EFFECTS OF EARTHQUAKE-2015 ON TRANS BORDER TRADE:A STUDY OF TATOPANI, SINDHUPALCHOWK

A Thesis

Submitted to APF Command and Staff College,

Faculty of Humanities and Social Sciences

Tribhuvan University

In Partial Fulfillment of the Requirements

For Master's Degree in

Security, Development and Peace Studies

Submitted by

MADAN DHUNGANA

Eighth Batch (2079-2081)

Roll No.: 28 MSDPS 40054

TU Registration No.: 9-2-268-55-99

APF Command and Staff College

Sanogaucharan, Kathmandu, Nepal

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DECLARATION

I, MADAN DHUNGANA, declare that this thesis entitled **EFFECTS OF EARTHQUAKE-2015 ON TRANS BORDER TRADE: A STUDY OF TATOPANI, SINDHUPALCHOWK** submitted to APF Command and Staff College is my own original work unless otherwise indicated or acknowledged in the thesis. The thesis does not contain materials which has been accepted or submitted for any other degree at the University or other institution. All sources of information have been specifically acknowledged by reference to the author or institution(s).

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Date: May 2024

LETTER OF RECOMMENDATION

This thesis entitled **EFFECTS OF EARTHQUAKE-2015 ON TRANS BORDER TRADE: A STUDY OF TATOPANI, SINDHUPALCHOWK** has been prepared by MADAN DHUNGANA under my guidance and supervision. I hereby recommend it in partial fulfillment of the requirements for the Master's Degree in Security, Development and Peace Studies Tribhuvan University. I hereby recommend this thesis for the final evaluation and approval.

……

Prof. Dr. Ramesh Raj Kunwar

Thesis Supervisor

Date: May 2024

Government of Nepal Ministry of Home Affairs

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LETTER OF APPROVAL

This thesis entitled **"EFFECTS OF EARTHQUAKE-2015 ON TRANS BORDER TRADE: A STUDY OF TATOPANI, SINDHUPALCHOWK"** submitted by MADAN DHUNGANA to APF Command and staff College, Faculty of Humanities and Social Sciences, Tribhuvan University in partial fulfillment of Master Degree in Security, Development and Peace Studies has been approved by the undersigned members of the Evaluation Committee.

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Finally, this dissertation is not the outcome of my single individual result but was of all individuals mentioned in this acknowledgment text, although several efforts were made for its sharpening and to avoid mistakes but still may not be free from human errors. Therefore, although there are inputs from them all in preparation for this dissertation, I am solely responsible for all such errors.

Madan Dhungana

May 2024

ABSTRACT

Nepal endured a devastating earthquake on April 25, 2015, measuring 7.6 on the Richter scale, along with over 300 subsequent aftershocks. This event resulted in approximately 9,000 fatalities, 22,000 injuries, and inflicted damages totaling USD 7 billion. The overall impact of the earthquake, equivalent to roughly one-third of Nepal's gross domestic product, underscores the magnitude of the destruction. The objective of this study on Effect of Earthquake-2015 on Trans-Border Trade: A study of Tatopani, Sindhupalchowk was to illuminate several important aspects of earthquake and its effect on trade and economy. The study used a mixed method research design. The qualitative data was collected by KII and general interviews, observations, documents, and records. Whereas the quantitative data was gathered by instrument data, observational checklists, or numeric records from different government agencies. The fieldwork was conducted on March 2024, prior to that researcher has conducted pretest and the data collected from field survey with 135 probability clusters sampling of available population, 40 interviews, 10 KIIs and 3 FGDs were conducted with different stakeholders related to trans-border trade of Tatopani Border. The trend analysis of the trade before and after the earthquake was done by the data taken from the department of customs and Nepal Rastra Bank. The results of the study showed that the effect of the earthquake 2015 has adversely affected the trans-border trade at Tatopani damaging the infrastructures, closure of the border, and complete stoppage of the trans-border trade for more than 8yrs affecting revenue generation and ultimately affecting the national economy. However, the Government policies and regulations have effectively facilitated the recovery of Transnational Trade in Tatopani post-earthquake. The research also emphasized the importance of considering geographic and physical activity levels into account when revising ration. Additionally, the study revealed that despite the adverse effect on Tatopani border, the trade through Timure, Rasuwa has covered some part of the trans-border trade. The findings of the study highlight the crucial importance of building the earthquake resilience infrastructures in Tatopani for trans-border trade. Infrastructure development initiatives have improved the resilience of Transnational Trade routes in Tatopani against future seismic events. Ongoing infrastructure development efforts have faced delays, causing disruptions to Transnational Trade activities in Tatopani. The earthquake has highlighted the importance of strengthening cross-border trade partnerships and alliances in Tatopani. The Gorkha earthquake of 25 April 2015 enormously affected human, socio-economic and other multiple sectors and left deep scars mainly in the economy, livelihood and infrastructure of the

country. The study also pointed out some cross cutting issues like rebuilding efforts, geography, disaster and security and optimism for Revival. Chinese authorities are actively involved in rebuilding the Khasa Bazaar, which holds promise for revitalizing economic activity and cross-border trade in the area. It is one of the peaceful and regulated borders with very few security posts. Due to its high altitude, the government of Nepal has not been able to establish adequate checkpoints. According to APF Nepal Headquarters, there are only 09 Border outposts in Nepal- China frontier with disaster management trained team. The high altitude, rugged terrains are the major problems faced by security personnel in this region. Also, transporting necessary logistics and equipment is costly as airlift is required. There is no man-made boundary demarcation on land as indicated in the boundary treaties except for boundary pillars. There is optimism that once the reconstruction is completed, the foot traffic in the vicinity will gradually resume, breathing new life into economic transactions and cross-border trade. The Khasa market in Tibet, initially deserted after the earthquake, is experiencing a revival due to returnees Chinese inhabitants. The research reveals that the substantial economic disruption resulting from the closure of the Tatopani border due to the earthquake highlights the vulnerability of economic systems to natural disasters and changes in trading routes. Following the earthquake, a new trade point emerged, leading to a shift in trade activities.The shift of trade from Tatopani to Rasuwa helps to cushion the national economy from severe disruptions; it results in significant localized economic effects. These include new economic opportunities and infrastructure developments in the Rasuwa area, alongside potential economic challenges for the regions previously dependent on Tatopani.

Keywords: Earthquake, disruption, infrastructure, trans-border, trade

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LIST OF ACRONYMS AND ABBREBIATIONS

APF	Armed Police Force, Nepal
BBC	British Broadcasting Corporation.
BCPR	Bureau for Crisis Prevention and Recovery
CBS	Central Bureau of Statistics
CDPS	Central Department of Population Studies
CESIF	Centre for Social Inclusion and Federalism
DaLA	Disaster and Loss Assessment
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
DSO	District Survey Office
EONBC	Embassy of Nepal Beijing China.
FAO	Food and Agriculture Organization
FGD	Focus Group Discussion
FNCCI	Federation of Nepalese Chambers of Commerce and Industry
GDP	Gross Domestic Product
GLOF	Glacial Lake Outburst Flood
GoN	Government of Nepal
HDI	Human Development Index
HKH	Hindu Kush Himalayan
ICIMOD	International Centre for Integrated Mountain Development
INGO	International Non-government Organization
IOM	International Organization for Migration
KII	Key Informant Interview
LAPA	Local Adaptation Plans for Actions

MHT	Main Himalayan Thrust
MOFA	Ministry of Foreign Affairs Nepal
MOHA	Ministry of Home Affairs
MOIAL	Ministry of Internal Affairs and Law
MoPE	Ministry of Population and Environment
NAPA	National Adaptation Program of Action
NDRF	National Disaster Response Framework
NGO	Non-government Organization
NPC	National Planning Commission
NPR	Nepalese Rupees
NRRC	Nepal Risk Reduction Consortium
NSDRM	National Strategy for Disaster Risk Management
OECD	Organization for Economic Co-operation and Development
PDNA	Post Disaster Needs Assessment
SAWTEE	South Asia Watch on Trade, Economics and Environment
UNDAC	United Nations Disaster Assessment and Coordination
UNDP	United Nations Development Program
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
UNISDR	United Nations Officer for Disaster Risk Reduction
USD	United States Dollars
USGS	United States Geological Survey
WHO	World Health Organization
WTO	World Trade Organization

CHAPTER I

INTRODUCTION

1.1 Background of the study

Nepal, situated between India and the Tibet Autonomous Region of China, is a landlocked country covering an area of 147,516 square kilometers. Its territory extends 885 kilometers from east to west and 193 kilometers from north to south. As of the 2021 census, the population stands at 29 million, with a growth rate of 0.92% annually and an absent population of 2.2 million. Geographically, Nepal lies between latitude and longitude coordinates of 26’22’ to 30’27’ North and 80′ 4′ to 88′ 12′ East. The country's topography ranges from the world's deepest gorge, the Kali-Gandaki, to the highest point on earth, Mount Everest, standing at 8848.86 meters (MOFA, 2024).

Nepal's distinctive geographical characteristics, marked by elevated terrain, rugged landscapes with steep inclines, significant seismic activity, and concentrated monsoon precipitation, make its environment highly vulnerable to a range of hazards and disasters. The nation ranks 20th, 4th, 11th, and 30th in terms of multi-hazard, climate change, earthquake, and flood risk, respectively. Instances of catastrophic events like the 1993 flood, 2014 landslide, 2015 earthquake, and 2017 flood underscore the profound multi-hazard risk faced by Nepal (Khatakho et al., 2021). According to the Disaster Risk Reduction and Management Act of 2017, natural disasters encompass phenomena such as snowfall, hailstorms, avalanches, Glacier Lake Outburst Floods (GLOFs), continuous rainfall, droughts, floods, landslides, soil erosion, inundations, storms, tornadoes, extreme temperature fluctuations, lightning, earthquakes, volcanic eruptions, wildfires, or similar natural occurrences.

On April 25, 2015, Nepal endured a devastating earthquake measuring 7.6 on the Richter scale, along with over 300 subsequent aftershocks. This event resulted in approximately 9,000 fatalities, 22,000 injuries, and inflicted damages totaling USD 7 billion. The overall impact of the earthquake, equivalent to roughly one-third of Nepal's gross domestic product, underscores the magnitude of the destruction (NPC, 2015).

The agriculture sector, crucial for livelihoods in many earthquake-impacted regions, incurred a substantial loss estimated at approximately NPR 28.4 billion (NPC, 2015). The tourism

industry suffered significantly, witnessing extensive damage or destruction to infrastructure and a sharp decline in visitor numbers. The earthquake's impact extended across various sectors including agriculture, livestock, tourism, trade, and industry, affecting the overall economic landscape. Under such circumstances, any administration would confront a significant challenge in the endeavor to recover, rejuvenate, and stimulate both livelihoods and the economy (Rasul, 2015).

1.1.1 Disaster

The term "disaster" originated from the Greek word "Disaster," which combined "dus," meaning bad, and "aster," meaning star. Therefore, disaster, or "Bad Star" in Greek, originated from an astrological concept where ancient civilizations referred to the destruction or downfall of a star as a disaster (Braga et al., 2008). Nepal, known as one of the most disaster-prone countries in South Asia, faces a range of natural hazards that cause significant damage to infrastructure and result in loss of lives and property. Among the most devastating natural hazards in Nepal are floods, landslides, earthquakes, and urban fires (Talchabhadel & Sharma, 2023).

Successful disaster management relies on clearly outlined policy strategies, legal frameworks, and institutional responsibilities throughout the four stages of disaster management: preparedness, response, recovery, and mitigation. It is essential to involve various stakeholders and communities simultaneously throughout different phases of a disaster. Inadequate disaster management policies and implementations increase the risk and magnitude of disasters.

Figure 1.1

Disaster Management Cycle

Source: DRRM Act (2074)

In Nepal, there are numerous instances of one type of natural hazard leading to another hazardous event. For instance, a significant landslide in Jure village on August 2, 2014, obstructed the Sunkoshi River, forming a landslide dam. After 37 days, the dam burst, causing a flash flood that inflicted severe damage to houses located over 6 km downstream in the valley. Similarly, the 2015 Gorkha earthquake and its aftershocks triggered numerous landslides and avalanches, with the most notable being a debris avalanche that engulfed several villages in the Langtang Valley. Additionally, Nepal experiences recurrent serial hazards, such as floods and landslides, which occur regularly during the monsoon season (June–September).

1.1.2 Earthquake

The term "earthquake" encompasses both the abrupt movement along a fault line and the subsequent tremors and seismic energy emitted due to this movement, as well as seismic activity resulting from volcanic eruptions, magma activity, or sudden shifts in stress within the Earth (USGS, 2020).

An earthquake is characterized as the trembling of the Earth caused by waves traveling both on and beneath its surface, resulting in surface faulting, vibrations, tremors, liquefaction, landslides, aftershocks, and/or tsunamis.

1.1.3 Major Earthquakes of the world

The top 10 largest earthquakes documented in history occurred across diverse regions and years, each leaving a profound impact on the affected areas. In 2012, an immense 8.6 Mw earthquake struck off the coast of Banda Aceh, Indonesia, closely followed by another registering 8.2 Mw, instigating panic but resulting in minimal damage. The Aleutian Islands experienced a devastating 8.6 Mw earthquake in 1946, triggering a destructive tsunami that wrought havoc, particularly in Hawaii. In 1950, India and Tibet were rocked by an 8.6 Mw earthquake, leading to landslides and significant loss of life. Rat Island in the Aleutian chain witnessed an 8.7 Mw earthquake in 1965, generating a sizable tsunami but causing limited damage due to its remote location. Chile grappled with an 8.8 Mw earthquake in 2010, causing extensive destruction and prompting tsunami alerts across several nations. In 1952, Severo-Kurilsk, Russia, endured an 18-meter tsunami following a massive earthquake, resulting in catastrophic consequences. The Tohoku earthquake and subsequent tsunami in Japan in 2011, measuring 9.1 Mw, resulted in catastrophic damage and a nuclear crisis at

Fukushima Daiichi. Sumatra, Indonesia, faced a 9.1 Mw earthquake in 2004, triggering a deadly tsunami that claimed countless lives across Asia. Alaska experienced a 9.2 Mw earthquake in 1964, causing widespread devastation and remains the most powerful earthquake in U.S. history. Lastly, the largest earthquake on record occurred in Valdivia, Chile, in 1960, registering at 9.5 in magnitude, leading to extensive destruction, tsunamis, and volcanic eruptions. These earthquakes, ranging from magnitudes 8.6 to 9.5, serve as stark reminders of the Earth's formidable force and the potential for catastrophic outcomes (Cutmore, 2024). A compilation of major earthquakes since 1960 is provided in Appendix I.

1.1.4 Major Earthquakes of Nepal

Nepal is situated in the central part of the Himalaya Range, renowned as one of the most seismically active regions globally. Throughout history, Nepal has endured numerous devastating earthquakes. The earliest documented earthquake in Nepal dates back to 1255 A.D. / 1310 B.S. (Mw 7.8), followed by seismic events in 1260 A.D. / 1316 B.S. (Mw 7.1), 1408 A.D. / 1463 B.S. (Mw 8.2), 1681 A.D. / 1737 B.S. (Mw 8.0), 1810 A.D. / 1866 B.S., 1823 A.D. / 1880 B.S., 1833 A.D. / 1890 B.S. (Mw 8.0), 1934 A.D. / 1990 B.S. (Mw 8.1), 1980 A.D. / 2037 B.S. (Mw 6.5), 1988 A.D. / 2045 B.S. (Mw 6.9), 2011 A.D. / 2068 B.S. (Mw 6.9), and 2015 A.D. / 2072 B.S. (Mw 7.8). These seismic occurrences are primarily attributed to the subduction of the Indian plate beneath the Eurasian plate. This subduction process leads to convergence, which is manifested as strain accumulation along the plate boundary, resulting in earthquakes of varying magnitudes (Chaulagain et al., 2017).

1.1.5 Gorkha Earthquake-2015

An earthquake of magnitude M7.8 struck Gorkha district in Nepal on 25 April at 11:56 local time. The epicenter was at Barpak VDC (Village Development Committee) about 80 km NW of Kathmandu – 28.250°N latitude and 84.116°E longitude. The main shock was followed by many aftershocks, 421 of them with a magnitude ≥ M4 (up to 31 December 2015). Four aftershocks had a magnitude greater than M6.0, including one of magnitude, M7.3 on 12 May -17 days after the first big earthquake - with epicentre in Sindhupalchowk district. Many of the arge aftershocks occurred to the east of the main shock. The earthquake occurred as a result of faulting confined to the subsurface approximately 14 km deep near the foothills of the Himalayan range. The fracture propagated about150 km to the east and 60 km to the south of Barpak (Shrestha et al., 2016).

The 2015 earthquake was a powerful seismic event that rocked the mountainous and Himalayan areas of central Nepal on April 25, 2015. Its tremors reverberated across central and eastern Nepal, spanning much of the Ganges River plain in northern India, as well as northwestern Bangladesh, and southern regions of the Plateau of Tibet and western Bhutan. The initial jolt, measuring a magnitude of 7.8, occurred shortly before midday local time. Its epicenter was approximately 34 kilometers east-southeast of Lamjung and 77 kilometers northwest of Kathmandu, with a depth of approximately 15 kilometers underground. Following the main quake, the region experienced two significant aftershocks, measuring magnitudes 6.6 and 6.7, within an hour, along with numerous smaller aftershocks in the ensuing days (Rafferty, 2024).

The 2015 earthquake resulted in the loss of about 9,000 lives, with many thousands sustaining injuries, and over 700,000 structures in Kathmandu and neighboring towns suffered varying degrees of damage or were completely demolished (Rafferty, 2024). Following the earthquake, numerous individuals were left homeless, and entire villages were leveled across multiple districts in the country. Centuries-old structures at UNESCO World Heritage sites in the Kathmandu Valley, such as those at Kathmandu Durbar Square, Patan Durbar Square, Bhaktapur Durbar Square, Swayambhunath Stupa, Changu Narayan Temple, and Bauddhanath Stupa, were destroyed.

1.1.6 Trade

Trade entails the exchange of goods and services between individuals or entities, typically in return for monetary compensation. Economists characterize the framework or infrastructure facilitating this exchange as a market. Trade serves as a catalyst for economic expansion, generating employment, alleviating poverty, and fostering economic prospects (The World Bank, 2023).

1.1.7 Trans-Border Trade

The OECD defines trans-border trade in goods and services as the exchange of goods and services between residents and non-residents. This trade is quantified in USD, typically represented as a percentage of GDP for net trade (the difference between exports and imports in value), and also in yearly growth rates for both imports and exports. Trans-border trade is a pivotal and dynamic element of the global economy, facilitating the movement of goods,

services, and capital across international borders. It plays a crucial role in shaping economic interactions and impacting the prosperity of nations.

1.1.8 International Trade Theory

Trade involves the interchange of goods and services among multiple countries. International trade theories encompass various explanations for this phenomenon. Nations participate in international trade for two primary purposes, both of which enhance their benefits from trade. This engagement stems from differences among countries in factors such as resources, technology, geography, and human capital, alongside a desire to attain production economies of scale (Krugman & Obstfeld, 2003).

Approximately 5,200 years ago, Uruk, located in southern Mesopotamia, emerged as one of the earliest known cities globally, with a population exceeding 50,000 people enclosed within its six-mile perimeter wall. Benefitting from sophisticated irrigation techniques, Uruk experienced thriving agriculture, which led to the emergence of an innovative group of intermediaries facilitating trade. This collaborative network established foundational trade practices that endured for over 6,000 years, significantly influencing the trajectory of human development.

There are two main categories of international trade-classical, country-based and modern, firm-based as presented in the table below:

Table 1.1

International Trade Theories

S.N.	Classical Country-Based Theories	Modern, Firm-Based Theories
1.	Mercantilism	Country Similarity
2.	Absolute Advantage	Product Life Cycle
3.	Comparative Advantage	Global Strategic Rivalry
4.	Heckscher	Porter's National Competitive Advantage

Source: Soares (2007)

Over time, international trade theories have undergone significant evolution, encompassing classical country-based theories such as Mercantilism, which prioritize wealth accumulation

through exports, and modern firm-based theories like Country Similarity, which emphasize trade between nations sharing similar attributes (Kumar et al., 2023).

Classical theories, including Absolute Advantage and Comparative Advantage, emphasize specialization based on efficiency and opportunity costs. Modern theories, like Product Life Cycle and Global Strategic Rivalry, focus on product lifecycle and competition among firms. The Heckscher-Ohlin model highlights factor endowments, while Porter's National Competitive Advantage considers national conditions. These theories collectively offer frameworks for understanding international trade dynamics (Bharat et.al).

1.1.9 Trade Policy of Nepal

Nepal's trade and industrial policies have undergone three distinct phases since the post-war era, transitioning from a period of free trade (1923-1956) to a progressively protectionist stance (1956-1985), and eventually embracing openness and liberalization from 1985/86 onwards. In 1982, Nepal shifted towards a liberal trade policy, introducing a new framework aimed at incentivizing private entrepreneurs to invest in the development and expansion of the export sector. This policy overhaul aimed to facilitate greater access to international markets, marking a significant departure from previous protectionist approaches.

The longstanding and profound ties between Nepal and the People's Republic of China have endured over time, marked by a history of friendship and warmth. Fisher's study on Trans-Himalayan Traders in the 1980s sheds light on the intricate economic and cultural exchanges practiced by Nepali communities, notably through two significant trade routes: the grain-salt-rice circuit and the increasingly favored commodities circuit. According to Embassy of Nepal Beiging, these exchanges reflect the enduring bilateral relations between Nepal and China, which have evolved since ancient times, dating back to figures like Nepali monk and scholar Buddhabhadra in the early 5th century, Princess Bhrikuti in the first half of the 7th century, and Araniko (Anige) in the latter half of the 13th century, as well as early visits by Chinese monks and scholars such as Monk Fa Xian during the Jin Dynasty and Monk Xuan Zang during the Tang Dynasty, among others (MOFA, 2024).

On August 1, 1955, the two nations formalized their relationship by establishing diplomatic ties. Throughout their history, the relations between these countries have been characterized by warmth, mutual understanding, support, cooperation, and a respect for each other's concerns. Both nations uphold the principles of the Five Principles of Peaceful Coexistence

with unwavering faith. Nepal maintains a strong commitment to the One China policy and pledges not to permit its territory to be used for any activities hostile to China. Covering a span of 1,414 kilometers along the Himalayan range on Nepal's northern border, the two countries share a significant border. Nepal operates an embassy in Beijing, along with consulates general in Lhasa, Hong Kong, and Guangzhou, as well as an honorary Consul in Shanghai (MOFA, 2024).

