

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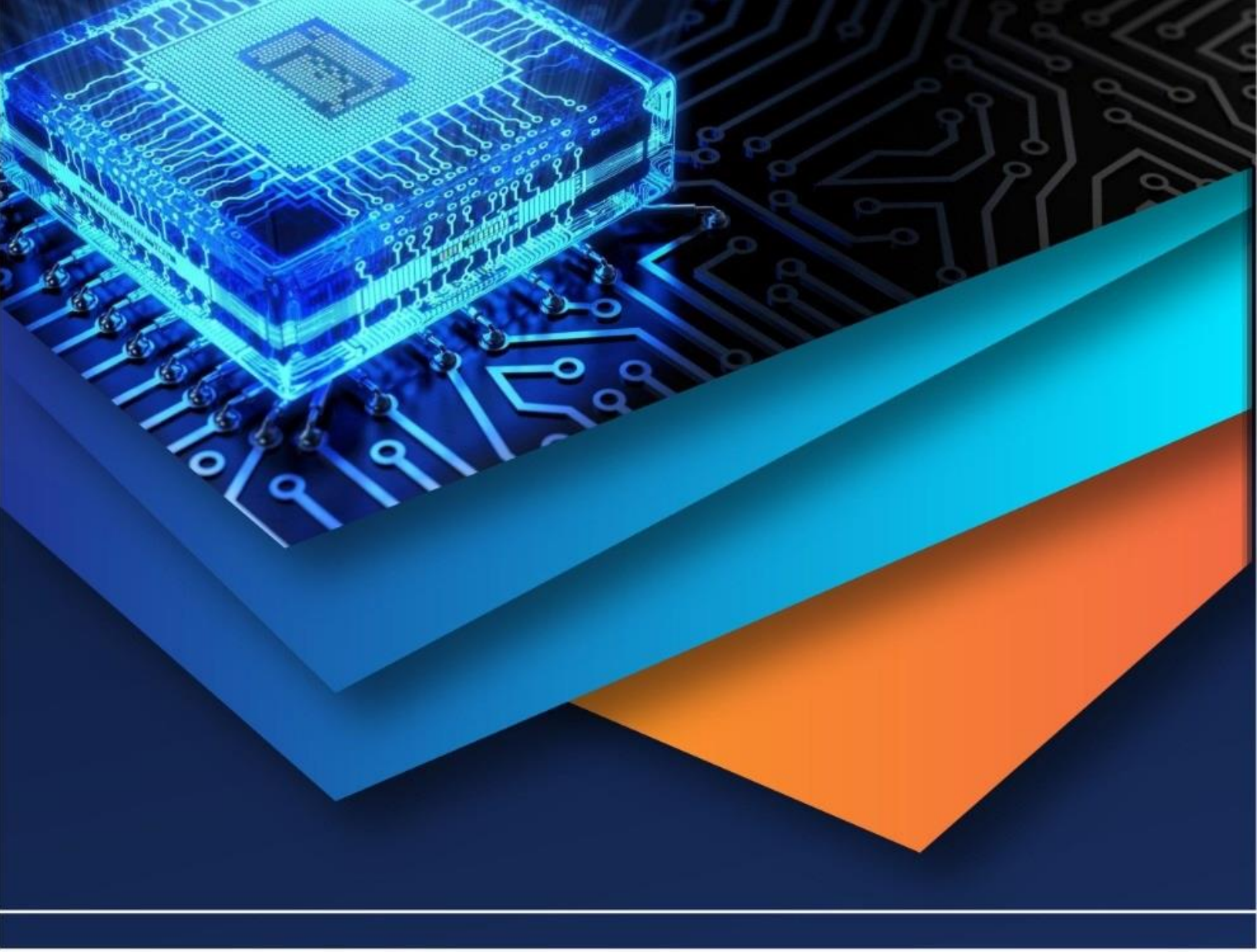

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