1.1.10 Trade and Geography

Tatopani, situated approximately 115 kilometers northeast of Kathmandu along the Nepal-China border, serves as a pivotal juncture. Historically, it marks the origin of the renowned caravan trail to Lhasa and has functioned as the primary overland trade route with China ever since the inauguration of a highway connecting Kathmandu in 1967. China holds the position of Nepal's second-largest trading partner. In the fiscal year 2022-23, Nepal recorded exports to China valued at Rs 1.76 billion, while imports from China amounted to Rs 222.71 billion (Tiwari, 2023).

Trade flows, encompassing both imports and exports, experience more adverse impacts when natural disasters strike countries characterized by low-quality institutions or limited political freedom ((Dallmann, 2019; Felbermayr & Gröschl, 2013).This susceptibility is attributed to the level of resilience exhibited by these nations. Robust institutional frameworks tend to foster economies that are relatively resilient in the face of natural calamities and climatic fluctuations. Correspondingly, the repercussions on imports and exports tend to be more detrimental in economically disadvantaged nations ((Barua, 2018; Li et al., 2015), although Pascasio et al. (2014) do not support this observation. Additionally, countries with small geographical footprints and exporters situated in proximity to the equator or in regions with warmer climates encounter more adverse effects on their trade flows (Dallmann, 2019; Li et al., 2015).

Traditionally, salt, a vital commodity for humans, was imported from Bhot and more recently from the easily accessible South. This shift has significantly transformed the entire system of Tarangpur in terms of socio-economic, religious, political, and geographical aspects. The series of transactions related to this commodity has long been termed the "salt-circuit," connecting various elements such as geography, religion, altitudes, cultures, and languages (Fisher, 1986).

Nepalese traders from Kathmandu have been trading with Tibet since the Malla dynasty, between 1645 and 1650, Kathmandu signed a trade treaty with Tibet, enabling Nepali traders to set up businesses in Tibet and granting them exemption from government taxes. Additionally, Tibet agreed to use Nepali currency, and a Nepalese mission led by a government representative (wakil) was established in Lhasa (Rose, 1975). Nepal facilitated transit trade between Tibet and India, with goods exchanged via the Kuti and Keyrong route. This arrangement persisted until 1903 when the opening of the Chumbi Valley-Nathu La Pass route led to the cessation of transit trade through Nepal (Adhikari, 2010).

Trade between Nepal and China dates back to ancient times, facilitated by various border points such as Kodari-Nyalam, Rasuwa-Keyrong, Yari (Humla)-Purang, Olangchunggola-Riwu, Kimathanka-Riwu, and Nechung (Mustang)-Lizi. However, beyond these established border crossings, trade also occurs through numerous traditional passes, totaling around forty. Within a 30-kilometer radius from the border, residents are permitted to engage in traditional barter-based trade. Among the official land routes, Kodari-Nyalam and Rasuwa-Kerong serve as crucial points for international trade. Presently, due to the COVID-19 pandemic, there are restricted quotas for vehicles traveling from China to Nepal via these land routes (EONBC, 2024).

1.1.11 Sindhupalchowk District

Sindhupalchowk district extends in between latitude of 270 27’ to 280 13’ North and longitude of 850 27’ to 860 06’ East. It covers approximately 1.69% land of whole country. In terms of area, it is the largest district of Bagmati Province with an area of 2,489 Sq. Km. It is surrounded by Rasuwa district and Autonomous Region of China (Tibet) in the north, Ramechhap and Kavrepalanchowk districts in south, Dolakha district in east and Kathmandu and Nuwakot district in west. Sindhupalchowk district is divided into 12 local levels including 3 (Chautara Sangachowk Gadhi, Melamchi and Bahrabise) municipalities while and 9 (Indrawati, Bhotekoshi, Sunkoshi, Balephi, Tripurasundari, Panchpokhari Thangpal, Jugal, Helambu and Lishankhupakhar) rural municipalities (DSO, 2024).

The district has been distributed from 746-meter (2,450 feet: Sunkoshi riverbank of Chautara Sangachowk municipality) above from sea level to 7,083 (23,238 feet: Langpoghyan peak) altitude and the altitude of the district headquarter- Chautara is 1,418 meters. The average east-west width of the district is 49.38 km, whereas the north-south length is 53.06 meter.

The district is bounded by Dolakha District and Tibet in east; Nuwakot and Rasuwa Districts in west; Rasuwa District and Tibet in north and Kavrepalanchowk, Kathmandu and Ramechhap Districts in south.The total death toll close to the epicenter in Barpak VDC was 72, nearly 70% of them women and girls, and about 70% children (9 years and below) and the elderly (60 years and above). Almost all the houses in Barpak VDC were destroyed, 1,365 of 1,400. Among the districts affected, loss of life was highest in Sindhupalchok to the east with more than 3,573 people killed (GON, 2015).

Nepal is recognized as one of the most disaster-prone nations with Sindhupalchowk district emerging as particularly susceptible to various calamities over the past eight years. This district has witnessed a series of significant hazards, including the Jure landslide that blocked the Sunkoshi River in 2014, the devastating Gorkha earthquake in 2015 claiming 3,500 lives in this area alone, the Bhotekoshi Glacial Lake Outburst Flood (GLOF) damaging hydropower infrastructure in 2016, and the Melamchi Flood in 2021, which resulted in 25 fatalities and inflicted severe damage on the drinking water supply project. These consecutive catastrophic events, characterized by their high magnitude, have exacted a heavy toll on both human lives and infrastructure, imposing substantial economic costs. The government has grappled with the challenge of comprehending the underlying factors contributing to these disasters.

According to the Disaster Risk Reduction (DRR) portal of the Government of Nepal (GoN), analysis of past disaster events and associated loss and damage data reveals that earthquakes, landslides, floods, fires, and thunderbolts are the primary five disasters in the Sindhupalchowk district. The data also underscores the district's susceptibility to multiple hazards, including seismic events (earthquakes and landslides), hydro-meteorological and climatic hazards (floods, landslides, and thunderbolts), and human-induced hazards (fires). Major disaster events in Sindhupalchowk over the last decade include the Jure landslide in 2014, the Gorkha earthquake in 2015, the Bhotekoshi Flood in 2016, the Tatopani Bhotekoshi flood and landslide, the Lidi Multi-Hazard Assessment and Vulnerability Mapping of Sindhupalchowk District Landslide in 2020, and the Melamchi flood in 2021. Additionally, fires and thunderbolts are recurrent disasters in the district.

1.2 Statement of the Problem

The closure of the northern border at Tatopani in the aftermath of the 2015 earthquake had a profound impact on the longstanding trade route between Nepal and China, disrupting a vital channel for commerce and economic activity in the region. Prior to the earthquake, Tatopani played a pivotal role as the gateway for a flourishing exchange of goods, enabling the export of various Nepali products to key Chinese markets such as Khasa, Lhasa, and Shigatse. However, the post-earthquake resumption of trade has been beset by challenges, with exports virtually grinding to a halt due to restrictions imposed by the Chinese government, despite a surge in imports through the Tatopani border point.

This unbalanced trade flow has exacerbated Nepal's trade deficit with China, placing considerable strain on the national economy. The trade imbalance has only widened over time, with imports from China far surpassing exports from Nepal. Consequently, Nepal's economy is facing increasing pressure, compounded by the limited revenue generated from exports and the rising costs associated with imports.

The current scenario underscores the urgent need to address the effects of one-sided trade on Nepal's economy and to formulate effective strategies for rejuvenating and balancing trade relations with China. It is imperative to identify optimal mechanisms and approaches to facilitate the revival of two-way trade through the Tatopani border point. Such strategies should tackle regulatory barriers hindering Nepali exports to China, address infrastructure constraints affecting trade operations, and consider the broader economic ramifications of the trade deficit.

1.3 Research Questions

This research was guided by the following research questions:

a) What was the flow of Trans Border Trade before Earthquake-2015?

b) What was the status of Trans Border Trade which resumed after earthquake-2015?

c) How the Trans-Border Trade from Tatopani has been impacting on Economy?

1.4 Objectives of the study

The overall objective of the study was to understand how the earthquake-2015 affected on the trans-border trade from Tatopani, Sindhupalchowk district of Nepal. The specific objectives of this study were the following:

a) To explore the flow of Trans - Border Trade before Earthquake-2015

b) To examine the status of Trans - Border Trade which resumed after earthquake-2015

c) To assess the impact of Trans - Border trade from Tatopani on economy

1.5 Significance of the Study

By studying the effects of earthquake 2015 on trans-border trade of Tatopani, Sindhupalchok. We can explore the flow of trans-border trade before earthquake-2015, examine the status of trans-border trade which resumed after earthquake-2015 and assess the impact of trans-border trade from Tatopani on national economy. It can gain insights to effective strategies employed by the concerned authorities and stakeholders and the knowledge can contribute to the smooth flow of trans-border trade and a contributing to the growth of national economy.

1.6 Limitations of the Study

Every research has its limitation; similarly, this study is also not free from limitations and constraints. This study was not incorporate overall nature, dynamics and trend of trans-border trade. This study is limited within the effects of earthquake in trans-border trade and data collection covers mostly the border area. Due to the time constraint for field work, the research has covered only the disaster and post disaster trade scenario from Tatopani border point of Sindhupalchowk district of Nepal.

1.7 Summary

This chapter sets the context of the study. It outlines the context, research problem, objectives, limitation and organization of the study. The key argument of this thesis is that disasters like an earthquake can have far-reaching consequences. The three objectives set up in this study are; to examine the socio Economic and demographic context of the affected population, to explore the Nepal suffered a massive loss of lives and property on 25 April

2015, when a devastating earthquake magnitude of 7.6 struck the country. Subsequent aftershocks, including one magnitude which was 7.3 near the Chinese border on 12 May caused additional losses of life and property. The affected public property was, such as; roads, schools, utilities, heritage monuments, and hospitals.

The closure of the northern border at Tatopani in the aftermath of the 2015 earthquake had a profound impact on the longstanding trade route between Nepal and China, disrupting a vital channel for commerce and economic activity in the region. Prior to the earthquake, Tatopani played a pivotal role as the gateway for a flourishing exchange of goods, enabling the export of various Nepali products to key Chinese markets such as Khasa, Lhasa, and Shigatse. In this context, it is necessary to examine earthquake-induced closure of Tatopani border and effect on trans-border trade. This research is not free from constraints and limitations therefore, it will also create additional opportunities for the scholars who are interested in similar aspects.

CHAPTER II

REVIEW OF LITERATURE

An effective and well conducted review as a research method creates a firm foundation for advancing knowledge and facilitating theory development (Webster &Watson, 2002). There are as many as fourteen types of literature reviews have been described (Grant & Booth, 2009). They are critical review, literature review, mapping review/systematic map, meta-analysis, mixed studies review/mixed methods review, overview, qualitative systematic review/qualitative evidence synthesis, rapid review, scoping review, state-of-the-art review, systematic review, systematic search and review, systematized review and Umbrella review. A simple analytical framework-Search, Appraisal, Synthesis and Analysis (SALSA) was used to examine the main review types. Fourteen review types and associated methodologies have to analyze against the SALSA framework to best match of review work.

A systematic review can be explained as a research method and process for identifying and critically appraising relevant research, as well as for collecting and analyzing data from said research (Liberati et al., 2009). Mixed methods literature reviews (MMLRs) are distinct in that they summarize and integrate findings from qualitative, quantitative, and mixed methods studies via qualitative and/or quantitative methods (Leeman et al., 2015). The major books, articles and reports of various authors and institutions was be studied and referred in this paper as follows:

Haimendorf (1975) conducted pioneering fieldwork that shed light on trans-Himalayan trade, crucial to Nepal's northern borderlands and the livelihoods of Sherpas and other high-altitude communities. Being among the first anthropologists to venture into Nepal's remote regions bordering Tibet, he gathered invaluable data on the trade dynamics until 1952 when Nepal was largely inaccessible. Continuing his research since 1953, Haimendorf focused on various tribal groups, particularly examining the disruption caused by China's occupation of Tibet in 1939. His new book delves into the profound impact of this event on commercial patterns, providing detailed insights into trading networks among different communities. From Sherpas to other Bhotia populations, each with distinct dialects and lifestyles, Haimendorf's work unravels the ethnographic complexity of Nepal's alpine regions. By examining both traditional and contemporary trading systems, he offers a comprehensive view of the social

changes and enduring trading patterns, which are valuable for comparative studies of ancient commercial systems worldwide.

Fisher (1986) found Tarangpur residents navigate their isolation through economic and cultural connections stretching from Tibet to India. Surplus plays a crucial role in the intricate exchange networks beyond the village, with two main trade circuits: the grain-salt-rice route and the emerging goods-cash-goods circuit. They adeptly manage impressions, adapting to various cultures, resulting in a blend of Hinduism and Buddhism in their own culture. Social standing within the village is determined by an ethos of equality, although practices like unequal reciprocity and subtle hierarchy exist. Increasingly, political influence tied to wealth encourages innovation and advancement. Tarangpur's extensive exchange networks shape its worldview, rooted in multifaceted transactional activities.

Anderson and van Wincoop (2003) formulated a gravity model which considers factors like distance, economic strength, and infrastructure quality to anticipate trade between nations. Although this model doesn't directly address natural disasters, it offers valuable insights into the fundamental elements influencing cross-border trade trends. Assessments have shown that disasters, when measured against gross domestic product, inflict a detrimental impact on the economy.

Sen (2010) concluded that the evolution of trade theory, from older doctrines to New Trade Theory (NTT), has influenced policy in two main ways. Firstly, it has reinforced support for the free trade doctrine in shaping policy for developing regions, driven by advanced nations and institutions like the IMF and WTO. Secondly, trade theory has impacted policies in advanced nations, which heavily rely on NTT principles of strategic trade. The unequal power dynamics between rich and poor nations allow for this imbalanced policy approach, significantly influenced by trade theory. Policymakers' focus on micro-theoretic aspects of both old and new trade theories has led to a neglect of broader macroeconomic issues at both national and global levels.

Harris (2013) explored the Himalayan region has seen significant state-led infrastructure projects, such as highways connecting Nepal and Tibet, road expansions in North Bengal, Sikkim, and Tibet, and planned extensions to the Beijing-Lhasa railroad. These projects aim to open new markets for surplus commodities under the guise of "free" trade and bilateral cooperation, leading to rerouted trade routes and environmental damage. Historically seen as

marginal and remote, the area is now being reshaped for economic and political goals, erasing some places while highlighting others. The research used traders' oral narratives to show how these changes have impacted local trading practices, advocating for a nuanced understanding of the interplay between large-scale economic shifts and local practices, beyond simple models of hegemony and resistance. Representations of the region, like "the chicken's neck" or "the roof of the world," often emphasize its peripheral status. The study provided a nuanced and engaging exploration of how local and global forces intersect in one of the world's most unique and complex regions.

Bollinger et al. (2014) and Dixit et al. (2015) delve into the seismic vulnerability of Nepal, highlighting the looming threat of extensive devastation and socio-economic upheaval. They underscore the profound risks associated with earthquakes in the region, emphasizing the potential for widespread destruction and disruption of livelihoods. The catastrophic impact of the 2015 Gorkha earthquake, centered near Kathmandu, serves as a poignant example, leaving a trail of significant damage to infrastructure and communities nationwide.

Constitution of Nepal (2015) implemented a federal system, establishing three levels of government: federal, provincial, and local. This decentralization grants significant decision making power, resource management, and service delivery responsibilities to provincial and local authorities. Additionally, the Government of Nepal has transitioned towards a proactive approach to Disaster Risk Reduction and Management (DRRM) by enhancing legal frameworks, policies, strategies, planning, institutional capacities, and fostering multi-stakeholder partnerships for DRRM.

Koirala (2015) examined the economic impact of the 2015 earthquake in Nepal, estimating direct costs between USD 5 billion to USD 10 billion. The earthquake necessitated extensive reconstruction efforts, leading to increased wages for construction workers and heavy equipment operators. The disaster underscored the urgency for economic reforms and effective reconstruction strategies in Nepal. While the earthquake's impact on global markets was minimal due to Nepal's small economic contribution, it was expected to further slow down the country's already sluggish GDP growth rate. The event also highlighted the importance of enforcing building codes and enhancing awareness and preparedness for future disasters. The sources reviewed primarily focus on the economic repercussions and reconstruction initiatives following the earthquake in Nepal, providing valuable insights into these aspects.

Post-Disaster Need Assessment (2015) conducted an evaluation of the earthquake's impact on the Nepalese economy, estimating that the combined direct and indirect effects amounted to nearly USD 7 billion, equivalent to approximately one-third of the country's GDP. The earthquake inflicted significant damage on essential elements of the economy, including the agricultural labor force, draft animals, and agricultural infrastructure. Moreover, it severely affected around 180,000 individuals employed in the tourism sector, a particularly vulnerable group. Additionally, the study revealed that approximately 0.7 million people were pushed below the poverty line due to the negative repercussions of the earthquake.

Kunwar (2016) conducted a study on safety, security, and assurance in the tourism sector, examining the implications of risks such as vulnerability, crises, disasters, hazards, emergencies, and political instability. The article aims to emphasize the effects of disasters on tourism and address crisis and disaster management issues, as well as explore new marketing strategies to revitalize tourism, areas that have been relatively neglected in the context of Nepal.

Ministry of Home Affairs (2016) identified Sindhupalchowk as one of the most severely affected districts by the Gorkha Earthquake 2015, with significant human casualties and extensive damage to private and public structures. The earthquake resulted in 3,573 deaths, the highest among all districts, along with 1,569 injuries and 8 disappearances. Additionally, it caused the destruction of 710 public structures, 89,884 private houses, and damage to numerous machineries and stored goods, disrupting both domestic and international trade via the Araniko Highway. The blockade led to a sharp decrease in trade with China and compromised trade with India, contributing to a rise in import costs and subsequently higher prices for essential goods. This economic strain led to decreased employment opportunities and financial hardship for the affected population. The earthquake's total cost to commerce amounted to NPR 16.9 billion, with micro, small, and medium-sized businesses bearing the brunt of the losses in the worst-affected districts, totaling NPR 15.2 billion.

Shrestha et al. (2016) highlighted the vulnerability of the Hindu Kush Himalayan (HKH) region to geohazards, such as landslides and debris flows, exacerbated by its geologically fragile nature and social conditions. These hazards pose significant risks to inhabitants, leading to annual fatalities and economic losses in billions of US dollars, hindering socioeconomic progress and poverty alleviation efforts. Moreover, the region's location in a seismically active zone results in frequent earthquakes, with the devastating 2015 earthquake

in Nepal causing approximately 9,000 deaths, 22,000 injuries, and economic losses estimated at USD 7 billion. These losses were attributed to seismic shaking and triggered geohazards like landslides and debris flows.

Disaster Risk Reduction and Management (DRRM) Act of 2017, the National DRR Policy of 2018, and the National DRR Strategic Action Plan spanning from 2018 to 2030 serve as the principal legal and policy frameworks guiding a proactive approach towards multi-hazard assessment and mapping, aligning with the Sendai Framework for Disaster Risk Reduction (SFDRR). The DRRM Act of 2017 encompasses various provisions, establishing new requirements for the country's disaster risk reduction and management in light of recent global and national developments. This Act includes provisions for multi-hazard and disaster assessment, mapping, planning, and their execution, all falling under the purview of the DRR Executive Committee. Similarly, the DRRM policy outlines the development of disaster risk

Sharma and Dixit (2017) and Lamichhane et al. (2020) jointly investigate the vulnerabilities of trade routes connecting Nepal and China, focusing particularly on the Arniko Highway leading to the Tatopani border point. Their research meticulously examines the susceptibility of this crucial infrastructure to a range of natural hazards, including landslides, rockfalls, and road surface failures, often exacerbated by seismic activity. Sharma and Dixit's (2017) analysis delves into historical data to uncover patterns of landslides and rockfalls along the highway, while Lamichhane et al. (2020) incorporate more recent data, including the impacts of the 2015 Nepal earthquake. Together, these studies underscore the urgent need for effective risk management strategies to safeguard the Arniko Highway, emphasizing the critical role it plays in facilitating cross-border trade and regional connectivity. They advocate for substantial investment in infrastructure improvements and disaster preparedness measures to ensure the resilience and reliability of this vital trade link between Nepal and China, thereby fostering economic development and stability in the region.

Xu et al. (2017) has conducted an analysis on the complexities posed by natural hazards. The frequency of earthquakes, windstorms, and floods, as well as the resulting damages, has shown a notable increase over recent decades. This rising trend presents a significant challenge for governments, businesses, and notably for the insurance sector as risk carriers. Documenting and analyzing natural catastrophes are crucial steps in preparing for and addressing potential hazards, enhancing our capacity to detect emerging patterns early on. The literature review of the paper encapsulates key findings and recommendations. It

explores the seismic impacts in Nyalam, Gyirong, Tingri, and Dinggye counties along the southern border of Tibet following the Nepal earthquake. The region experienced seismic intensity levels of VIII and even reached IX in two towns along the Nepal border, resulting in significant destruction and damage to infrastructure, including buildings, roads, and bridges.

Dangi (2018) analyzed the challenges and opportunities in Post Disaster Reconstruction (PDR) in Sindhupalchowk, Nepal. Data from primary and secondary sources, including the National Reconstruction Authority, were analyzed qualitatively and quantitatively. Disasters are increasing in frequency and severity, threatening human, social, economic, and environmental stability. PDR aims to restore pre-disaster living conditions, but it's often slow and costly. Successful reconstruction requires a "build back better" approach and linking reconstruction with development. Despite the establishment of the National Reconstruction Authority (NRA) after the 2015 earthquake, progress in Sindhupalchok has been hindered by political instability, bureaucratic inefficiency, and resource shortages. Cooperation between the government and citizens is crucial for effective reconstruction within set timelines.

Kharal (2018) examines shifts in Nepal's trade relationship with China following the 2015 earthquake and the subsequent blockade of the Nepal-India border. Utilizing monthly trade data to analyze trade flows within shorter timeframes, the study illustrates how the blockade exacerbated the earthquake's impact on trade. It further scrutinizes the performance and patterns of Nepal-China trade at various levels, including product, customs point/route, and product-customs point/route levels. With the closure of the Tatopani-Zhangmu trading point, the primary commercial link between Nepal and China, the proportion of overland imports from China decreased from 24 percent prior to the earthquake to 12 percent two years after the seismic event.

Khatiwoda & Dixit (2018) examined the devastating earthquakes and aftershocks of 2015, which caused property damage worth approximately NPR 701 billion, about one-third of the national output. This disaster stalled economic growth. The Post Disaster Needs Assessment (PDNA) report cites World Bank simulations predicting that the earthquake would push an additional 2.5 to 3.5 per cent of Nepali people into poverty, disproportionately impacting poorer and rural areas. Real GDP growth slowed to less than one per cent in FY 2015/16, down from three per cent the previous fiscal year. The immediate impact included a reduction in both public and private sector investments and a decline in job creation due to significant rural job losses. The National Reconstruction Authority's (NRA) Post Disaster Recovery

Framework (PDRF) estimates the cost of reconstruction at NPR 837.74 billion. Additionally, the government's decision to provide NPR 300,000 to each destroyed household will add at least another NPR 100 billion to the total, bringing the estimated reconstruction costs to over NPR 950 billion

Rai et al. (2018) meticulously assessed the aftermath of the earthquake on Nepal's trade landscape, with a particular focus on the disruptions caused to cross-border trade routes and the logistical challenges that ensued. Their analysis highlights the closure of the Tatopani border point as a critical consequence of the earthquake's damage, leading to substantial impediments in bilateral trade between Nepal and China. By delving into the specific impacts of this closure, the researchers underscore the broader implications for Nepal's economy and its trade relations with China. The closure of such a vital trade route not only disrupts the flow of goods and services but also engenders ripple effects across various sectors, affecting employment, supply chains, and economic stability. Further shed light on the complexities and vulnerabilities inherent in Nepal's trade infrastructure, prompting considerations for resilience-building measures and strategic planning to mitigate the impacts of future natural disasters on cross-border trade routes.

Adhikari & Adhikary (2019) conducted an examination of the economic ramifications of natural disasters in Nepal spanning from 1971 to 2017. Their analysis underscores the adverse effects on the economy, particularly evident in significant disaster occurrences. They drew upon various studies to comprehend the long-term economic implications of natural disasters, integrating these findings into macroeconomic forecasts and developmental strategies. Utilizing statistical data from Nepalese agricultural and economic surveys, they evaluated the economic repercussions of disasters in Nepal. Prior research has concentrated on the enduring economic aftermath of natural calamities, the macroeconomic effects of disasters, and the global estimation of disaster impacts.

Botzen et al. (2019) examined the expanding body of literature concerning the economic ramifications of natural disasters. They synthesized the principal theoretical, computational, and empirical approaches to distill key findings and identify factors that alleviate the impacts of such disasters. Their analysis revealed that natural disasters result in significant direct economic consequences, such as substantial property damage in developed nations and loss of life in developing nations. While overall net macroeconomic (indirect) losses tend to be negative, they are likely to be relatively minor for large and developed economies, which are

better equipped to manage adverse production shocks (e.g., compensating for lost production by increasing output elsewhere). Conversely, these indirect economic repercussions are generally more severe for low-income countries and smaller, less diversified economies.

Kulstad-Gonzalez (2019) investigated the occurrence of disasters in cross-border settings, with a specific focus on the 2010 earthquake in Haiti and its effects on the border town of Comendador, Elias Pina, in the Dominican Republic. The research conducted in Comendador underscores the susceptibility of the local population and the obstacles they encountered following the earthquake. It underscores the significance of grasping the cross-border interactions and interdependence of communities to adequately address and alleviate the repercussions of disasters. Additionally, it highlights how social, economic, and political factors contribute to heightened vulnerability and impede recovery efforts in cross-border areas. The article advocates for a holistic disaster management approach that considers the distinct challenges and dynamics present in cross-border settings.

Osberghaus (2019) discovered through a comprehensive review of empirical literature on the trade consequences of natural disasters and weather fluctuations that the existing body of research is more extensive than previously acknowledged. He synthesized insights from 19 studies conducted by 18 separate research teams, revealing a wide array of motivations, datasets employed, methodologies applied, and findings obtained. While the impacts of natural disasters on trade outcomes are somewhat ambiguous, there is a discernible trend indicating a negative effect on exports in countries experiencing severe or frequent disasters. Import dynamics, however, exhibit more variability, with some studies suggesting decreases, increases, or negligible changes following such events. Notably, smaller, economically disadvantaged nations characterized by warmer climates, lower institutional quality, and restricted political freedoms appear to suffer the most adverse consequences on their trade flows.

Subedi & Chhetri (2019) emphasized the multitude of disaster risks confronting Nepal, including earthquakes, floods, and landslides, among which earthquakes pose the most significant threat. The 2015 Gorkha earthquake inflicted severe damage on Nepal's economy and infrastructure. Human actions contribute to the exacerbation of these risks, underscoring the necessity for more rigorous building regulations and proactive disaster management laws. This study scrutinizes the essential deficiencies in Nepal's seismic risk mitigation endeavors

following the earthquake and proposes policy and technical enhancements for disaster management.

McLean & Bas (2020) examined the potential cross-border impacts of natural disasters, emphasizing their ability to affect neighboring nations and even have broader regional or global ramifications. They noted that such disasters may trigger refugee movements, spill over into conflicts, disrupt trade ties, and induce various indirect consequences for other countries. The discussion underscores the importance of international collaboration in managing risks and supporting post-disaster recovery initiatives.

Cowan (2021) provided a nuanced and comprehensive exploration of the Araniko Highway, considering past, present, and future significance in Nepal and beyond. Examined the Araniko highway who traveled extensively throughout the region, allowed him to observe firsthand the highway's conditions, the impact of natural disasters, and the socio-economic environment. His military background provided a unique perspective on the strategic importance of the highway, considering both the logistical challenges of maintaining such infrastructure in difficult terrain and the broader geopolitical implications. His analysis was informed by a combination of field research, historical study, and engagement with local experts and communities. The researcher’s ability to contextualize the highway within Nepal's political landscape, especially its relations with China and India, was enhanced by his deep connections and ongoing interest in the region's development and security issues.

Biyik (2022) examined the impact of economic crises, particularly the Tohoku earthquake, on Japanese International Bilateral Trade Flow (JIBTF), focusing on changes in Distribution Networks of JIBTF (DNoJ) involving African countries and Japanese Major Trade Partners (JMTP). The study analyzed panel data from 2001 to 2019 at the Harmonized System 6-digit level, employing the gravity method for analysis. Firstly, the findings indicate that the Tohoku earthquake had a more pronounced negative impact on JIBTF compared to the 2008 crisis, reshaping DNoJ among Japanese trade partners. Secondly, the study highlights a relative decrease in Japan's trade engagement with African markets, with exports to African countries showing a negative interaction effect after 2015. In contrast, there was a comparatively increased interaction effect on JMTP, leading Japan to redirect its exports to markets such as JMTP. Consequently, the Tohoku earthquake influenced JIBTF to become more closely integrated with the Asia-Pacific and EU regions, rather than African markets.

Shrestha (2022) investigated earthquake-induced displacement through a targeted study of two severely affected districts, Sindhupalchok and Rasuwa, located in the central mountainous region of Nepal. The research uncovered both temporary and permanent displacements, accompanied by significant changes in livelihoods, including alterations in capital assets. While some positive shifts were noted in human capital, such as the acquisition of skills and disaster preparedness training, there was a decline in social capital attributed to the loss of networks and reduced cultural engagement. In summary, the study sheds light on the intricate dynamics of displacement caused by earthquakes and its impact on livelihoods.

Bharat et al. (2023) explored various theories of international trade, encompassing predominant ones such as absolute advantage, comparative cost advantage, factor endowment theories, technological gap theories, intra-industry trade theories, new trade theories, Dutch disease, and twenty-first-century trade theories. The essay primarily delves into a literature review concerning trade theory and the policies shaping modern global trade. It commences with the examination of traditional theories of international trade, including mercantilism, physiocrats, Adam Smith's absolute advantage theory (1776), and David Ricardo's comparative advantage theory (1817). The factor endowment model, pivotal in twentieth-century economics and developed by Heckscher and Ohlin, with later contributions by Samuelson (referred to as HOS), presents a framework based on two countries, two commodities, and two factors of production, assuming constant returns to scale. This model has elevated factor endowments of countries to a central position in trade theories. Additionally, the essay delves into the significance of new trade theories, intra-industry trade, and contemporary trade theories in the existing literature.

2.1 Research Gap

The earthquakes in 2015, Nepal, caused widespread destruction throughout 31districts of the country. The 2015 earthquake in Nepal was serious academic concerns from the different perspective like -sociocultural, engineering, urban planning and other disciplines. Numbers of studies have been carried out, and major concerns are as follows:

Table 2.1

Research Gap

Research Conducted by	Methodology	Findings	Gap
Anderson and van Wincoop (2003)	Gravity model analysis	Factors like distance, economic strength, and infrastructure quality impact cross-border trade.	Does not directly address natural disasters' impact on trade.
Sen (2010)	Evolution of trade theory	New Trade Theory (NTT) has influenced policy, reinforcing support for free trade doctrine in developing regions.	Neglects broader macroeconomic issues at national and global levels.
Xu et al. (2017)	Analysis of natural hazards	Increasing frequency of natural hazards (earthquakes, windstorms, floods) presents significant challenges for governments, businesses, and insurance.	Focuses on challenges without providing detailed strategies for mitigation.
Government of Nepal (NPC)	Post Disaster Needs Assessment (PDNA)	Assessed damages of houses and post-earthquake needs based on estimates rather than observed data.	Did not focus on the impacts of the earthquake on trans-border trade.
Sharma and Thapa (2020)	Case study	Highlighted widespread destruction of transportation infrastructure and substantial disruptions to trade operations due to the 2015 earthquake.	Insufficient details on economic losses and recovery processes for businesses engaged in trans-border trade.
Shrestha (2022)	Targeted study of affected districts	Investigated earthquake-induced displacement, noting both temporary and permanent displacements and changes in livelihoods.	Lacked comprehensive analysis of economic impacts on trans-border trade.

Dangi (2018)	Qualitative and quantitative analysis	Analyzed challenges and opportunities in Post Disaster Reconstruction (PDR) in Sindhupalchowk, highlighting political instability and resource shortages.	Did not sufficiently address the effectiveness of government support measures for trade network resilience.
Kharal (2018)	Trade flow analysis	Examined shifts in Nepal's trade relationship with China post-earthquake, noting a significant decrease in overland imports and exports.	Lack of detailed insights on economic recovery models post-disaster.
Rai et al. (2018)	Evaluation of trade disruptions	Emphasized the severe disruptions in cross-border trade routes and logistical hurdles post-earthquake.	Did not address the long-term strategies for sustaining trade continuity.

While reconstruction efforts have been underway at the Tatopani border in Nepal and Nyalam in China post-2015 earthquakes, there is a notable absence of trade resumption via this route. Despite the completion of road construction and basic infrastructure on both sides of the border, business activity at the Nepal-China border town in Sindhupalchok has ceased due to earthquake damage. This highlights a critical gap in understanding the impact of the earthquakes on trans-border trade between Nepal and China, encompassing border crossing closures, trade infrastructure damage, interruptions to supply chains, and the subsequent shift in trade routes. Additionally, there is insufficient research on the economic losses incurred by businesses engaged in trans-border trade and their subsequent recovery process. Examining the financial losses, challenges in rebuilding trade infrastructure, and the effectiveness of government support measures can provide valuable insights into the resilience of trade networks and the socio-economic impacts of disasters on the national economy. Therefore, further research is needed to address these gaps comprehensively.

2.2 Theoretical vs. conceptual framework

According to Sheekumar (2023) theoretical framework covers the theoretical aspect of the study, that is, the various theories that can guide your research whereas a conceptual

ramework defines the variables for your study and presents how they relate to each other. The conceptual framework is developed before collecting the data.

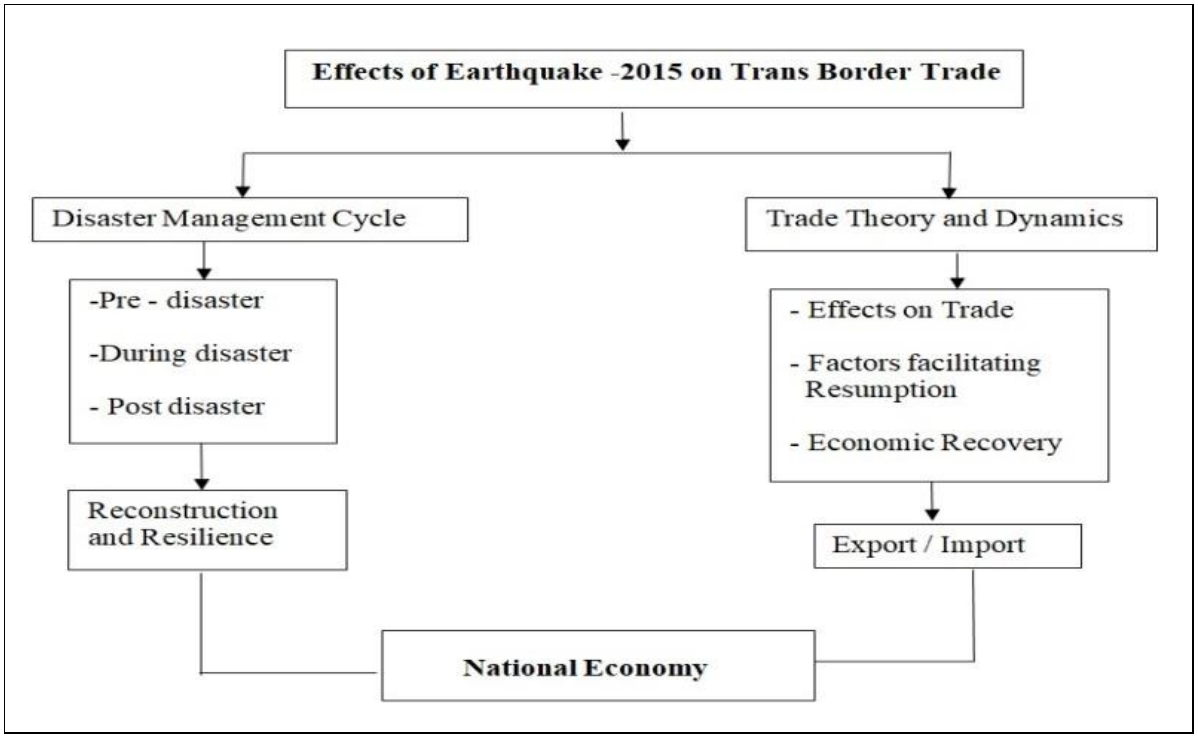
However, both frameworks help in understanding the research problem and guide the development, collection, and analysis of the research. Theoretical framework used to create a foundation of the theory on which the study developed whereas conceptual framework visualizes the relationships between the concepts and variables based on the existing literature.

2.3 Theoretical framework

According to Varpio et al. (2020), a theoretical framework is a systematically constructed and interconnected collection of concepts and principles derived from one or more theories, which a researcher establishes to support a study. Developing a theoretical framework involves defining relevant concepts and theories that serve as the foundation for the research, establishing logical connections between them, and demonstrating how these concepts are relevant to the study being conducted.

Figure 2.3

Theoretical framework



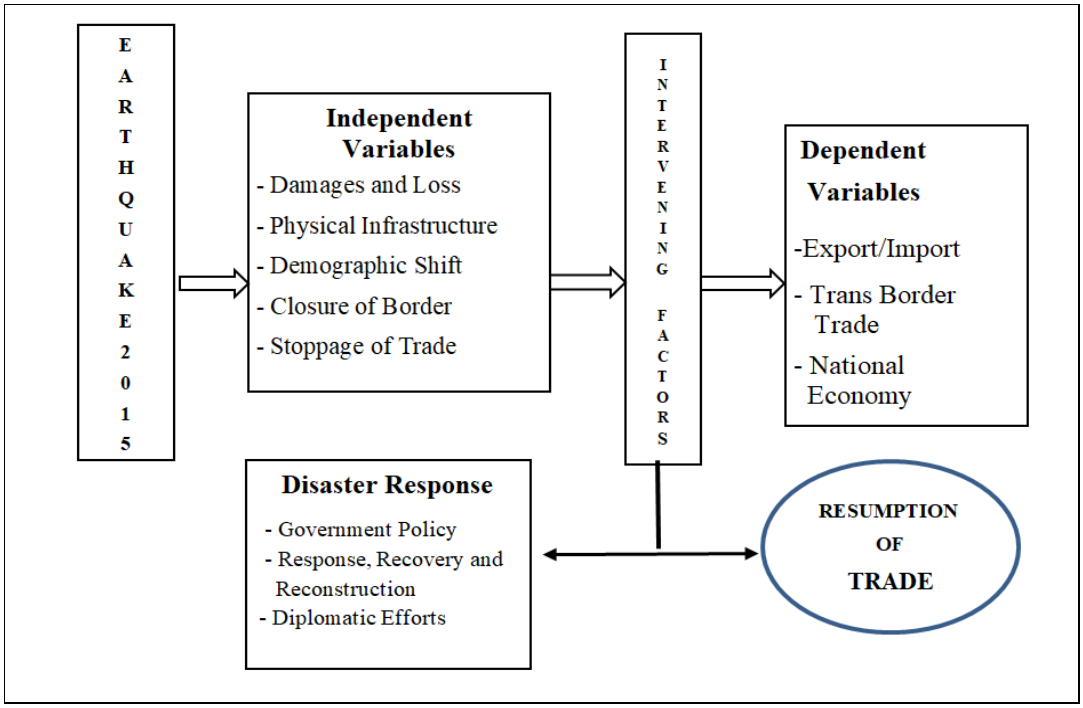
Source: Adapted and modified from Varpio et al., (2020).

2.4 Conceptual framework

A conceptual framework is the justification for why a given study should be conducted. In essence, a conceptual framework serves as the rationale behind the necessity of conducting a particular study. It encompasses the existing body of knowledge, often delineated through a literature review, to pinpoint gaps in comprehension of a phenomenon or issue. Additionally, it delineates the methodological foundations of the research endeavor Varpio et al., (2020).

Figure 2.6

Conceptual framework



Source: Adapted and modified from Varpio et al., (2020).

The researcher outlined the theoretical and conceptual framework underpinning the research. This framework serves as a guiding structure for the study, incorporating relevant theories, models, and concepts from the literature. This framework acted as a navigational tool, integrating pertinent theories, models, and concepts from existing literature. It directed the inquiries, methodology, and data analysis, maintaining consistency and robustness in whole research process.

CHAPTER III

RESEARCH METHODOLOGY

Research methodology serves as a structured approach to addressing research inquiries systematically. It can be regarded as the scientific study of how research is methodically conducted. Rehman & Alharth (2016) delineated four components comprising a research paradigm: ontology, epistemology, methodology, and methods. Creswell and Creswell (2018) elaborated on four worldviews: Post-positivism, Constructivism, Transformative, and Pragmatism which provide foundational perspectives for research endeavours. These worldviews serve as interpretive frameworks within the realm of research and are applied to guide inquiry.

Mixed methods research, often abbreviated as MM, refers to a category of research designs wherein the researcher integrates both quantitative and qualitative research techniques, methods, approaches, concepts, or language within a single study. The aim is to achieve a comprehensive and corroborated understanding of the subject matter, encompassing both breadth and depth (Creswell & Clark, 2011). Originally, mixed methods were introduced to facilitate the convergence of findings or cross-validation (Campbell & Fiske, 1959). Over time, mixed research designs gained popularity in social science studies due to their numerous advantages. These include the capacity to capitalize on the strengths of diverse methods, offer deeper insights into phenomena that cannot be fully grasped using only quantitative or qualitative methods, address research inquiries requiring real-world contextual comprehension, multi-faceted perspectives, and consideration of cultural influences (Johnson et al., 2007).

Beyond the household survey, researcher conducted key informant interviews and focus group discussions. Questionnaires are one of the primary sources of obtaining data. Questionnaire with both open end and closed ended questions is regarded preferable to obtain the detail data as (Zohrabi, 2013). So, in this study closed ended questions were asked as a survey instrument and open-ended questions are asked in the interview section Shrestha: Effects of Landslide on the Livelihood ... 99 (Kalaian, 2008). Questionnaires are highly structured to collect the empirical data in the social research (O'Leary, 2017). The questionnaire was administered at respondents' home, public place and agricultural field.

3.1 Research design

The convergent mixed methods design is probably the most familiar of the core and complex mixed methods approaches. Researchers new to mixed methods typically first think of this approach because they feel that mixed methods only consists of combining the quantitative and qualitative data (Creswell & Creswell, 2018). The nature of this research was be explanatory as well as analytical design with mixed methodologies involving collection and analysis of both qualitative and quantitative data to identify the effects of earthquake on trans-border trade.

3.2 Area of study and situation

A study area in research refers to the specific geographical location where a research study was conducted, encompassing various characteristics like climate, topography, resources, and land use patterns. It serves as the primary field for data collection and analysis

Sindhupalchowk district is one of the districts of Bagmati province located in the northern part of the province. Sindhupalchowk district is divided into 12 local levels including 3 municipalities and 9 rural municipalities. Chautara is the headquarters of the district. Sindhupalchowk is the biggest district in regard to area with 2,542 km2 in the Central Development Region among 19 districts and it has covered 1.73% area of Nepal. This district is situated 86 kilometres from Kathmandu in east/north direction (DAO, 2024). Sites selected for survey are:

i. Tatopani border area

ii. Bhotekoshi rural municipality

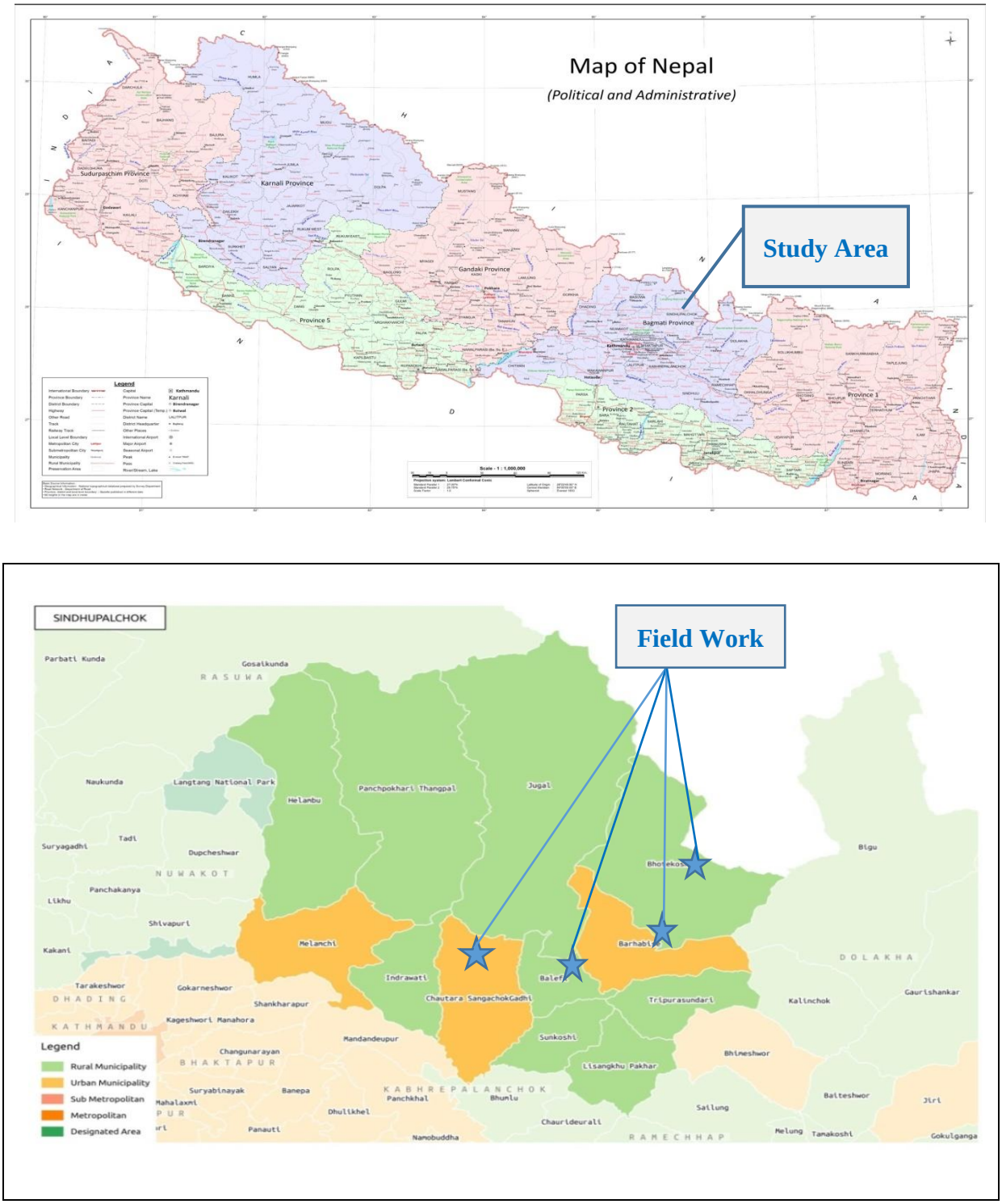
iii. Baharabishe municipality

iv. Balefi Rural municipality

v. Chautara, district headquarters of Sindhupalchowk

3.2.1 Map of the study Area

Figure 3.2



Source: https://ehrpinspection.nra.gov.np/maps?district=23District Administration Office Sindhupalchowk (2024).

3.3 Nature and sources of data

The primary data has been collected through Field Survey by cluster sampling method, Key Informant Interviews and Focused Group Discussions. Secondary data was be collected by desk review. The nature and sources data for this study are shown below:

3.3.1 Sources of data

Secondary data

This study was done using primary and secondary data. Secondary data consists of Journal articles, newspapers, research reports. Secondary data was collected from various sources such as Ministry of Affairs (MOHA), National Planning Commission (NPC), National Reconstruction Authority (NRA), Nepal Rastra Bank (NRB), Central Bureau of Statistics (CBS), Department of Customs (DOC), Customs Office Tatopani, Immigration Office Tatopani and other relevant sources regarding the recent earthquake and trans-border trade. Besides, the Report of the National Planning Commission, UNDP on earthquake has been the source for review to understand the Government of Nepal ‘s present policy to address the problem.

The primary data

Once the primary field was carried out in a rapid survey, an in-depth analysis was carried out as an outline for further surveys for both quantities and qualitative surveys. Field study was conducted for both qualitative and quantitative surveys before the quantitative survey structure questionnaire was developed, and a detailed survey conducted after the pretest of the questionnaire and gap in the questionnaire was filled. After the tentative and rapid analysis of the collected data, the checklist prepared for qualitative information was revived based on the rapid analysis report. Finally, the Key Informants Interview (KII) and Focus Group Discussion (FGD) were conducted to fill the gap of the information collected from a structured questionnaire and additional proof/support evident to the structured data.

Primary data were collected using structured interviews with the affected households, key informants’ interview and through using the case study. The structured interview generated the quantitative data while the FGD and case study generated qualitative information.

Quantitative data

Survey questionnaire was administered to the local inhabitants at border area, businesspersons involved in trade and civil society members for the analysis of effect of recent earthquake on trans-border trade which captures the demographic information, effect of earthquake, government policy, trade and economy. Survey questionnaire is attached in Appendix "A".

Qualitative information

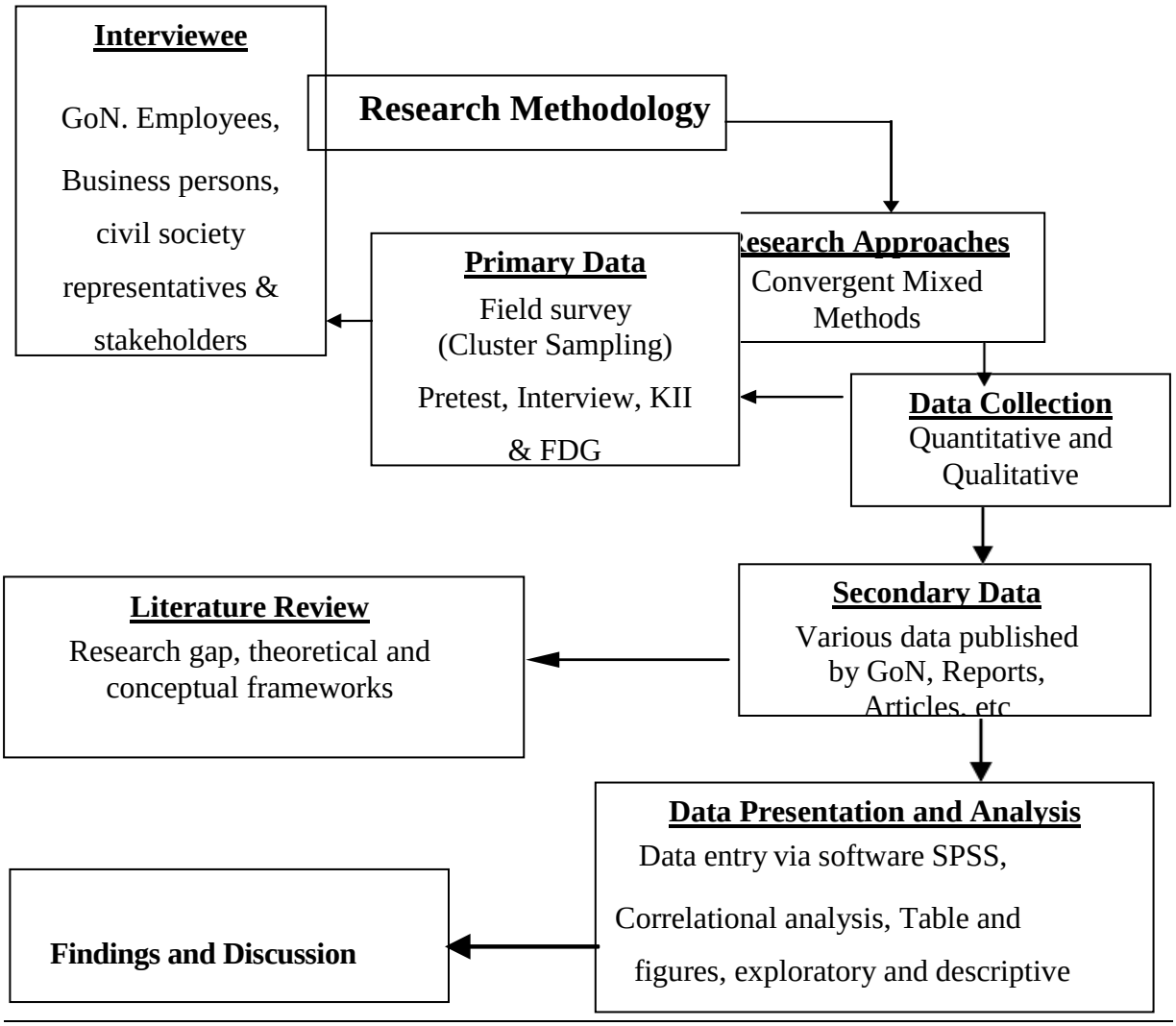
To supplement the information obtained from the survey qualitative information was collected using the tools including the participatory research method such as observation, FGDs, narratives. The researcher also observed the present situation of the research area during the field visit regarding the trade condition at the Tatopani border. The researcher stayed in the field to gather the above- mentioned qualitative data. Finally, the Key Informants Interview (KII) and Focus Group Discussion (FGD) were conducted to fill the gap of the information collected from a structured questionnaire and additional proof/support evident to the structured data. The nature and sources data for this study are shown in the figure below:

Focus group discussion is characterized by a non-directive style of interviewing, encouraging a variety of viewpoints on the topic in focus for a group. A focus group discussion is a formal, facilitated discussion on a specific topic. Focus group discussion is useful for identifying the knowledge, ideas, values, beliefs, and attitudes of the group (Ennew et.al., 2009).

Focus groups and in-depth interviews both offer unique advantages when conducting research. Focus groups gather individuals for collaborative conversation whereas in-depth interviews provide a perspective from individuals with no environmental influence. An in-depth interview can be conducted with anyone who has relevant knowledge about a subject. In contrast, a key-informant interview involves someone who has unique expertise in a given field and could provide deep insight and validate the date from other sources.

Figure 3.3

Nature and sources of data



Source: Adapted and modified from Creswell & Creswell (2018).

3.4 Techniques and tools of data collection

The study used a mixed method research design. Ideally, the key idea with this design is to collect both forms of data using the same or parallel variables, constructs, or concepts (Shaw et al. 2013). The data were collected from field survey with 135 cluster sampling, 40 interviews, 10 KIIs, and 3 FGDs of different stakeholders related to trans-border trade of Tatopani Border. The trend analysis of the trade before and after the earthquake was done by the data taken from the department of customs and Nepal Rastra Bank. The qualitative data was be collected by KII and general interviews, observations, documents, and records. The quantitative data was gathered by instrument data, observational checklists, or numeric records from different government agencies. Primary and secondary data was collected

through the different techniques and tools of data collection. Structured and unstructured questions were used to conduct survey and interview respectively with different stakeholders. Spatial Analysis of trade routes, infrastructure damage, and economic activities were also incorporated.

3.4.1 Sample size and technique

A sample design is a definite plan for obtaining a sample from a given population. It refers to the technique or the procedure the researcher would adopt in selecting items for the sample (Kothari, 2024). Cluster probability sampling technique has been opted for selecting respondent of the field survey whereas the purposive sampling technique has been adapted for the participants of the KIIs.

Table 3.4

Sample Size and Technique

Method	**Tool /Technique**	**Size**	**Respondents/ Participants**
Field Survey	Survey Questionnaire	135	Local inhabitants at border area, business persons involved in trade and civil society members of Sindhupalchowk district.
Interview	Interview Questions	40	Government officials-7, local representatives-5, business persons-15, economist-3, advocate-1, journalist -2 and civil society members-7
Key Informant Interview (KII)	Interview Questions	10	Government officials (Working in Tatopani) -1, Civil Society (Tatopani) -1, Businessman (Tatopani) -1, FNCCI (Sindhupalchowk) -1, NTHBCA-1, Economist-1, Advocate-1.
Focus Group Discussion (FDG)	Open Ended Questions	3	FGD 1- Customs Office at Larcha, Tatopani FGD 2 - District Security Committee, Chautara FGD 3 - FNCCI Coordination Office, Ktm.

Note: The consent form and participants list of survey and interview questions are attached in Appendices "B", "C", "D", "E", "F" and "G".

Before the field survey researcher conducted pretest via telephone and field survey was conducted with 135 individual, interview was be conducted with 40 individual and the key informant interview conducted with 10 and 3 FDGs were conducted. The number selected for such interview is as per the rule of saturation as per recommendation of Johnson et al. (2007). In this regard, Creswell and Plano Clark (2007) suggested the number of interviewees should be between 5-25 or till the saturation of the data. Likewise, survey can be conducted with 50 stakeholders to collect quantitative data.

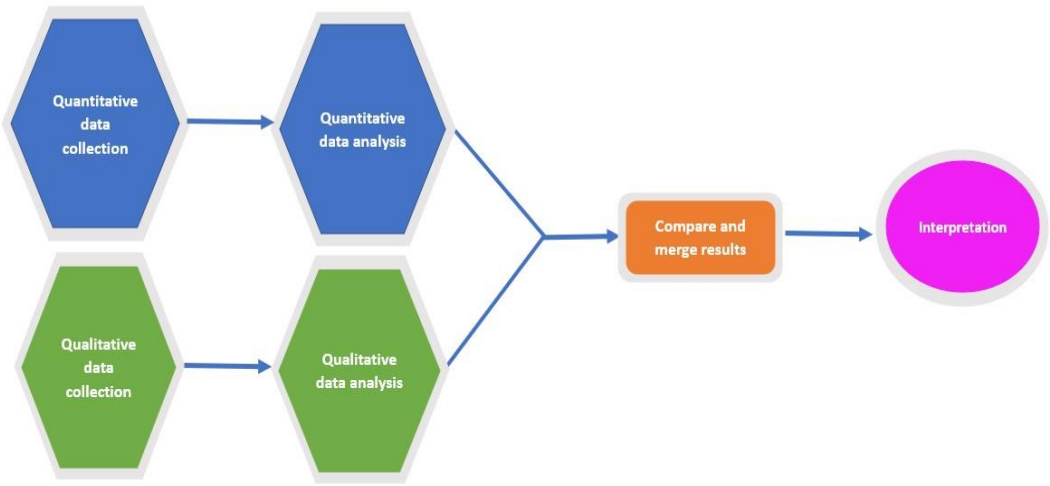
The sample population for the interview were selected based on their knowledge, experience and diverse backgrounds. Only 185 populations were selected based on convenience based sampling method.

3.4.2 Validity and reliability of findings

A mixture of formal quantitative and qualitative analysis is employed to examine the economic impacts of natural hazards at an economy wide level (Benson & Clay, 2003). The quantitative investigations are partial, involving a combination of regression analysis, the use of charts to examine movement around trends, and "before-and-after" comparison of disaster impacts and of forecast and actual economic performance.

Figure 3.4

Convergent Mixed Methods Design



Source: Adapted from Creswell & Creswell (2018).

The sample taken was from field survey with 135 cluster sampling, 40 Interview, 10 KIIs, and 3 FGDs of different stakeholders related to trans-border trade of Tatopani. Therefore, the research result may generalize for other relocated areas including in the non-sample districts.

Both quantitative and qualitative methods used for analyzing the data. Structured questionnaires were pretested, and data was analyzed in first phase, the result was compared with respect to the specific objective of the study then the questionnaires were managed and filled the gap then final questionnaire was designed.

The collected data underwent analysis and scrutiny to ensure alignment with the research objectives. Checklists were devised to capture the necessary qualitative information, utilizing interviews, key informant interviews (KII), and focus group discussions (FGD). Additionally, similar queries were employed at times to validate findings through cross-verification. Triangulation methods were employed to reinforce the results of quantitative analysis. Observation and unstructured interviews were utilized to further validate the findings obtained.

3.5 Data Processing, Analysis and Presentation

According to Creswell & Creswell (2018) data analysis in a convergent design consists of three phases. First, analyze the qualitative database by coding the data and collapsing the codes into broad themes. Second, analyze the quantitative database in terms of statistical results. Third comes the mixed methods data analysis. This is the analysis that consists of integrating the two databases. This integration consists of merging the results from both the qualitative and the quantitative findings.

The independent variables for this study considered are damages and loss, physical infrastructure, demographic shift, closure of border, and export/import. The dependent variables in the study considered are Trans Border Trade and National Economy.

Data entry via software IBM Statistical Package for Social Sciences (SPSS) for Correlations Analysis of quantitative data was done, Quantitative data was presented in bar charts, pie charts and frequency tables as necessary whereas the qualitative analysis was conducted for qualitative data collected from in-depth interviews with key informants. Qualitative data was presented in direct statements from the respondents and narrative analytical statements to explain or to substantiate quantitative data.

To make the research paper easily understandable and self-explanatory, the research was prepared including facts, figures and table and chart as well. Integration of qualitative and quantitative findings was carried out to develop a holistic understanding of the effects of earthquakes on trans-border trade in Tatopani, Sindhupalchowk, Nepal.

3.6 Ethical Consideration

The research was specially prepared for the purpose in partial fulfillment of requirement of 8th APF Command and Staff Course so there was no funding of any institution and agencies for the research purpose. All the respondents were behaved as respected person. The interview was conducted after the consent of the respondents, in sound environment. This paper followed the APA-7 format accordingly directed by the faculty. Authentic and approved sources were used for data collection. Copy of other research was be avoided and well cited as well as references of all sources were mentioned.

CHAPTER IV

FINDINGS AND DISCUSSION

4.1 Findings

The objective of this study on effect of earthquake -2015 on trans-border trade: A study of Tatopani, Sindhupalchowk was to illuminate several important aspects of earthquake and its effect on trade and economy. The study used a mixed method research design. The data were collected from field survey with 135 cluster sampling, 40 interviews and 10 KIIs, and 3 FGDs of different stakeholders related to trans-border trade of Tatopani Border. The trend analysis of the trade before and after the earthquake was done by the data taken from the department of customs and Nepal Rastra Bank. The results of the study showed that the effect of the earthquake 2015 has adversely affected the trans-border trade at Tatopani damaging the infrastructures, closure of the border and complete stoppage of the trans-border trade for more than 8 years affecting revenue generation and ultimately affecting the national economy. However, the Government policies and regulations have effectively facilitated the recovery of Transnational Trade in Tatopani post-earthquake.

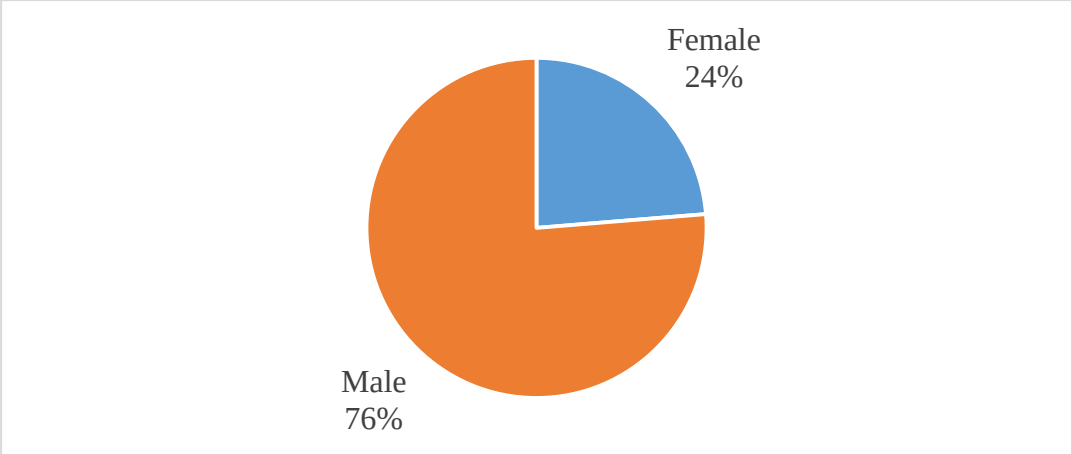
4.1.1 Demographic Profile

a) Gender of respondents

The gender of respondents are shown as following figure

Figure 4.1

Gender of Respondents



Source: Field Survey, 2024

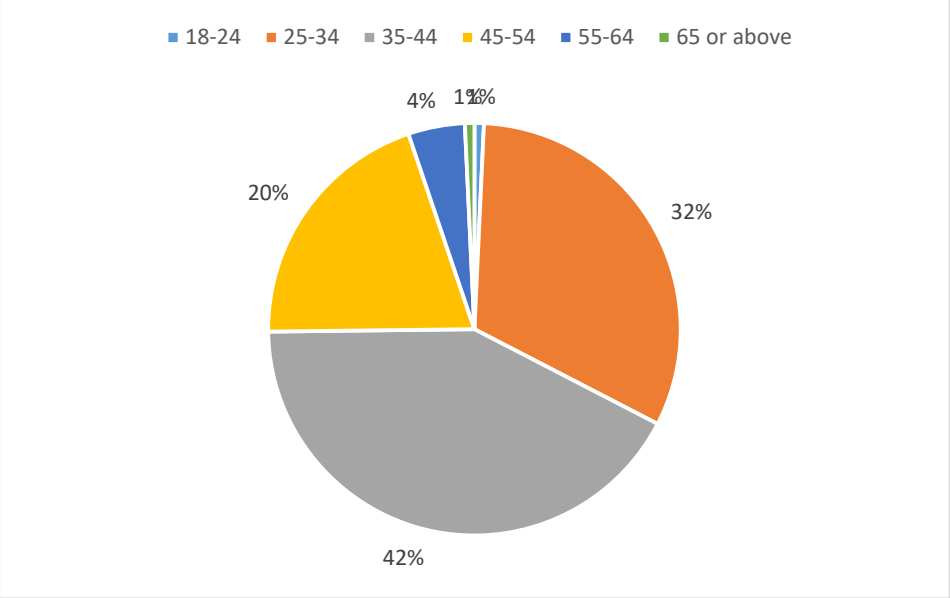
Out of the total sample, 103 individuals identified as male, constituting 76.3% of the population, while 32 individuals identified as female, making up 23.7%.

b) Respondents age

The researcher focused on gathering insights from diverse age groups of respondents in order to comprehend their individual experiences of impact of earthquake in trans-border trade. The age distribution of the respondents are shown in following figure

Figure 4.2

Age of respondents



Source: Field Survey, 2024

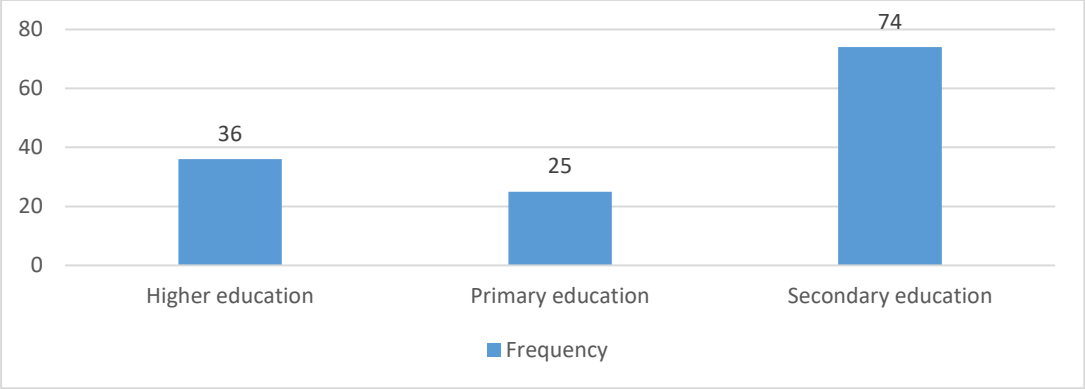
Among the sample, the largest proportion falls within the age range of 35-44, with 57 individuals representing 42.2% of the total population, followed by the 25-34 age group comprising 43 individuals, accounting for 31.9%. The 45-54 age group accounts for 27 individuals, constituting 20.0%, while smaller percentages are represented by the 55-64 age group with 6 individuals (4.4%) and the 65 or above category with 1 individual (0.7%). Notably, both the 18-24 and 65 or above age categories each have only 1 individual, making up 0.7% of the population each.

c) Educational attainment of respondents

Educational background of respondents are mentioned as follows

Figure 4.3

Educational level of respondents



Source: Field Survey, 2024

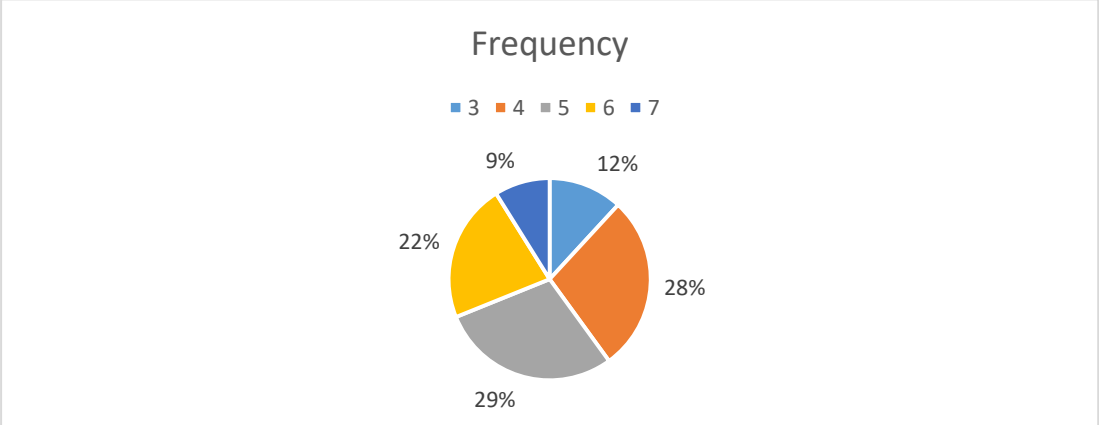
Notably, the largest proportion of individuals in the sample possess secondary education, with 74 individuals representing 54.8% of the total population. Following closely behind, 36 individuals have attained higher education, constituting 26.7%, while 25 individuals have completed primary education, making up 18.5%.

d) Household size of the respondents

The household sizes of the respondents are as follows

Figure 4.4

Household Size



Source: Field Survey, 2024

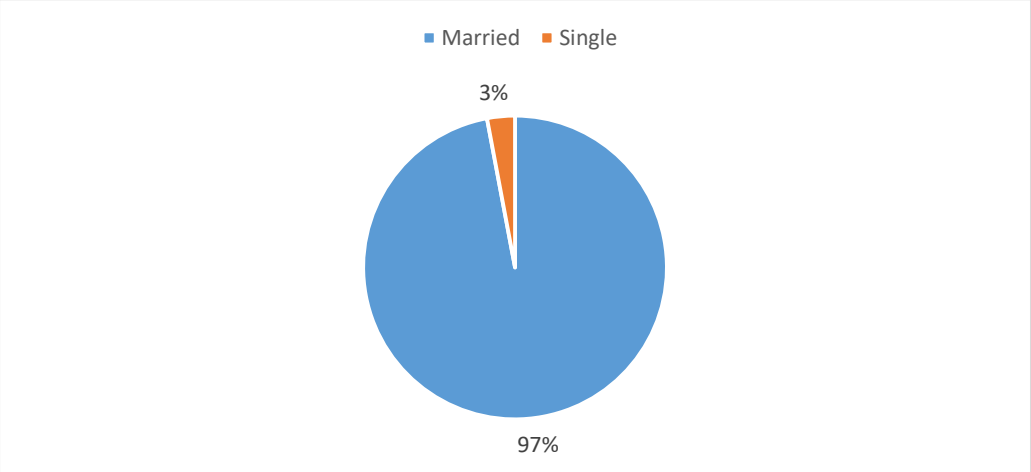
Notably, households consisting of four members represent the largest proportion, with 38 instances accounting for 28.1% of the total population. Following closely, households with five members comprise 39 instances, constituting 28.9%, while those with six members total 30 instances, making up 22.2%. Additionally, households with three members amount to 16 instances, representing 11.9%, and those with seven members comprise 12 instances, accounting for 8.9%.

e) Marital Status of the respondents

The Marital Status of the respondents are as follows

Figure 4.5

Marital Status



Source: Field Survey, 2024

The provided data outlines the distribution of marital status within a specific population, with the majority of individuals being married, constituting 131 instances. In contrast, a smaller number of individuals are categorized as single, totaling 4 instances.

4.1.2 Descriptive statistical data analysis

Descriptive statistics are brief informational coefficients that summarize a given data set, which can be either a representation of the entire population or a sample of a population (Hayes, 2024). Descriptive statistics are broken down into measures of central tendency and measures of variability (spread). Measures of central tendency include the mean, median, and

mode, while measures of variability include standard deviation, variance, minimum and maximum variables, kurtosis, and skewness.

Table 4.1

Descriptive statistics of earthquake-2015

	N	Min	Max	Mean	SD
The Earthquake of 2015 significantly disrupted Transnational Trade activities in Tatopani.	135	3	5	4.79	.430
The Earthquake of 2015 had a lasting impact on the infrastructure necessary for Transnational Trade in Tatopani.	135	2	5	4.68	.568
The Earthquake of 2015 caused a decrease in the volume of goods traded across the border in Tatopani.	135	2	5	4.24	.539
The Earthquake of 2015 led to delays and challenges in customs clearance procedures for Transnational Trade in Tatopani.	135	2	5	3.84	.625

Source: Field Survey, 2024

The descriptive statistics provide insight into the impact of the 2015 earthquake on transnational trade activities in Tatopani. Across all four statements, a consistent pattern emerges, with a total sample size of 135 respondents. The earthquake's disruption is evident in the reported mean scores, ranging from 3.84 to 4.79, indicating a moderate to significant impact across various aspects of transnational trade. Notably, the mean scores suggest that the earthquake had a particularly pronounced effect on infrastructure, with a mean score of 4.68, and on trade volume, with a mean score of 4.24. Additionally, challenges in customs clearance procedures, as indicated by a mean score of 3.84, further highlight the earthquake's disruptive influence on trade operations. The relatively low standard deviations across all statements suggest a relatively consistent perception among respondents regarding the earthquake's impact.

Overall, these findings underscore the widespread and lasting ramifications of the 2015 earthquake on transnational trade activities in Tatopani, signaling a need for robust recovery efforts and infrastructure reinforcement to mitigate future disruptions.

Table 4.2

Descriptive Statistics of Government Policies and Regulations

	N	Min	Max	Mean	SD
Government policies and regulations have effectively facilitated the recovery of Transnational Trade in Tatopani post-earthquake.	135	2	5	2.88	.890
Government policies and regulations have imposed unnecessary bureaucratic hurdles on Transnational Trade operations in Tatopani.	135	2	5	3.30	.883
Government policies and regulations have provided adequate support and incentives for businesses engaged in Transnational Trade in Tatopani.	135	2	4	3.23	.712
Inconsistent enforcement of government policies and regulations has hindered the smooth operation of Transnational Trade in Tatopani.	135	1	5	3.24	.971

Source: Field Survey, 2024

With a consistent sample size of 135 respondents across all statements, varying levels of agreement or disagreement are reflected in the reported mean scores. Notably, while the mean score for the statement indicating the effectiveness of government policies and regulations in facilitating trade recovery post-earthquake is relatively lower at 2.88, indicating a moderate level of agreement, other statements reveal mixed sentiments. The mean scores for statements suggesting unnecessary bureaucratic hurdles and inconsistent enforcement of regulations are higher at 3.30 and 3.24, respectively, indicating a tendency towards disagreement. However, the statement concerning adequate support and incentives for businesses receives a mean score of 3.23, suggesting a more neutral stance. The relatively high standard deviations across all statements indicate a considerable degree of variability in respondents' perceptions.

Overall, these findings underscore the complexity of the regulatory environment surrounding transnational trade in Tatopani, suggesting areas for improvement such as streamlining bureaucratic processes and enhancing consistency in enforcement to foster a more conducive trading environment.

Table 4.3

Descriptive Statistics of Infrastructure Development

	N	Min	Max	Mean	SD
Infrastructure development initiatives have improved the resilience of Transnational Trade routes in Tatopani against future seismic events.	135	2	5	3.37	.991
Insufficient investment in infrastructure development has hindered the recovery of Transnational Trade in Tatopani post-earthquake.	135	2	5	3.83	.554
Ongoing infrastructure development efforts have faced delays, causing disruptions to Transnational Trade activities in Tatopani.	135	2	5	3.84	.700
Infrastructure development projects have failed to adequately address the specific needs of Transnational Trade stakeholders in Tatopani.	135	2	5	3.70	.672

Source: Field Survey, 2024

With a consistent sample size of 135 respondents across all statements, varying levels of agreement or disagreement are reflected in the reported mean scores. Notably, while the mean score for the statement indicating improvement in resilience against future seismic events is relatively moderate at 3.37, other statements reveal concerns. The mean scores for statements suggesting insufficient investment, delays in ongoing efforts, and inadequacy in addressing stakeholders' needs are higher, ranging from 3.70 to 3.84, indicating a tendency towards disagreement. The relatively high standard deviations across all statements indicate a considerable degree of variability in respondents' perceptions.

Overall, these findings highlight the mixed sentiments regarding infrastructure development in Tatopani, underscoring the need for enhanced investment, timely implementation, and stakeholder engagement to ensure effective resilience-building and support for transnational trade activities in the region.

This table shows the 135 respondents, the mean scores show varied agreement levels. Seismic resilience scored moderately at 3.37, while higher scores (3.70-3.84) for investment, delays, and stakeholder needs indicate disagreement. High standard deviations reflect diverse perceptions. Overall, the findings highlight the need for better investment, timely implementation, and stakeholder engagement in Tatopani's infrastructure development**.**

Table 4.4

Descriptive Statistics of Trade

	N	Min	Max	Mean	SD
The earthquake has led to a shift in trade patterns, with a greater emphasis on regional trade rather than international trade in Tatopani.	135	2	5	3.72	.581
Despite challenges, Transnational Trade in Tatopani has demonstrated resilience and adaptability in the face of the earthquake's impact.	135	2	5	3.73	.706
The earthquake has highlighted the importance of strengthening cross-border trade partnerships and alliances in Tatopani.	135	2	5	4.18	.668
The earthquake has spurred innovation and the adoption of new technologies to enhance efficiency and transparency in Transnational Trade operations in Tatopani.	135	2	5	4.41	.616

Source: Field Survey, 2024

With a consistent sample size of 135 respondents across all statements, varying levels of agreement or disagreement are reflected in the reported mean scores. Notably, the mean scores for statements indicating a shift in trade patterns towards regional trade (3.72) and the resilience of transnational trade (3.73) suggest a moderate level of agreement. Meanwhile, statements emphasizing the importance of cross-border partnerships (4.18) and the adoption of new technologies (4.41) receive higher mean scores, indicating a stronger level of agreement. The relatively low standard deviations across all statements suggest a degree of consensus among respondents regarding these perceptions.

Overall, these findings highlight the dynamic response of Tatopani's trade sector to the earthquake, with a focus on regional trade, resilience, partnership strengthening, and technological innovation emerging as key themes in post-disaster adaptation strategies. With 135 respondents, the mean scores show moderate agreement on the shift to regional trade (3.72) and transnational trade resilience (3.73). Higher agreement is seen for cross-border partnerships (4.18) and new technologies (4.41). Low standard deviations suggest consensus among respondents. These findings highlight Tatopani's trade sector's focus on regional trade, resilience, partnerships, and technological innovation in post-disaster strategies.

4.1.3 Correlational Analysis

Table 4.5

Correlational Analysis

Correlations

	EQ	GP	ID	T
EQ	1			
GP	.093	1		
ID	.490**	.422**	1	
T	.399**	.280**	.497**	1

** Correlation is significant at the 0.01 level (2-tailed).

Starting with the correlation between earthquake and the other variables, we see a positive correlation of 0.093 with Government Policies (GP), indicating a weak positive relationship. However, this correlation is not statistically significant ($p = 0.282$). There's a stronger positive correlation of 0.490 with Infrastructure Development (ID) and a moderately strong positive correlation of 0.399 with Trade (T), both of which are statistically significant at the 0.01 level ($p < 0.001$).

Moving on to Government Policies (GP), it exhibits a weak positive correlation of 0.093 with earthquake and a stronger positive correlation of 0.422 with Infrastructure Development, both of which are statistically significant ($p < 0.001$). The correlation with Trade is positive as well (0.280), indicating a weak positive relationship, but it is also statistically significant.

Infrastructure Development (ID) demonstrates a strong positive correlation with earthquake (0.490) and Government Policies (0.422), both of which are highly significant ($p < 0.001$). Additionally, it shows a strong positive correlation of 0.497 with Trade, also statistically significant at the 0.01 level ($p < 0.001$).

Lastly, Trade (T) exhibits positive correlations with earthquake (0.399), Government Policies (0.280), and Infrastructure Development (0.497), all of which are statistically significant at the 0.01 level ($p < 0.001$).

4.1.4 Pre and Post Earthquake Trade Analysis

Table 4.6

Data on Import and Export from Tatopani (in Million)

Year (BS)	Import Value	Export
2079/80	154685.4	35549.9
2078/79	210592.9	32265.3
2077/78	1335.8	31.7
2076/77	956.9	56.7
2075/76	48.5	0
2074/75	0	0
2073/74	0	0
2072/73	0	0
2071/72	10,971	1,420.9
2070/71	11,589	2,091.1
2069/70	15,647	1,494.3
2068/69	14,013	819.2
2067/68	11,104	434.7

Source: NRB, Macro-Economic and Financial Situation2067/68-2079/80 (BS)

Tatopani's trade data illustrates a stark contrast with the other regions. The import values in recent years, particularly 2079/80 and 2078/79, were exceptionally high at 154,685.4 million and 210,592.9 million, respectively. These figures suggest a significant influx of goods, possibly due to strategic trade policies or infrastructural developments. Similarly, exports from Tatopani were notably high in these years, with 35,549.9 million in 2079/80 and 32,265.3 million in 2078/79, indicating a vibrant trade hub.

However, the historical data shows periods of inactivity, where both import and export values were zero. This period of inactivity could have been due to infrastructural damage due to the Earthquake 2015.

Table 4.7

Data on Import and Export from Rasuwa (in Million)

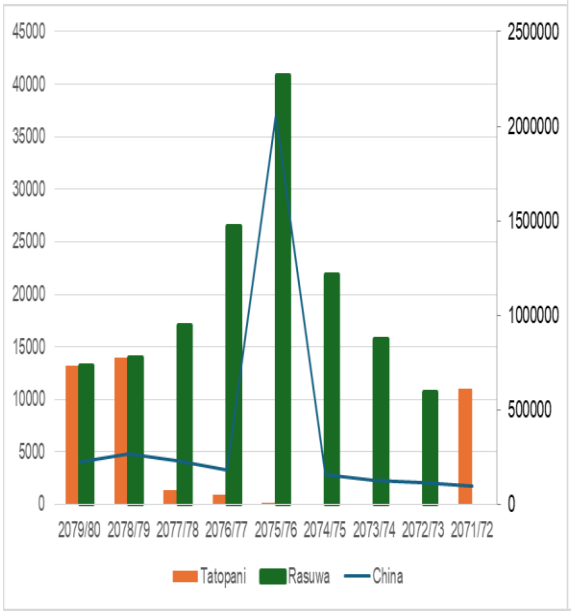
Year (BS)	Import Value	Export
2079/80	13210.2	5.9
2078/79	14023.7	0
2077/78	17014.8	0
2076/77	26468.2	581.6
2075/76	40851.0	1209.6
2074/75	21894.8	1136.9
2073/74	15743.6	775.5
2072/73	10658.6	561.0
2071/72	0	0

Source: NRB, Macro-Economic and Financial Situation 2071/72 - 2079/80 (BS)

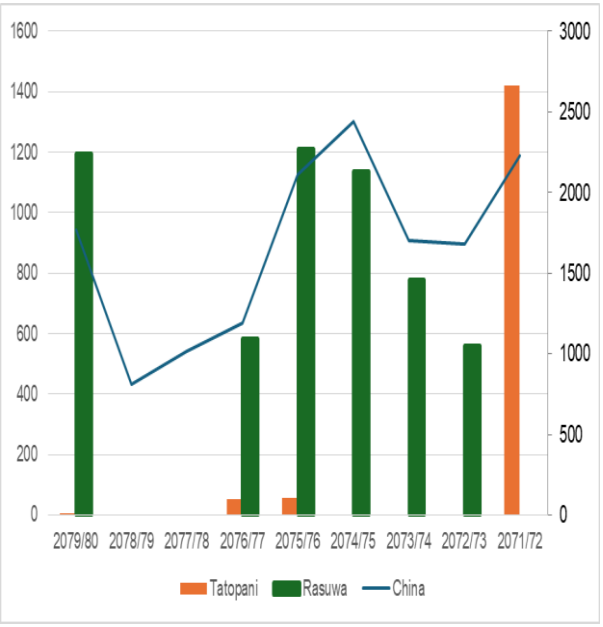
Figure 4.8

Comparison chart of Tatopani &Rasuwa on import and export

Import wise



Export wise



Source: NRB, Macro-Economic and Financial Situation 2071/72 - 2079/80 (BS)

a) Import data analysis

As shown in above figure, trade dynamics at the Rasuwa and Tatopani borders have shifted notably. In fiscal year 2079/80, imports from China totaled 222,715.9 million, evenly split between Tatopani and Rasuwa at 13,210.2 million each. This balance was also seen in 2078/79 with total imports at 264,783.7 million, and each border handling 14,023.7 million. In 2077/78, Rasuwa's imports significantly outpaced Tatopani's (17,014.8 million vs. 1,335.8 million) out of 233,923.1 million. This trend was more pronounced in 2076/77, with Rasuwa handling 26,468.2 million compared to Tatopani's 956.9 million, from a total of 181,920.3 million.

In 2075/76, total imports surged to 2,055,186 million, with Rasuwa dominating at 40,851 million and Tatopani contributing only 48.5 million. The previous years, 2074/75 and 2073/74, saw all imports through Rasuwa (21,894.8 million and 15,743.6 million respectively) with Tatopani unused. In 2072/73, total imports were 115,694.3 million, all via Rasuwa at 10,658.6 million. However, in 2071/72, Tatopani handled 10,971 million out of 100,166.4 million, with no imports through Rasuwa. This shift from Tatopani to Rasuwa reflects changes in trade policies, border infrastructure, or regional stability.

b) Export data analysis

The above figure exhibits that export data over the years shows notable trends. In 2079/80, total exports to China were 1,765.8 million, with Tatopani handling 5.9 million and Rasuwa 1,196.1 million. In 2078/79 and 2077/78, total exports were 808.8 million and 1,016.1 million respectively, with no exports through either border, indicating possible disruptions. In 2076/77, out of 1,191.2 million total exports, Tatopani handled 53.7 million and Rasuwa 581.6 million.

In 2075/76, total exports were 2,109.8 million, with Tatopani at 56.7 million and Rasuwa at 1,209.6 million. The previous years followed a similar pattern: in 2074/75, total exports were 2,437.7 million, all through Rasuwa (1,136.9 million), and in 2073/74, total exports were 1,701.5 million, all through Rasuwa (775.5 million). In 2072/73, total exports were 1,681.5 million, with Rasuwa handling 561 million and no exports through Tatopani.

In 2071/72, total exports were 2,229.9 million, with Tatopani handling 1,420.9 million and no exports through Rasuwa. This shift from Tatopani to Rasuwa for exports highlights changes in trade dynamics and infrastructural developments at the Rasuwa border.

Table 4.8

Data on Import and Export from China

Year (BS)	Import Value	Export
2079/80	1222715.9	1765.8
2078/79	264783.7	808.8
2077/78	233923.1	1016.1
2076/77	181920.3	1191.2
2075/76	2055186	2109.8
2074/75	159987.1	2437.7
2073/74	127245.0	1701.5
2072/73	115694.3	1681.5
2071/72	100166.4	2229.9
2070/71	73318.6	2840.7
2069/70	62451.3	2085.8

Source: NRB, Macro-Economic and Financial Situation 2069/70 - 2079/80 (BS)

c) Comparison and total trade with China

The import and export data reveals that Rasuwa has increasingly become the primary border for trade with China, especially since 2073/74. This shift is evident in both the growing trade volumes and the diminishing role of Tatopani. Total trade peaked in 2075/76, with imports exceeding 2 million. The preference for Rasuwa over Tatopani is likely due to better infrastructure, improved facilities, and greater geopolitical stability at Rasuwa. Overall, the data highlights a strategic shift to optimize trade routes and enhance trade efficiency with China through Rasuwa.

4.1.5 Rebuilding of infrastructure

a) Descriptive analysis

The descriptive statistics of the field survey regarding infrastructure development (table 4.8) highlighted the mixed sentiments regarding infrastructure development in Tatopani, underscoring the need for enhanced investment, timely implementation, and stakeholder engagement to ensure effective resilience-building and support for transnational trade activities in the region.

b) Correlational analysis

Likewise, the correlational analysis regarding the Infrastructure Development (table 4.10) demonstrates a strong positive correlation with earthquake (0.490) and Government Policies (0.422), both of which are highly significant ($p < 0.001$). Additionally, it shows a strong positive correlation of 0.497 with Trade, also statistically significant at the 0.01 level ($p < 0.001$).

c) Rebuilding initiatives

According to the Road Division in Charikot, Dolakha, around Rs1.36 billion was spent to upgrade the highway. Several years ago, the China Railway Construction Bureau Group had upgraded and blacktopped the highway twice. Traders are suffering because of the poor road condition as their cost of imports increases.

d) Respondents Views

Regarding the current status of physical infrastructure development for the recovery of transnational trade in Tatopani after the earthquake,

Most of the respondents stated that

> *Apart from Miteri bridge and Tatopani dry port built by a Chinese company, all other essential structures like immigration and security posts on the Nepal side are in a dilapidated condition. The final 26-km stretch of Araniko Highway to the border is yet to be repaired, and traders say it is dangerous to drive goods-loaded containers.*

These statements articulate the participants' live experience. Though the highway and upgrading the customs and port infrastructure there as national priority projects, overall infrastructure development projects have failed to adequately address the specific needs of transnational trade stakeholders in Tatopani.

As explained by a respondent of KII in the following statement

> *Overall, while significant progress has been made in enhancing trade facilitation in Tatopani, Sindhupalchok, following the 2015 earthquake, there is still ongoing work to further improve infrastructure, streamline procedures, and strengthen cross-border cooperation to fully realize the potential of trade in the region.*

e) FGD insight

The infrastructure development and reconstruction are very important for inland trans-border trade. This part exhibits the findings regarding the infrastructure development initiatives, improved the resilience, investment in infrastructure development and ongoing infrastructure development efforts.

Most of the participants of three different FDGs agreed that

Infrastructure development initiatives have improved the resilience of transnational Trade routes in Tatopani against future seismic events. Ongoing infrastructure development efforts have faced delay; in repair of highway from Barahabise to Tatopani which has caused the difficulty in smooth transportation of goods and the request to concerned authority has been continuous process.

4.1.6 Resumption of Trade

a) Descriptive Analysis

The relatively low standard deviations across all statements suggest a relatively consistent perception among respondents regarding the earthquake's impact. Overall, these findings highlight the dynamic response of Tatopani's trade sector to the earthquake, with a focus on shifting to regional trade, resilience, partnership strengthening, and technological innovation emerging as key themes in post-disaster adaptation strategies.

b) Correlational analysis

As table 4.10 exhibits the correlation between earthquake and the other variables, Trade (T) exhibits positive correlations with earthquake (0.399), Government Policies (0.280), and Infrastructure Development (0.497), all of which are statistically significant at the 0.01 level ($p < 0.001$).

c) Trend Analysis

The data underscores the significant impact of the 2071/72 earthquake of Nepal and the Jure landslide on trade activities through the Tatopani route, leading to a prolonged period of disruption followed by a gradual recovery. Despite some progress in import volumes, efforts to restore export activities and achieve a more balanced trade flow remain essential for the sustained economic development of the region as shown in table (4.11 &4.12).

d) Respondents views

Almost all of the respondents reaffirmed that Tatopani, only land route for trade with China, historic and important and revenue generating, contributing to the national economy stated

> *Before the 2015 earthquake, a diverse range of 182 items, including handicrafts, medicinal herbs, noodles, and other goods, were transported to Chinese markets such as Khasa, Lhasa, and Shigatse. Many traders relied on the export of locally made product for their livelihood.*

One of the KII respondents explained that

> *Once the earthquake occurred due to the disruption, the immediate closure of the border halted trade, the goods remained in border for 9 months resulting in the damage and expiry of goods, faced the huge loss and compel to seek alternative trade routes.*

Some of the respondents highlighted that

> *First time opened in 2076 again was disturbed by Covid 19, reopened in this 2080 limited import. No export from Nepal. Major shift observed are insignificant export from Nepal like one way trade, high import on Electric Vehicles, Apples, Wallnuts and Garments. The import of construction items somehow lead to long-term development and the others are luxury items like EV.*

Respondents view revealed that earthquake caused border closure, leading to major losses and the search for new trade routes. Reopened in 2019 and again closed due to COVID-19 disruptions, and reopened by 2023 resuming limited imports with no exports from Nepal, imports of electric vehicles, apples, walnuts, garments, and construction items.

e) FGD Insight

Most of the FGD participants expressed their views

> *Before earthquake, it was the major land trade route with China historic, important and revenue generating and contributing to national economy.*

Previously, the border had been exclusively accessible for import and export trade. In the third phase, starting from Friday, it has been opened to the public. Following the devastating earthquake on 25 April, 2015, this border remained completely closed for four and a half years. After extensive diplomatic efforts, on 29 May, 2019, the one-way border was reactivated for import trade. Four years later, on 1 May, 2023, it transitioned into two-way operation, allowing for exports as well.

4.1.7 Impact on economy

The trans-border trade from Tatopani has been crucial for revenue generation, market stability, employment, and regional integration. The 2015 earthquake's impact highlighted the border's significance and the need for resilient infrastructure to support economic stability.

a) Descriptive Analysis

The relatively low standard deviations across all statements suggest a relatively consistent perception among respondents regarding the earthquake's impact. Overall, these findings underscore the widespread and lasting ramifications of the 2015 earthquake on transnational trade activities in Tatopani, signaling a need for robust recovery efforts and infrastructure reinforcement to mitigate future disruptions.

b) Correlational analysis

Starting with the correlation between earthquake and the other variables, Trade (T) exhibits positive correlations with earthquake (0.399), Government Policies (0.280), and Infrastructure Development (0.497), all of which are statistically significant at the 0.01 level ($p < 0.001$).

c) Trade activities

Tatopani's trade data illustrates a stark contrast with the other regions table (4.11). The import values in recent years, particularly 2079/80 and 2078/79, were exceptionally high at 154,685.4 million and 210,592.9 million, respectively. These figures suggest a significant influx of goods, possibly due to strategic trade policies or infrastructural developments. Similarly, exports from Tatopani were notably high in these years, with 35,549.9 million in 2079/80 and 32,265.3 million in 2078/79, indicating a vibrant trade hub.

However, the historical data shows periods of inactivity, where both import and export values were zero. This period of inactivity could have been due to infrastructural damage due to the Earthquake 2015.

d) Respondents views

Almost all of the respondents reaffirmed that Tatopani, only land route for trade with China, historic and important and revenue generating, contributing to the national economy:

> *Before the 2015 earthquake, a diverse range of 182 items, including handicrafts, medicinal herbs, noodles, and other goods, were transported to Chinese markets such as Khasa, Lhasa, and Shigatse. Many traders relied on the export of locally made product for their livelihood.*

One of the respondents explained that

> *Once the earthquake occurred due to the disruption, the immediate closure of the border halted trade, the goods remained in border for 9 months resulting in the damage and expiry of goods, faced the huge loss and compel to seek alternative trade routes.*

Some of the respondents highlighted that

> *First time opened in 2076 again was disturbed by Covid 19, reopened in this 2080 limited import. No export from Nepal. Major shift observed are insignificant export from Nepal like one way trade, high import on Electric Vehicles, Apples, Wallnuts and Garments. The import of construction items somehow lead to long-term development and the others are luxury items like EV.*

e) FGD insight

According to Tatopani Customs Office, before the earthquake, goods worth Rs 20 billion used to be imported and goods worth Rs 3 billion exported through the border point. The import and export used to contribute around Rs 5 billion as revenue to the national coffers.

Most of the FGD participants agreed their views as

> *Before earthquake, it was the major land trade route with China historic, important and revenue generating and contributing to national economy.*

Nepal's trade deficit with China was Rs220.95 billion in the last fiscal year, according to the Department of Customs. Before Covid in fiscal 2018-19, imports amounted to Rs205.51 billion. In 2017-18, imports were valued at Rs159.98 billion, up from Rs129.87 billion in fiscal 2016-17(NRB, 2018).

4.2 Discussion

This section summarizes the discussion of major findings analyzed in the earlier chapters. The impacts of the earthquake have been observed as multi sectorial affecting various aspects of society and the environment. Additionally, the study revealed that despite the adverse effect on Tatopani border, the trade through Timure, Rasuwa has covered some part of the trans-border trade (Kharel, 2018). The findings of the study highlight the crucial importance of building the earthquake resilience infrastructures in Tatopani for trans-border trade. Infrastructure development initiatives have improved the resilience of Transnational Trade routes in Tatopani against future seismic events.

Ongoing infrastructure development efforts have faced delays, causing disruptions to Transnational Trade activities in Tatopani. The earthquake has highlighted the importance of strengthening cross-border trade partnerships and alliances in Tatopani. The earthquake has spurred innovation and the adoption of new technologies to enhance efficiency and transparency in Transnational Trade operations in Tatopani.

The road network across the country has been impacted, obstructing import and export routes, mainly that of Araniko Highway which is the lifeline of Nepal-China trade. Export to China had earlier been witnessing a growing trend but with the obstruction of trade routes, exchange of products is expected to register a slump.

4.2.1 Pre and post-earthquake trade

Rasuwa experienced substantial growth in trade activities from 2071/72 to 2075/76. Starting with no recorded trade in 2071/72, imports rose dramatically to 10,658.6 million in 2072/73 and peaked at 40,851.0 million in 2075/76. Exports, although consistently much lower than imports, increased from 561.0 million in 2072/73 to 1,209.6 million by 2075/76. This period highlights a marked expansion in Rasuwa's trade capacity, reflecting its growing significance in Nepal's trade landscape despite a persistent trade imbalance favoring imports (Table 4.12).

In contrast, Tatopani's trade pattern during the same period showed a different trajectory. In 2071/72, Tatopani had substantial trade activity, with imports at 10,971 million and exports at 1,420.9 million. However, from 2072/73 to 2074/75, there was no recorded trade, indicating a period of inactivity possibly due to infrastructural or logistical challenges. In 2075/76, trade resumed minimally with imports at 48.5 million and no exports, reflecting a slow recovery in trade activities (Table 4.11).

The total trade with China from 2071/72 to 2075/76 reveals a strong and steadily growing economic relationship. Imports from China increased significantly, starting at 100,166.4 million in 2071/72 and peaking dramatically at 2,055,186 million by 2075/76. Exports to China, while also growing, remained comparatively lower, starting at 2,229.9 million in 2071/72 and reaching 2,109.8 million in 2075/76. This data underscores China’s crucial role as a major trade partner, with imports far outweighing exports and revealed trade shift (Table 4.13).

4.2.2 Government policy and regulation

a) Emergency response

Relief operations started from the second hour of the earthquake in 2015 and lasted till 19 May 2015. Government of Nepal remained quick and swift during the initial phase of search, rescue and relief response. The first meeting of the Central Disaster Relief Committee (CNDRC) took place at NEOC within the first two hours of the tremor, and the first emergency meeting of the Cabinet took place within the first four hours. These meetings managed to (a) immediately release NRs. five hundred million at the disposal of the CNDRC, (b) call for international humanitarian support, and (c) declare emergency in 11 “crisis-hit” districts (MoHA 2016), among other decisions. Certain institutional and policy frameworks

put in place earlier enabled this quick initial response. Predefined roles and responsibilities of the NEOC and other institutions for taking time-bound actions, as outlined in the National Disaster Response Framework (NDRF), 2013 was extremely helpful in managing disaster response.

b) Reconstruction and rehabilitation

From 19 May 2015, the Government of Nepal took firm steps towards transitioning from relief phase to recovery phase. Following the enactment of the NRA Act on 20 December, the National Reconstruction Authority (NRA) was constituted on 25 December 2015 with a mandate to manage, oversee and coordinate recovery and reconstruction work in the earthquake affected districts. In May 2016, the NRA brought the Post Disaster Recovery Framework (PDRF) to provide strategic guidance on carrying out recovery and reconstruction activities in an integrated manner with sectorial priorities identified and sequenced and availability of resources earmarked for actual recovery and reconstruction.

c) Post-2015 DRM regulatory framework in Nepal

Nepal's Constitution, for the first time, mentions the DRM under Article 51 and Schedules 5 to 9, and has clearly assigned DRM as a concurrent responsibility of the three tiers of government, particularly of the local governments. Article 51 stipulates the policies that the state shall pursue with regard to DRM. For instance, the sub-article G that relates to "policies concerning protection, promotion and use of natural resources," does mention that the state shall formulate policies related to development of sustainable and reliable irrigation through prevention of water-induced disasters and river management.

On 24 September 2017, the legislative-parliament unanimously passed a new Disaster Risk Reduction and Management Act, 2017. In many respects, the Act is considered more progressive and comprehensive than the existing Natural Calamity Relief Act, 1982 since it also recognizes risk reduction as an important and integral part of risk management.

Tatopani transit point at the Nepal-China border resumed on 30 May 2019 after four years. The border point was closed due to the earthquakes of 2015.The transit point officially resumed after four containers ferrying wool entered the Nepali side from China amidst a programme attended by high level officials from both countries. Minister of Industries,

Commerce and Supplies Matrika Yadav and Chinese envoy to Nepal Hou Yanqi had jointly inaugurated the transit point and announced its operation (The Himalayan, 2019).

4.2.3 Response and rebuilding effort

The government produced a "White Paper" to inform the deteriorating national position and to discuss the broader public of the worsening economic crisis. The paper painted a bleak image of the economy, predicting 2% growth instead of the anticipated 6% for FY 2015/16 (National Reconstruction Authority [NRA], 2016).

The Gorkha, Nepal earthquake on April 25, 2015, triggered a large number of landslides, severely impacting the Araniko Highway among other areas. The highway, a crucial link between Tibet and Nepal, experienced significant damage over a total length of approximately 1,415 meters due to 35 recorded coseismal landslides. The landslides deposited an estimated total volume of 0.37 million cubic meters along the highway (Xu et al., 2017).

Trans-border trade and transportation infrastructure underwritten with international investment, China Aid Arniko Highway Long-term Opening Maintenance Project: The 115 kilometers long Arniko Highway was opened to traffic in May 1967. It was the first China aid project in Nepal which carries the friendship between China and Nepal over the past half century. After the earthquake in 2015, the road was seriously damaged, and the Chinese government launched a long-term maintenance project.

Most of the respondents expressed their views that

> *Major initiatives taken by the GoN are Post Disaster Need Assessment (PDNA) by National Planning Commission, Rebuilding of damaged infrastructures, alternative inland trade route from Kerung-Rashuwagadi, New Dry Port at Larcha and finally multitrack diplomatic efforts of the GoN to resume the trans-border trade after the earthquake.*

Finance Secretary Shankar Prasad Adhikari and Chinese Ambassador to Nepal Yu Hong signed the agreements on behalf of the government of Nepal and the Chinese government respectively. For the resumption of the Tatopati border point, the budget would be used for renovation of building and establishment of protection measures, so that trade clearance capabilities would be improved (Reporters Nepal, 2018).

4.2.4 Existing trade activities

According to the Nepal Trade Information Portal, under the Ministry of Industry, Commerce, and Supplies, China provides zero-tariff benefits for about 8,000 Nepalese goods, covering 95 percent of Nepal's total exports to China. A study by the South Asia Watch on Trade, Economics, and Environment (SAWTEE) on Nepal-China trade from 2020 to 2022 found that over 90 percent of the value of Nepal's exports to China fell under the zero-duty list for least developed countries (LDCs). However, the utilization of these preferences averaged only 68 percent.

Due to supply-side constraints and weak trade logistics, Nepal has not been able to boost its exports to China. A former Commerce Secretary highlighted that for every Rs 1 worth of goods Nepal exports, it imports goods worth Rs 341, indicating a significant trade deficit. Despite being geographically close to China, Nepal has not fully capitalized on its trade potential, unlike countries much farther away that successfully export to China, the world's second-largest economy.

a) Respondents View

Most of the respondents expressed their views that major initiatives taken by the GoN are

> *Post Disaster Need Assessment by National Planning Commission, Rebuilding of damaged Infrastructures, and alternative inland trade route from Kerung-Rashuwagadi, New Dry Port at Larcha and finally multi track diplomatic efforts of the GoN to resume the trans-border trade after the earthquake.*

b) FGD Insights

Most of the participants of FDGs opined that

> *The one-way flow of trade has been observed and Nepal's strategy should be to diversify trade and transit routes, exploring all options. Diplomatic efforts to resume the trade as of pre-earthquake 2015 Tatopani-Zhangmu should be complemented by repairing and upgrading the Araniko Highway and upgrading the customs and port infrastructure as national priority projects.*

c) Observation

As a researcher, observed during the field visit, a decline in the export from Nepal, approximately 14 stalls of day-to-day items around Zhangmu Port in Chinese side. The researcher found that the swift flow of trade (import) from Zhangmu Port to dry port at Larcha Tatopani Nepal. After the clearance from the custom, direct to Kathmandu. Investments in infrastructure, including the Trans-Himalayan trade route and improved border crossing facilities, can optimize cross-border trade and unlock the potential of tourism and investment.

4.2.5 Economic impact

According to the Post-Disaster Needs Assessment Report, the value of the total damages and losses caused by the earthquakes is at NPR 706 billion, or US$7 billion. In a country with 25 percent of its population estimated to be living under the poverty line, the disaster further pushed 700,000 people into a hand-to mouth existence.

Macroeconomic impact assessment conducted by NPC as part of the PDNA reveals that the "total damage to existing stock of assets has been estimated at over NRs. 500 billion, with economic losses that flow from this destruction, estimated at nearly NRs. 200 billion – taken together both figures represent an economic force equivalent to about one third of Nepal's GDP and well over 100 percent of the Gross Fixed Capital Formation" (NPC 2015b, p. 76).

The report concludes that "the earthquake upset the nation's high aspirations for swifter economic progress in the short run shaking the national hope the country graduating from its current status as a Least Developed Country (LDC) to a developing country, possibly by 2022 (Nepal Disaster Report 2017). According to PDNA 2015 (NPC, 2015) the total loss in Commerce (Trade) Sector 16,953 million.

In FY 2014/2015, imports of construction materials like steel rods, sheets (235%), pipes and fittings (567%), and clinker surged dramatically by three-digit percentages. Prior to the earthquake, these imports had only increased by two-digit percentages. That same year, exports fell by 5.5% to NPR 70.98 billion. In FY 2015/16, exports further declined by 23.4%, and imports decreased by 9.9%. Trade disruptions in FY 2015/17 were primarily due to a blockade at the southern border, making it difficult to isolate the earthquake's impact on trade. The total trade deficit reached NPR 470 billion, an 8.2% reduction compared to a 12.9% increase in the previous fiscal year (Khatiwoda & Dixit, 2018).

Following the 2015 earthquake, which severely disrupted trade through the Tatopani border, there has been a significant shift in trade routes towards the Rasuwa border. This shift represents an adaptive response to the logistical challenges posed by the earthquake. Despite the disruptions at Tatopani, the overall trade balance with China remained stable by geographically shifting from one trading post to another.

According to the trade analysis of pre- and post-quake, it gives the picturesque of negative impact on national economy. Most of the respondents expressed their views that the export through Tatopani border should be resumed to maintain the two-way trade.11th Nepal-China Joint Consultative Mechanism meeting held in Kathmandu on Tuesday said the Chinese side has assured Nepal that they are committed to resuming the operation of the Tatopani customs point once the reconstruction of the damaged buildings and road and protection works of the area are completed (My republica,2017).

Rasuwa, previously less dominant, saw increased trade activities due to relatively less damage and quicker restoration efforts. This shift maintained the flow of goods between Nepal and China, preventing a significant decline in overall trade volume.

The adaptive shift highlights the flexibility and resilience of trade networks in response to natural disasters and underscores the importance of having multiple operational trade routes to maintain trade flows during crises. This development suggests that enhancing multiple border points can provide greater stability and resilience in international trade relationships.

4.2.6 Cross cutting issue

The Gorkha earthquake of 25 April 2015 enormously affected human, socio-economic and other multiple sectors and left deep scars mainly in the economy, livelihood and infrastructure of the country (Subedi & Chhetri, 2019).

a) Rebuilding efforts

Chinese authorities are actively involved in rebuilding the Khasa Bazaar, which holds promise for revitalizing economic activity and cross-border trade in the views FGD 3 as informed by counterpart during coordination meeting.

b) Geography, disaster and security

The terrain of Nepal is diverse consisting of Himalayan, Hilly, and Terai regions with 14, 68 and 15 percent of the total area respectively. Nepal shares its international border in all

diverse geographical locations. It is one of the unique terrains of the world which have geographical differences from 60 m to 8848 m from sea level. The high Himalayan demarks Nepal-China boundary and it is declared as a demilitarized zone that covers 20 km inside from boundary by Nepal-China boundary treaty of 21 March 1960 (Shrestha, 2003).

It is one of the peaceful and regulated borders with very few security posts. Due to its high altitude, the government of Nepal has not been able to establish adequate checkpoints. According to APF Nepal Headquarters, there are only 09 Border outposts in Nepal- China frontier with disaster management trained team. The high altitude, rugged terrains are the major problems faced by security personnel in this region. Also, transporting necessary logistics and equipment is costly as airlift is required. There is no man-made boundary demarcation on land as indicated in the boundary treaties except for boundary pillars (Kansakar, 2000).

Ghimire (2022) opined that China's strategy to shift Nepal-China border points for cross border trade, Nepal's desire to diversify border points in the northern border, movement of Tibetan refugee as perceived threat by China, and prospects of bilateral trade through western borders points are the major crossing cutting issues and subject of further study.

c) Optimism for revival

There is optimism that once the reconstruction is complete, foot traffic in the vicinity will gradually resume, breathing new life into economic transactions and cross-border trade. The Khasa market in Tibet, initially deserted after the earthquake, is experiencing a revival due to the arrival of some local inhabitants.

One of the respondents stated that

> *Authorities are working on rebuilding the Khasa Bazaar, and there is hope that economic activity will thrive once foot traffic resumes.*

Locals and traders who were elated that their business would recover after China announced reopening two-way trade are disappointed again since only the one-way trade has been resumed.

A local resident of Bhotekoshi Rural Municipality,ward no.-2 stated that

Traders and workers of various companies like Silk, Rewang and Rising Star, who were hopeful about the resumption of hassle-free trade through Tatopani, are gradually starting to move to Kerung further west.

One of the KII respondents (economist) shared

> *The closure of the Tatopani border due to the earthquake highlights the vulnerability of economic systems to natural disasters and changes in trade routes. Nepal should focus on diversifying its trade and transit routes, considering all possible alternatives.*

Adding on Nepal China in land trade, one of the KII respondents (trade expert) highlighted

> *Lack production and productivity of the goods and services followed by poor trans-himalayan transport connectivity damaged after disaster are the major hindrance for the shortfall of trade.*

Diplomatic efforts can be most effective measure to revive the prolonged disturbed trans-border trade from Tatopani. According to MOFA, Nepal has its Embassy in Beijing, Consulates General in Lhasa, Hong Kong and Guangzhou and an Honorary Consul in Shanghai, the highest number of Nepalese missions as compared to any country.

4.2.7 Objectives wise discussion

a) Findings with respect to the objective one; to explore the flow of Trans - Border Trade before Earthquake-2015

Tatopani lies some 115 km northeast of Kathmandu on the Nepal-China border. Tatopani is the starting point of the legendary caravan route to Lhasa, and it has been the main land route for trade with China since a highway linking Kathmandu opened in 1967.Before the April 2015 earthquakes, Nepal's exports to China were booming. Nepal used to dispatch handicrafts, herbs, noodles and hundreds of other goods to Khasa, Shigatse and Lhasa in Tibet.

Prior to the earthquake, Nepali citizens could enter Tibet with a one-day pass issued by the Immigration Office, based on their citizenship certificate or passport. Foreign nationals used to travel freely between Nepal and China through this border. For foreigners arriving in Nepal through this crossing, the Immigration Office would extend their entry visa for a brief

period. Nepali officials have mentioned that the details of the complete movement of Nepali citizens and foreigners will become clearer over time.

b) Findings with respect to the objective two; to examine the status of Trans- Border Trade which resumed after earthquake-2015

According to the Custom Office Tatopani, First time opened in 2076 again was disturbed by Covid 19, reopened in 2080 limited import, no export from Nepal. Major shift observed are insignificant export from Nepal like one way trade, high import on Electric Vehicles, Apples, Wallnuts and Garments. The import of construction items somehow lead to long-term development and the others are luxury items like EV.

On the Chinese side of the border, the infrastructure was soon rebuilt. But little work was done on the Nepal side, poor state of the infrastructure and highway from Barahabise to Tatopani needs immediate repair and up gradation for smooth flow of heavy trucks. The study revealed the localized effect on the economy.

(c) Findings with respect to the objective three; to assess the impact of Trans-Border trade from Tatopani on national economy

The earthquake has affected the overall economic situation in the production and service sectors, such as agriculture, livestock, tourism, trade, and industry and has put roughly 3.5 million people in need of food assistance (FAO, 2015). It affected the livelihoods of over 2.28 million households and 8 million people with total damage and loss to livelihoods of NPR 28.4 billion (USD 284 million) in 31 districts (NPC, 2015).

The list of 31 districts with their severity of damage (severe, crisis hit and hit with heavy losses and slightly affected etc.) The impact of disaster on economy was very high resulting in low GDP growth, loss of employment opportunities and increased food insecurity (Gauchan et al., 2017).

According to estimate of the Post Disaster Need Assessment (PDNA) of the Government of Nepal (NPC, 2015), the total value of direct and indirect impact of the earthquake to Nepalese economy was close of USD 7 billion, equivalent to one-third of country's GDP. The earthquake also caused heavy loss and damage to productive human resource base (agricultural labour), draft animals and agricultural infrastructure. It also affected 180,000 people engaged in tourism, which were extremely vulnerable. The study

also showed that about 0.7 million people fell on below poverty line due to negative consequences of earthquake (NPC, 2015).

Over 5 million workers have been affected, with about 150 million workdays lost, 69% of which are in the agriculture sector. Livelihoods of small farmers and those of daily agricultural and non-agricultural labor have been severely affected, with income losses of over 75% reported in several areas (FAO 2015).

4.3 Triangulation and Validation

In this study, the independent variables are damages and loss, physical infrastructure, demographic shift, border closure, and export/import activities. The dependent variables are Trans Border Trade and the National Economy. Quantitative data were entered using IBM's Statistical Package for Social Sciences (SPSS) for correlation analysis and were presented using bar charts, pie charts, and frequency tables as needed. Qualitative data were gathered from interviews, KIIs and FGDs were presented as direct quotes from respondents and narrative analytical statements to support the quantitative findings. Methodological analysis and discussion has been carried according to the following model:

a) Quantitative Findings

Field survey was conducted by the sample of 135 Local inhabitants at border area, business persons involved in trade and civil society members of Sindhupalchowk district. The study adapted three tools and techniques of quantitative method which are discussed below:

i) SPSS analysis

The descriptive statistical analysis highlight the dynamic response of Tatopani's trade sector to the earthquake, with a focus on regional trade, resilience, partnership strengthening, and technological innovation emerging as key themes in post-disaster adaptation strategies.

ii) Correlational analysis

Correlational analysis of survey data, Trade (T) exhibits positive correlations with earthquake (0.399), Government Policies (0.280), and Infrastructure Development (0.497), all of which are statistically significant at the 0.01 level ($p < 0.001$).

iii) Government data

Government data Government data revealed that Rasuwa saw significant trade growth from 2071/72 to 2075/76. Starting with no trade in 2071/72, imports surged to 10,658.6 million in

2072/73 and peaked at 40,851.0 million in 2075/76. Exports, though much lower, rose from 561.0 million in 2072/73 to 1,209.6 million by 2075/76, indicating a growing but imbalanced trade capacity favoring imports.

In contrast, Tatopani had substantial trade in 2071/72, with imports at 10,971 million and exports at 1,420.9 million. However, no trade was recorded from 2072/73 to 2074/75, likely due to infrastructural or logistical issues. Trade resumed minimally in 2075/76 with imports at 48.5 million and no exports, indicating a slow recovery.

b) Qualitative Findings

The study adapted the three tools and technique of qualitative method which as Interviews, Key Informant Interviews and Focus Group Discussions, details of which are shown in the table (3.4).

c) Integrations of findings and triangulation

The integration of data has been done in following model

i) Quantitative Findings

The study revealed substantial growth in trade activities in Rasuwa from 2071/72 to 2075/76, with imports increasing from zero to 40,851.0 million and exports rising from 561.0 million to 1,209.6 million. This indicates a marked expansion in trade capacity.

Conversely, Tatopani showed a different trend with significant trade in 2071/72 but a period of inactivity from 2072/73 to 2074/75. Trade resumed modestly in 2075/76 with minimal imports and no exports.

ii) Qualitative Findings

Interviews with key informants confirmed the quantitative data, highlighting Rasuwa's growing role in Nepal's trade due to improved infrastructure and strategic initiatives. Respondents noted the persistent trade imbalance favoring imports. In Tatopani, informants attributed the trade inactivity from 2072/73 to 2074/75 to infrastructural and logistical challenges. The minimal resumption of trade in 2075/76 was seen as a slow recovery phase.

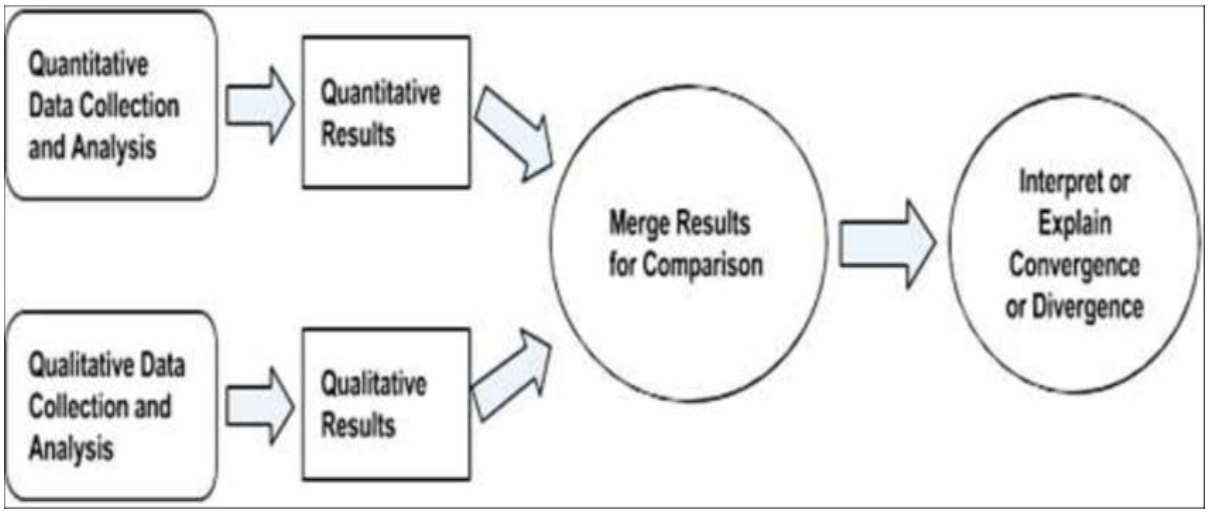
iii) Integration of Findings

According to Creswell and Creswell (2018), data analysis in a convergent design involves three stages. The first stage is analyzing the qualitative data by coding and consolidating the codes into overarching themes. The second stage involves analyzing the quantitative data

through statistical results. The third stage is the mixed methods data analysis, which integrates the qualitative and quantitative databases by merging their results as shown in following model.

Figure 10

Convergent Mixed Methods Design



Source: Model adapted from Creswell & Creswell (2018).

The integrated analysis of both quantitative and qualitative data underscores a significant expansion in Rasuwa's trade activities, supported by statistical evidence and corroborated by insights from interviews, key informant interviews and FGDs. This dual approach confirms the region's growing importance in Nepal's trade landscape despite an import-heavy imbalance. Similarly, the integration highlights Tatopani's contrasting trade trajectory, with both data sets pointing to infrastructural issues as the primary cause for its inactivity and slow recovery.

iv) Triangulation

By merging the statistical results with narrative insights, the study provides a comprehensive understanding of the trade dynamics in Rasuwa and Tatopani, illustrating consistent findings across both research methods. This integrated approach enhances the robustness of the study's conclusions.This triangulation strengthens the validity of the findings, providing a comprehensive view of the trade dynamics in both Rasuwa and Tatopani by confirming consistency across both quantitative and qualitative data sources.

4.4 Summary

Nepal's strategy should be to diversify trade and transit routes, exploring all options. The temptation to make a cost-benefit analysis comparing trade costs along different routes, without factoring in the value of transit needs, must be avoided. Diplomatic efforts to reopen Tatopani-Zhangmu should be complemented by repairing and upgrading the Araniko highway because borders are in a constant state of "materialization, dematerialization, and rematerialization" (Megoran 2012).

The Nepalese economy faced severe difficulties due to shortages of essential goods, prompting the government to seek alternatives to its dependency on Indian transit routes. This led to the 2016 Transit Transport Agreement with China, finalized in 2018, granting Nepal access to seven Chinese transit points (four sea ports and three land ports). Despite the agreement aiming to reduce dependency on Indian ports and avoid import disruptions, it has not been effective. The COVID-19 pandemic further hindered the use of northern transit routes, with minimal cargo passing through. Consequently, Nepalese traders have reverted to using Indian ports, escalating regional geopolitical tensions and economic challenges for Nepalese businesses (Ghimire,2022).

By using Foreign Policy Analysis (FPA) as a tool (Bhattarai, 2021) to resume the trans-border trade from Tatopani which is historical inland trade between two countries, hence diplomatic negotiations can headway in the context of trade.

The study used a mixed method research design. The fieldwork was conducted on March 2024, prior to that researcher has conducted pretest and the data collected from field survey with 135 probability clusters sampling of available population, 40 interviews, 10 KIIs and 3 FGDs were conducted with different stakeholders related to trans-border trade of Tatopani Border. The trend analysis of the trade before and after the earthquake was done by the data taken from the department of customs and Nepal Rastra Bank. The results of the study showed that the effect of the earthquake 2015 has adversely affected the trans-border trade at Tatopani damaging the infrastructures, closure of the border, and complete stoppage of the trans-border trade for more than 8yrs affecting revenue generation.

CHAPTER V

SUMMARY AND CONCLUSIONS

5.1 Summary

This thesis investigates the impact of the 2015 earthquake on trans-border trade between Nepal and China, focusing specifically on disruptions along the Tatopani border, a critical trade route severely affected by the disaster. The primary consequence of the earthquake was substantial infrastructural damage which led to the prolonged closure of the border. This cessation of trade operations had a detrimental effect on local businesses and the broader economic landscape of the region, impacting both local livelihoods and national economic indicators.

The findings from this study highlight several key areas: Firstly, the trade disruption was profound, with the complete stoppage of trans-border activities through Tatopani lasting over eight years. This halt in trade flow significantly impeded local economic activity and revenue generation, contributing to a widening trade deficit with China. Secondly, the government's response, involving policies aimed at facilitating economic recovery and rebuilding infrastructure, was met with mixed success. Persistent bureaucratic delays and inefficiencies hindered effective implementation, slowing the recovery process.

Nepal endured a devastating earthquake on April 25, 2015, measuring 7.6 on the Richter scale, along with over 300 subsequent aftershocks. This event resulted in approximately 9,000 fatalities, 22,000 injuries, and inflicted damages totaling USD 7 billion. The overall impact of the earthquake, equivalent to roughly one-third of Nepal's gross domestic product, underscores the magnitude of the destruction. The objective of this study on Effect of Earthquake-2015 on Trans-Border Trade: A study of Tatopani, Sindhupalchowk was to illuminate several important aspects of earthquake and its effect on trade and economy. The study used a mixed method research design. The qualitative data was collected by KII and general interviews, observations, documents, and records. Whereas the quantitative data was gathered by instrument data, observational checklists, or numeric records from different government agencies. The fieldwork was conducted on March 2024, prior to that researcher has conducted pretest and the data collected from field survey with 135 probability clusters

sampling of available population, 40 interviews, 10 KIIs and 3 FGDs were conducted with different stakeholders related to trans-border trade of Tatopani Border.

The trend analysis of the trade before and after the earthquake was done by the data taken from the department of customs and Nepal Rastra Bank. The results of the study showed that the effect of the earthquake 2015 has adversely affected the trans-border trade at Tatopani damaging the infrastructures, closure of the border, and complete stoppage of the trans-border trade for more than 8yrs affecting revenue generation and ultimately affecting the national economy. However, the Government policies and regulations have effectively facilitated the recovery of Transnational Trade in Tatopani post-earthquake. The research also emphasized the importance of considering geographic and physical activity levels into account when revising ration.

Additionally, the study revealed that despite the adverse effect on Tatopani border, the trade through Timure Rasuwa has covered some part of the trans-border trade. The findings of the study highlight the crucial importance of building the earthquake resilience infrastructures in Tatopani for trans-border trade. Infrastructure development initiatives have improved the resilience of Transnational Trade routes in Tatopani against future seismic events. Ongoing infrastructure development efforts have faced delays, causing disruptions to Transnational Trade activities in Tatopani. The earthquake has highlighted the importance of strengthening cross-border trade partnerships and alliances in Tatopani. The Gorkha earthquake of 25 April 2015 enormously affected human, socio-economic and other multiple sectors and left deep scars mainly in the economy, livelihood and infrastructure of the country.

The study also pointed out some cross cutting issues like rebuilding efforts, geography, disaster and security and optimism for Revival. Chinese authorities are actively involved in rebuilding the Khasa Bazaar, which holds promise for revitalizing economic activity and cross-border trade in the area.It is one of the peaceful and regulated borders with very few security posts. Due to its high altitude, the government of Nepal has not been able to establish adequate checkpoints. According to APF Nepal Headquarters, there are only 09 border outposts in Nepal- China frontier till date with disaster management trained team. The high altitude, rugged terrains are the major problems faced by security personnel in this region. Also, transporting necessary logistics and equipment is costly as airlift is required. There is no man-made boundary demarcation on land as indicated in the boundary treaties except for boundary pillars.

There is optimism that once the reconstruction is completed, the foot traffic in the vicinity will gradually resume, breathing new life into economic transactions and cross-border trade. The Khasa market in Tibet, initially deserted after the earthquake, is experiencing a revival due to returnees Chinese inhabitants.The research reveals that the substantial economic disruption resulting from the closure of the Tatopani border due to the earthquake highlights the vulnerability of economic systems to natural disasters and changes in trading routes. Following the earthquake, a new trade point emerged, leading to a shift in trade activities.

The shift of trade from Tatopani to Rasuwa helps to cushion the national economy from severe disruptions; it results in significant localized economic effects. These include new economic opportunities and infrastructure developments in the Rasuwa area, alongside potential economic challenges for the regions previously dependent on Tatopani. These findings underscore the importance of robust disaster preparedness and resilient infrastructure in maintaining economic stability in regions dependent on trans-border trade. The insights gained from the Tatopani border's experience are critical for policymakers, disaster management professionals, and economic planners. They highlight the need for swift, effective governmental action and the implementation of recovery strategies to mitigate the economic impacts of natural disasters. This study not only contributes valuable knowledge about the economic ramifications of disasters on critical trade routes but also provides practical recommendations for enhancing resilience and preparedness in similar contexts globally.

5.2 Conclusion

Concluding the thesis on the impact of the 2015 earthquake on trans-border trade at the Tatopani border, it became clear that natural disasters can have profound and long-lasting effects on economic infrastructures, especially in regions where trade is a critical component of the economy. The earthquake not only disrupted trade by damaging physical infrastructure but also highlighted the vulnerabilities and systemic challenges in disaster response and economic resilience in Nepal.

The significant economic disruption caused by the earthquake induced closure of the Tatopani border underscores the susceptibility of economic systems to natural disasters and opening and shifting of trading points. This prolonged interruption stifled trade, affected local businesses reliant on this route, and exacerbated the trade deficit with China. The economic

repercussions were broad and deep, affecting not just the immediate area but also having ripple effects throughout the region's economy.

Despite initiatives by the government to restore and improve infrastructure post-disaster, the effectiveness of these measures varied. Recovery efforts were often slowed by bureaucratic inefficiencies and a lack of timely implementation. This experience points to a crucial need for more streamlined and efficient disaster response mechanisms that can quickly stabilize the economy and facilitate a faster recovery.

However, the resilience and adaptation displayed in the wake of the disaster are noteworthy. The eventual reopening of the border and the initiation of infrastructure improvements have led to a gradual recovery in trade volumes. This demonstrates the robustness of the economic actors and systems involved but also highlight the necessity for ongoing support and robust infrastructure capable of withstanding future shocks.

The experiences from the Tatopani border offer invaluable lessons for enhancing disaster preparedness and building economic resilience. There is a clear need for comprehensive disaster management strategies that include not only robust immediate response mechanisms but also long-term planning for infrastructure resilience and economic recovery.

In terms of policy implications and further research, this thesis, suggests that policymakers should use this research as a basis for revising existing disaster management and economic policies to incorporate stronger infrastructure development, quicker response strategies, and better-coordinated international support in disaster-prone areas. Further research should focus on developing models for rapid economic recovery following disasters, particularly in economically strategic regions. This seminal research’s insights are crucial not just for Nepal but for similar regions globally, enhancing their capabilities to manage and recover from natural disasters more effectively.

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Appendix "A"

(Refer to page No. 34)

Major Earthquakes after 1900 AD

Date	Impacts
19 September 2017	At least 200 people die in and around Mexico City during a magnitude 7.1 earthquake. It follows a more powerful but less deadly earthquake 12 days before; the 7 September quake was a magnitude 8.1, the most powerful to hit the country in a century, but its epicenter was offshore.It killed more than 65 people in southern Mexico and Guatemala.
24 August 2016	At least 298 people are killed when a magnitude 6 earthquake strikes central Italy. The worst hit is Matrices, where many of the town's historicbuildings collapse. Italy rushes to help homeless after earthquake.
16 April 2016	A powerful 7.8 magnitude earthquake strikes Ecuador's coast, killingmore than 650 people. More than 16,000 people are hurt and some. 7,000 buildings destroyed.
26 October 2015	Almost 400 people are killed when a magnitude 7.5 earthquake strikes north-eastern Afghanistan. Most of those killed are in Pakistan, but thequake is also felt in northern India and Tajikistan.
25 April 2015	A 7.8-magnitude earthquake kills more than 8,000 people and leaves hundreds of thousands homeless, in the worst natural disaster to strike Nepal since 1934. In some parts of the country, the quake flattens 98% of all homes in hillside villages.
3 August 2014	Approximately 600 people are killed in a 6.1-magnitude earthquakethat strikes Yunnan province in China. Thousands of houses are destroyed, and landslides are triggered. More than 2,400 people are injured.
15 October 2013	More than 200 people are reported to have died after a magnitude 7.2 earthquake strikes centrally located Bohol and Cebu in the Philippines.

25 September 2013	More than 300 people are killed as a 7.7-magnitude quake flattens entire villages in Pakistan's remote south-western province of Balochistan, mainly in the district of Awaran.
20 April 2013	A powerful 6.6-magnitude earthquake kills at least 160 people and injured at least 5,700 in China's rural south-western Sichuan province.
11 August 2012	At least 250 people are killed and more than 2,000 injured in north- west Iran by two powerful quakes which strikes within minutes of each other near the towns of Tabriz and Ahar.
23 October 2011	More than 200 people are killed and 1,000 are injured in a powerful 7.2-magnitude earthquake which hits south-eastern Turkey; many ofthe victims are in the town of Ercis, where dozens of buildings collapse.
11 March 2011	A devastating magnitude-8.9 quake strikes Japan, leaving more than20,000 people dead or missing. The tremor generates a massive tsunami along the Japanese coast and triggers the world's biggest nuclear disaster since Chernobyl in 1986.
22 February 2011	A magnitude-6.3 earthquake shatters the New Zealand city of Christchurch, killing more than 160 people and damaging some 100,000 homes.
14 April 2010	At least 400 people die after a magnitude 6.9 earthquake strikes western China's Qinghai province.
27 February 2010	A magnitude-8.8 earthquake hits central Chile north-east of the second city, Concepcion, killing more than 700 people.
12 January 2010	About 230,000 people die in and around the Haitian capital Port-au- Prince as a 7.0-magnitude earthquake strikes the city.
30 September 2009	More than 1,000 people die after an earthquake strikes the Indonesian island of Sumatra.

6 April 2009	An earthquake hits the historic Italian city of L'Aquila, killing 309 people. Life after L'Aquila's heart was ripped out
29 October 2008	Up to 300 people are killed in the Pakistani province of Balochistan after an earthquake of 6.4 magnitude strikes 45 miles (70km) north of Quetta.
12 May 2008	Up to 87,000 people are killed or missing and as many as 370,000 injured by an earthquake in just one county in China's south-westernSichuan province. The tremor, measuring 7.8, struck 57 miles (92km) from the provincial capital Chengdu during the early afternoon.
15 August 2007	At least 519 people are killed in Peru's coastal province of Ica, as a 7.9-magnitude undersea earthquake strikes about 90 miles (145km) south-east of the capital, Lima.
17 July 2006	A 7.7-magnitude undersea earthquake triggers a tsunami that strikes a 125-mile (200km) stretch of the southern coast of Java, killing more than 650 people on the Indonesian island.
27 May 2006	More than 5,700 people die when a magnitude 6.2 quake hits the Indonesian island of Java, devastating the city of Yogyakarta and surrounding areas.
8 October 2005	An earthquake measuring 7.6 strikes northern Pakistan and the disputed Kashmir region, killing more than 73,000 people and leaving millions homeless.
28 March 2005	About 1,300 people are killed in an 8.7-magnitude quake off the coast of the Indonesian island of Nias, west of Sumatra.
22 February 2005	Hundreds die in a 6.4 magnitude quake centered in a remote area near Zarand in Iran's Kerman province.
26 December 2004	Hundreds of thousands are killed across Asia when an earthquake measuring 9.2 triggers sea surges that spread across the region.
24 February 2004	At least 500 people die in an earthquake which strikes towns on Morocco's Mediterranean coast.

26 December 2003	More than 26,000 people are killed when an earthquake destroys the historic city of Bam in southern Iran.
21 May 2003	Algeria suffers its worst earthquake in more than two decades. Morethan 2,000 people die and more than 8,000 are injured in a quake felt across the sea in Spain.
1 May 2003	More than 160 people are killed, including 83 children in a collapsed dormitory, in south-eastern Turkey.
24 February 2003	More than 260 people die and almost 10,000 homes are destroyed in Xinjiang region, in western China.
31 October 2002	Italy is traumatized by the loss of an entire class of children, killed in the southern village of San Giuliano di Puglia when their school building collapses on them.
26 January 2001	An earthquake measuring magnitude 7.9 devastates much of Gujarat state in north-western India, killing nearly 20,000 people and makingmore than a million homeless. Bhuj and Ahmedabad are among the town ‘s worst hit.
12 November 1999	About 400 people die when an earthquake measuring 7.2 on the Richter scale strikes Ducze, in north-west Turkey.
21 September 1999	Taiwan is hit by a quake measuring 7.6 that kills nearly 2,500 people and causes damage to every town on the island.
17 August 1999	A magnitude-7.4 earthquake rocks the Turkish cities of Izmit and Istanbul, leaving more than 17,000 dead and many more injured.
30 May 1998	Northern Afghanistan is hit by a major earthquake, killing 4,000 people.
May 1997	More than 1,600 are killed in Birjand, eastern Iran, in an earthquake of magnitude 7.1.
27 May 1995	The far eastern island of Sakhalin is hit by a massive earthquake measuring 7.5, which claims the lives of 1,989 Russians.
17 January 1995	The Hyogo quake hits the city of Kobe in Japan, killing 6,430 people.
30 September 1993	About 10,000 villagers are killed in western and southern India.

21 June 1990	About 40,000 people die in a tremor in the northern Iranian province of Gilan.
7 December 1988	An earthquake measuring 6.9 on the Richter scale devastates north-west Armenia, killing 25,000 people.
19 September 1985	Mexico City is shaken by a huge earthquake which raises buildings and kills 10,000 people.
4 March 1977	Some 1,500 people are killed in an earthquake that hit close to the Romanian capital, Bucharest.
28 July 1976	The Chinese city of Tangshan is reduced to rubble in a quake that claims at least 250,000 lives.
23 December 1972	Up to 10,000 people are killed in the Nicaraguan capital Managua byan earthquake that measures6.5 on the Richter scale. The devastationcaused by the earthquake is blamed on badly built high-rise buildings that easily collapsed.
31 May 1970	An earthquake high in the Peruvian Andes triggers a landslide, burying the town of Yungay and killing 66,000 people.
26 July 1963	An earthquake measuring 6.9 on the Richter scale strikes the Macedonian capital of Skopje, killing 1,000 people and leaving 100,000 homeless.
22 May 1960	The world's strongest recorded earthquake devastates Chile, with a reading of 9.5 on the Richter scale. A tsunami 30ft (10m) high eliminates entire villages. Death toll reports vary widely, but many settle on the 2,000 mark.
1 September 1923	The Great Kanto earthquake, with its epicenter just outside Tokyo, claims the lives of 142,800 people in the Japanese capital.
28 December 1908	Earthquake about 7.1 magnitude and subsequent tsunami in Italy's Messina Strait, badly affecting the cities of Messina and Reggio Calabria. Deaths estimated at 70,000-80,000.
18 April 1906	San Francisco is hit by a series of violent shocks which last up to a minute. Between 700 and 3,000 people die either from collapsing buildings or in the subsequent fire

Source: National Geophysical Data Center and, Disaster Preparedness Network Nepal. Retrieved on 12/28/2017 as cited by Shrestha, M. G. (2022).

Appendix "B"

(Refer to page No. 34)

Details of Study: Respondents Interviews including KIIs &FDGs

ticipantNo.	Sex	ge range (Years)	Education	Organization
KII 1	M	40-45	University education	Custom Office Tatopani
KII 2	M	45-50	University education	Custom Office Tatopani
KII 3	M	35-40	University education	Immigration Office Tatopani
KII 4	M	35-40	University education	District Administration Office Sindhupalchowk
KII 5	F	40-45	Higher Secondary Level	Bhotekoshi Rural Municipality Sindhupalchowk
KII 6	M	45-50	University education	APF Nepal BOP Tatopani
KII 7	F	35-40	University education	Bahrabise Rural Municipality
KII 8	M	35-40	University education	Nepal Trans Himalaya Border Commerce Association
KII 9	F	45-50	University education	Nepal Trans Himalaya Border Commerce Association
KII 10	M	35-40	University education	Nepal Trans Himalaya Border Commerce Association
R 1	M	45-50	University education	Chief District Officer (During Earthquake 2015)
R 2	M	35-40	University education	District Administration Office Sindhupalchowk
R 3	M	40-45	University education	Bhotekoshi Rural Municipality Sindhupalchowk
R 4	F	35-40	Higher Secondary Level	Bhotekoshi Rural Municipality Sindhupalchowk
R 5	M	45-50	University education	Custom Office Tatopani
R 6	M	40-45	University education	Custom Office Tatopani

R 7	M	40-45	Higher secondary level	Custom Office Tatopani
R 8	M	35-40	University education	Immigration Office Tatopani
R 9	M	30-35	University education	APF Nepal BOP Tatopani
R10	F	25-30	Higher Secondary School	APF Nepal BOP Tatopani
R11	M	35-40	Higher Secondary School	APF Nepal BOP Tatopani
R 12	M	41-46	University education	Bahrabise Rural Municipality
R 13	M	41-46	University education	Bahrabise Rural Municipality
R 14	M	45-50	University education	Area Police Station Kodari
R 15	M	40-45	University education	Area Police Station Bahrabise
R 16	M	41-46	University education	Sindhupalchowk Chamber of Commerce and Industry
R 17	M	40-45	University education	Sindhupalchowk Chamber of Commerce and Industry
R 18	M	41-46	University education	Sindhupalchowk Chamber of Commerce and Industry
R 19	M	35-40	University education	Sindhupalchowk Chamber of Commerce and Industry
R 20	M	47-52	University education	Nepal Trans Himalaya Border Commerce Association
R 21	M	35-40	University education	Nepal Trans Himalaya Border Commerce Association
R 22	F	47-52	University education	Nepal Trans Himalaya Border Commerce Association
R 23	M	35-40	University education	Nepal Trans Himalaya Border Commerce Association
R 24	M	41-46	University education	Journalist
R 25	M	35-40	University education	Journalist
R 26	M	35-40	University education	Local Businessperson
R 27	F	35-40	University education	Local Businessperson
R 28	M	41-46	University education	Businessperson
R 29	M	23-28	University education	Economist
R 30	F	23-28	University education	Economist
R 31	M	45-50	University education	Senior Advocate

R 32	M	45-50	University education	Department of Industry
R 33	M	45-50	University education	Department of Custom
R 34	M	45-50	University education	Nepal Rastra Bank
R 35	M	45-50	University education	Ministry of Foreign Affairs
R 36	M	45-50	University education	Sindhupalchowk Chamber of Commerce and Industry
R 37	M	35-40	Higher secondary level	Nepal Himalaya Seemapar Banijya Sangh
R 38	M	41-46	University education	Nepal Himalaya Seemapar Banijyar Sangh
R 39	M	45-50	Higher secondary level	Local Bussiness Representative
R 40	M	35-40	University education	Sindhupalchowk Chamber of Commerce and Industry

Details of Study Participants (Focus Group Discussion)

ticipantNo.	**Sex**	**.ge range (Years)**	**Education**	**Unit**
FGD 1 (District Security Committee)				
P 1	M	41-46	University education	District Administration Office, Sindhupalchowk, CDO
P 2	M	41-46	University education	District Administration Office, Sindhupalchowk, ACDO
P 3	M	41-46	University education	Nepal Army
P 4	M	41-46	University education	Nepal Police
P 5	M	41-46	University education	APF Nepal
P 6	M	41-46	University education	Investigation Department
FGD 2 (Tatopani Custom Office, Dry Port)				
P 1	M	41-46	University education	Custom Office Tatopani, Dry Port
P 2	M	35-40	University education	Custom Office Tatopani, Dry Port (Legal Section)
P 3	M	40-45	University education	Immigration Office, Tatopani Border Point
P 4	M	35-40	University education	APF, Nepal BOP Tatopani

P 5	F	35-40	Higher Secondary Level	APF, Nepal BOP Tatopani
FGD 3 (FNCCI & Stakeholders)				
P 1	M	40-45	University education	Sindhupalchowk Chamber of Commerce and Industry
P 2	M	40-45	University education	Sindhupalchowk Chamber of Commerce and Industry
P 3	M	35-40	University education	Nepal Himalaya Seemapar Banijya Sangh
P 4	F	35-40	Higher Secondary Level	Sindhupalchowk Chamber of Commerce and Industry
P 6	M	35-40	Higher Secondary Level	Miteri Youth Club
P 7	M	40-45	Higher Secondary Level	Local Business Representative

Appendix "C"

(Refer to page No. 34)

Informed Consent Form

Effects of Earthquake-2015 on Trans-Border Trade: A Study of Tatopani, Sindhupalchowk, Nepal

Date ..... (day/month/year)

I, (Mr./Mrs./Ms.)
..... here by have signed the consent to declare that:

1. Before signing the certificate of consent, I have been explained theobjectives and methods of the study.
2. I have had the opportunity to ask questions about the study and anyquestions that I have asked have been answered to my satisfaction.
3. I have the right to withdraw from the study at any time if I feel uncomfortable.
4. The investigator will keep the information confidential, and my personaldata will not be declared in any case except the academic purpose.
5. The investigator will provide additional necessary information about thestudy, if there are any.

I have read and understand the above information and I consent voluntarily to participate as a participant in this research.

Signature/Fingerprint ..... (Respondent/informant)

Signature .....(Researcher)

(Madan Dhungana)

Appendix "D"

(Refer to page No. 34)

Effects of Earthquake-2015 on Trans-Border Trade: A Study of Tatopani, Sindhupalchowk

Survey Questionnaire

The following questions are part of Effects of Earthquake-2015 on Trans-Border Trade: A Study of Tatopani, Sindhupalchowk conducted by Madan Dhungana , an investigator/ student of Master in Security, Development and Peace Studies (MSDPS) at APF Command and Staff College Sanogaucharan, Kathmandu. Your candid answer will provide invaluable information about disaster, infrastructure, government policy, trans-border trade, national economy, etc. I assure you that your participation in this interview is completely voluntary, if you do not want to take part in the interview, or if there are any particular questions you do not wish to answer. All personal information shared will remain secret. The confidentiality of your participation will be maintained, and your responses will not be accessible to government officials or any other entities. Please reply to every question to the best of your ability.

Demographic Information:

1. Name:
2. Gender: Male Female Other (please specify)
3. Age:18-24 ☐ 25-34 ☐ 35-44 ☐ 45-54 ☐ 55-64 ☐ 65 or above
4. Ethnicity: ☐ ☐ ☐ ☐
5. Education Level:
6. Primary education ☐ Secondary education ☐ Higher ☐ education
7. Occupation: Agriculture ☐ Trade ☐ Tourism ☐ Services ☐ Other (please specify)
8. Household Size:
9. Marital Status: Married ☐ Single ☐ Divorced, ☐ Widowed

General Information:

Please provide the level of agreement where 1= strongly disagree, 2= disagree, 3= neutral, 4= agree, 5= strongly disagree.

1. Earthquake of 2015:	1	2	3	4	5
The Earthquake of 2015 significantly disrupted Transnational Trade activities in Tatopani.					
The Earthquake of 2015 had a lasting impact on the infrastructure necessary for Transnational Trade in Tatopani.					
The Earthquake of 2015 caused a decrease in the volume of goods traded across the border in Tatopani.					
The Earthquake of 2015 led to delays and challenges in customs clearance procedures for Transnational Trade in Tatopani.					
2. Government Policies and Regulations:					
Government policies and regulations have effectively facilitated the recovery of Transnational Trade in Tatopani post-earthquake.					
Government policies and regulations have imposed unnecessary bureaucratic hurdles on Transnational Trade operations in Tatopani.					
Government policies and regulations have provided adequate support and incentives for businesses engaged in Transnational Trade in Tatopani.					
Inconsistent enforcement of government policies and regulations has hindered the smooth operation of Transnational Trade in Tatopani.					
3. Infrastructure Development:					
Infrastructure development initiatives have improved the resilience of Transnational Trade routes in Tatopani against future seismic events.					
Insufficient investment in infrastructure development has hindered the recovery of Transnational Trade in Tatopani post-earthquake.					
Ongoing infrastructure development efforts have faced delays, causing disruptions to Transnational Trade activities in Tatopani.					
Infrastructure development projects have failed to adequately address the specific needs of Transnational Trade stakeholders in Tatopani.					
4. Trade:					
The earthquake has led to a shift in trade patterns, with a greater emphasis on regional trade rather than international trade in Tatopani.					
Despite challenges, Transnational Trade in Tatopani has demonstrated resilience and adaptability in the face of the earthquake's impact.					
The earthquake has highlighted the importance of strengthening cross-border trade partnerships and alliances in Tatopani.					
The earthquake has spurred innovation and the adoption of new technologies to trade					

Appendix "E"

(Refer to page No. 34)

Effects of Earthquake-2015 on Trans-Border Trade: A Study of Tatopani, Sindhupalchowk

Interview Questions for Government Officials

The following questions are part of **Effects of Earthquake-2015 on Trans-Border Trade: A Study of Tatopani, Sindhupalchowk** conducted by Madan Dhungana (1231madan@gmail.com), an investigator/ student of Master in Security, Development and Peace Studies (MSDPS) at APF Command and Staff College Sanogaucharan, Kathmandu. Your candid answer will provide invaluable information about disaster, infrastructure, government policy, trans-border trade, national economy, etc., I assure you that your participation in this interview is completely voluntary, if you do not want to take part in the interview, or if there are any particular questions you do not wish to answer. All personal information shared will remain secret. The confidentiality of your participation will be maintained, and your responses will not be accessible to government officials or any other entities. Please reply to every question to the best of your ability.

Basic Information

Name of Respondent:

Sex: Male Female Others

Religion/Ethnicity:

Name of Office: Post:

Education:

Age: 20-30 Yrs, 30-40 Yrs., 40-50 Yrs., 50-60 Yrs, 70- 80 Yrs.

General Information

Can you describe the general trend of Trans-Border Trade before the Earthquake of 2015?

What were the major goods or commodities involved in Trans-Border Trade prior to the Earthquake-2015?

Could you elaborate on any policies or agreements governing Trans-Border Trade before 2015?

Objective 4.2: To examine the status of Trans-Border Trade this resumed after earthquake-2015.
What measures were taken to resume Trans-Border Trade post the Earthquake-2015?

How did the resumption of Trans-Border Trade after the Earthquake-2015 differ from its pre-earthquake status?

Were there any changes in the types of goods or commodities traded after the resumption of Trans-Border Trade?

Objective 4.3: To assess the impact of Trans-Border trade from Tatopani on the national economy.
What is the significance of Trans-Border trade from Tatopani in contributing to the national economy?

Can you discuss any noticeable economic changes or impacts on local communities resulting from Trans-Border trade from Tatopani?

How do you evaluate the role of Trans-Border trade from Tatopani in terms of national trade balance and revenue generation?

Appendix "F"

(Refer to page No. 34)

Effects of Earthquake-2015 on Trans-Border Trade: A Study of Tatopani, Sindhupalchowk

Interview Questions for Businessman

The following questions are part of Effects of Earthquake-2015 on Trans-Border Trade: A Study of Tatopani, Sindhupalchowk conducted by Madan Dhungana (1231madan@gmail.com contact no.9841376278), an investigator/ student of Master in Security, Development and Peace Studies (MSDPS) at APF Command and Staff College Sanogaucharan, Kathmandu. Your candid answer will provide invaluable information about disaster, infrastructure, government policy, trans-border trade, national economy, etc. I assure you that your participation in this interview is completely voluntary, if you do not want to take part in the interview, or if there are any particular questions you do not wish to answer. All personal information shared will remain secret. The confidentiality of your participation will be maintained, and your responses will not be accessible to government officials or any other entities. Please reply to every question to the best of your ability.

Basic Information

Name of Respondent:

Sex: Male Female Others

Religion:

Profession / Bussiness: Education:

Age: 20-30 Yrs, 30-40 Yrs., 40-50 Yrs., 50-60 Yrs, 70- 80 Yrs.

General Information

Can you describe the flow of trans-border trade before the Earthquake of 2015? What were the major commodities being traded and which countries were involved?

How did the Earthquake of 2015 affect trans-border trade operations? Can you discuss any specific challenges or disruptions faced by businesses engaged in cross-border trade during that time?

Following the Earthquake of 2015, how quickly did trans-border trade resume in the affected areas? Were there any noticeable changes in the volume or nature of trade activities compared to pre-earthquake levels?

What initiatives or measures were taken by the government or relevant authorities to facilitate the resumption of trans-border trade post-earthquake?

Can you provide insights into the current status of trans-border trade operations in the region since the Earthquake of 2015? Have there been any significant shifts in trading patterns or preferences among traders?

How has the infrastructure in trans-border trade points, particularly at Tatopani, evolved since the earthquake? Have there been any improvements or investments to enhance trade facilitation?

What are the major commodities or goods being traded through the Tatopani border post? Have there been any notable changes in the types of goods traded or their quantities since the earthquake?

In your opinion, what has been the overall impact of trans-border trade from Tatopani on the national economy? Can you discuss any positive or negative effects observed in terms of economic growth, employment, revenue generation, etc.?

Have there been any policy changes or trade agreements implemented since the earthquake that have influenced trans-border trade dynamics at Tatopani or in the surrounding regions?

Looking ahead, what do you foresee as the future prospects and challenges for trans-border trade operations, particularly at Tatopani? Are there any opportunities for further growth or improvements in trade facilitation that you believe should be prioritized?

Appendix "G"

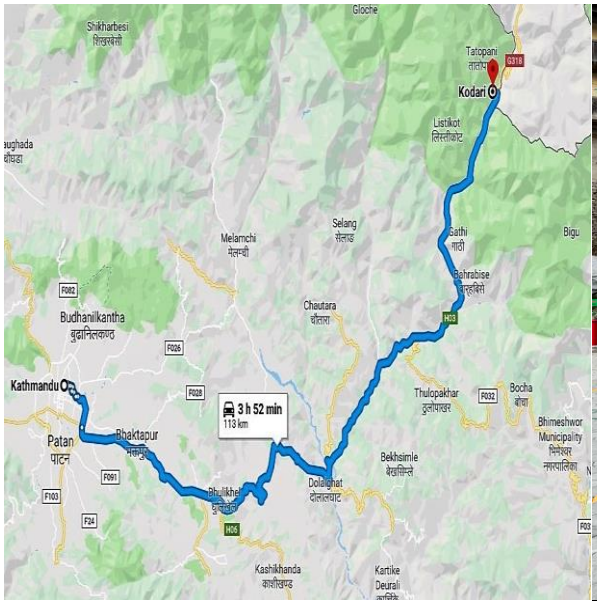
(Refer to page No. 34)

Focus Group Discussion Questions

1. What is your work experienced in various appointments in different unit?
2. Could you describe the flow of trans-border trade before the Earthquake of 2015?
3. How did the Earthquake of 2015 affect trans-border trade operations?
4. Following the Earthquake of 2015, how quickly did trans-border trade resume in the affected areas?
5. Were there any noticeable changes in the volume or nature of trade activities compared to pre-earthquake levels?
6. What initiatives or measures were taken by the government or relevant authorities to facilitate the resumption of trans-border trade post-earthquake?
7. Can you provide insights into the current status of trans-border trade operations in the region since the Earthquake of 2015? Have there been any significant shifts in trading patterns or preferences among traders?
8. What do you foresee as the future prospects and challenges for trans-border trade operations, particularly at Tatopani?
9. Are there any opportunities for further growth or improvements in trade facilitation that you believe should be prioritized?
10. Others

Thank You

Glimpses of Field Visit




中华人民共和国樟木口岸


Castrol